(IM)POSSIBILITIES OF NON-HIERARCHICAL SPACE
Learning from Christiania’s feedback system

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Foreword

The possession and manipulation of space has always been an expression of power hierarchy, either intentionally or un-intentionally. The most apparent examples are the grand palaces and cathedrals, where the first symbolizes the status of man and the latter symbolizes the power of God. Even within buildings or rooms, hierarchy is often present in forms such as the principal’s office, the stage and the lectern. Notice that these spaces of power without exception have either restricted visual/physical access or elevated positions that segregate users into different hierarchical groups through manipulation of user-behaviors. Nonetheless, the Western World’s escalated strive for Liberty in the past century marked by the ever increasing occurrence of protests and occupations, meant that spatial-arrangements ridden with rigid hierarchies are becoming increasingly inapplicable for particularly public spaces. This is because although a non-hierarchical space (i.e. open field) does not necessarily indicate that the governing system within it is non-hierarchical (i.e. bullying), a non-hierarchical system tends to require a non-hierarchical space in order to exist. For example a non-hierarchical discussion cannot occur within a space where some members sit on platforms raised high above other members, suggesting dominance of one group over another.

Thus the purpose of this thesis is to explore the possibilities of designing non-hierarchical space. The framework of our discussions shall be based upon Jay Forrester’s Cybernetic theory, in which human brains, cities and societies can all be studied as systems with feedback loops. This particular choice of framework owes to Cybernetic theory’s catalytic effects on the Counterculture movement in the 60s, which actively pursued concepts of non-hierarchy. The first halve of this thesis looks back in History at the Counterculture movement and provides theoretical analysis of several case studies in that era – in terms of their governance system characteristics and lessons to be learnt. The latter halve looks into other disciplines beyond Architecture, i.e. Behavioral Psychology, for clues of designing non-hierarchical spaces in the future. By integrating lessons learnt from Counterculture and Behavioral Psychology, we shall propose a new set of essential system parameters for the design of non-hierarchical space. One of the parameters shall be explored and
examined in greater depth on an intimate scale (about 5m by 10m) in context of an on-going hypothetical scheme - Copenhagen Ex-Change School. The aim of this scheme is to revitalize Copenhagen’s iconic commune, Christiania by attracting youths back into the area with an unconventional education system based on barter. Furthermore, learning spaces within the school will be interactive in such a way that they encourage non-hierarchy among users, hence realize on a regional scale Christiania’s grand ideal of autonomy.
Abstract

Research Questions
- Why did the self-governance feedback-system of Christiania fail?
- How to design non-hierarchical space with feedback loops in the future based on lessons learnt from Counterculture and Behavioral Psychology?

Methodology
- Archival research, analysis and comparison of Christiania and Fun Palace’s systems in the context of Counterculture movement.
- Interdisciplinary research into Cybernetic Theory and Behavioral Psychology related to notion of non-hierarchical space.
- Case study focused on the production of non-hierarchical spaces, based upon hypothetical scheme - Copenhagen Ex-change School.

Original Contributions
This thesis analyses the deficiencies of Christiania and compares Christiania with Fun Palace based on a Cybernetician’s viewpoint. In addition, it brings elements of Behavioral Psychology into spatial design in attempt to reinforce the social dimension of Architecture.
Historical Context //
Relationship between Counterculture and Cybernetics

The Western World experienced a vivid episode of civil unrest, sometimes referred to as the Hippie Counterculture, during the 1960s and 70s. Technological innovations along with availability of TV “brought events like the Vietnam War and... civil right march to the living room”\textsuperscript{i}. Reports of body bags returning to the US and blanket air raids in Vietnam eroded people’s faith in the governing authorities. Thus youths of the 60s turned to experimental lifestyles offered by the Hippie-culture. Their dream was to create “a brotherhood of man... sharing all the world” (John Lennon)\textsuperscript{ii}, in which society has \textit{no hierarchy} and all men are free.

By 1969, Counterculture was in full swing when MIT Professor Jay Forrester published his book “Urban Dynamics”, in which he theorized cities and societies as systems with feedback loops. This unprecedented perspective on human communities stems from Cybernetics, a discipline established by Norbert Wiener in 1948 as the scientific study of control and communication in the animal and the machine. Since its establishment, Cybernetics has quickly gained recognition, enticing academics to apply and expand this study of systems to areas ranging from ecosystems, sensory systems and geodesic domes.

One critical figure that bridged Cybernetics and Counterculture was the architect and system theorist, Buckminster Fuller (referred to affectionately by hippies as ‘Bucky’ in the 60s). The geodesic dome, which Fuller patented and popularized, became the architectural language of Drop City, an emblematic commune of the American counterculture. The droppers believed that the geodesic dome can not only provide for the “aesthetics, spatial and technological”\textsuperscript{iii} needs of the commune, but also embody Drop City’s ideal that every member of a society should consider themselves as a node within a \textit{non-hierarchical system} that is governed/\textit{stabilized simply by feedback}. This radical idea of a self-governance system that coincided \textit{loosely} with concepts of Cybernetics was promoted further by Fuller when he published the book ‘Operating Manual for spaceship earth’ also in 1969. Fuller argued that
“True democracy discovers by patient experiment and unanimous acknowledgement what the laws of nature or universe may be for the physical support and metaphysical satisfaction of the human intellect’s function in the universe.”

Figure 1 – Droppers building a geodesic dome

Following in the footsteps of Drop City (Figure 1), many communes continued to form throughout the 70s, not only in the US but also in Europe. A crucial example to our thesis occurred in Denmark. On the 26th September 1971, young activists sometimes referred to as “slum stormers”, broke down the fence to the Copenhagen’s Bådsmandsstræde military barracks and founded ‘Freetown Christiania’. Like Drop City, Christiania quickly distinguished itself architecturally from the rest of the city. These creative hippies were not limited by planning regulations; hence they built “homemade houses with a vastly varied demography” made from second-hand or Third World products. Figure 2 is Christiania’s famous Glass House that has been described as an “exemplifying modern architecture without architects.”
Yet despite repeated efforts of idealistic youths, most counterculture communes did not last for more than three years. Most failed because of fleeting memberships (“young people seeking new experiences would not remain long in a single commune”), inability to practice equality particularly between genders and drug-abuse. In 1972, ex-dropper Peter Rabbit returned to Drop City and found deserted, ripped off structures. He described what he saw as a “sad hippie ghost town”.

When Professor Felicity D. Scott examined Drop City’s failure in her book ‘Architecture or Techno-utopia’, she observed that “something had gone awry in the feedback loop”. The publication ‘Dome Cookbook’ which was the droppers chosen form of “feedback device”, failed to reinforce protest against the capitalist system; instead it “affected a sort of static repetition, a codification and institutionalization of dome-building as cathexis or ideology”.
Unlike Drop City, Christiania still exists today. However, it is no longer the creative hub that Danish youths look to for pioneering ideas, but “an outdoor museum for the culture of the 1960’s and 70’s, which because of a fence, has survived in a world that would otherwise have destroyed it years ago”.xiii

Although most of Christiania’s short-term egalitarian goals such as resource sharing and sustainability were broadly achieved, it was unable to achieve some of its more ambitious ideals. This included the creation of a self-governance system that is fully non-hierarchical and adaptive to the wider society. Interestingly, these failed aspirations of Christiania are evident in the commune’s spatial organization and usage. In the next chapter, we shall be exploring factors that contributed to these failures and their spatial implications.
Analysis

Why did Christiania’s feedback loop fail to deliver non-hierarchy and influence the wider society?

Christiania’s establishment in 1971 relied upon a planning vacuum provided by the Danish authorities during a time when the economy was poor and inequality was rife. It was labeled initially by the Defense Ministry almost mockingly as a social experiment, while the ministry proceeded with planning future uses for the area. Thus Christiania was under immense political and social pressure to prove that “an alternative society could organize itself and solve its own problems”\(^{xiv}\). The self-governance system that Christiania adopted under these constraints was very similar to the so-called Consensus Democracy. According to the Christiania Guide 2011,

> “Christiania is divided into 14 geographical areas, and each area has an administrative person in charge of financial matters pertinent to that area as well as planning and holding meetings among the residents there. Once a month, all 14 treasurers meet and discuss the economy and plans of their respective areas.”\(^{xv}\)

Evidently, this system is still unable to eliminate hierarchy, since most of the 800 residents are still represented by chosen individuals on most occasions. Nonetheless, consensus decisions for a common treasury and renouncement of private ownership are factors that set Christiania apart from the hierarchy-ridden system of wider Copenhagen during the 60s and 70s. The casual loop diagram (Figure 3) illustrates major components of Christiania’s self-governance system with feedback loops that are either reinforcing (positive) or balancing (negative) the system. It is noteworthy that some feedbacks, labeled with delay-symbol \(\Delta\), do not occur immediately after action.
Forty-three years have passed since the founding of Christiania, and Monocle Magazine has nominated Copenhagen as “the world’s most livable city” of 2013. The ‘glue’ of poverty and inequity that held the Christianites so tightly together is no longer present. Furthermore, as some Christianites found better paid jobs, many are tempted to invest in home improvements, which in turn generated desires of private ownership. If fulfilled, private ownership would mark the end of Christiania, as it will no longer be an alternative but integral part of the capitalist system. The fact that Christiania’s existence is dependent upon its indifference to changes of the wider context reveals the first cause of its ‘failure’- Christiania has in fact a closed governance system with very specific survival conditions. Spatial implications of a closed system include its rural conditions despite being at the heart of Copenhagen. (See comparison between figure 4 & 5 – only roughly 500m between locations where photographs were taken)
This rural escapist environment is maintained by visual, physical as well as symbolic barriers (i.e. the sign – you are now leaving the EU) that demarcate the boundary between Christiania and Copenhagen. Photographs below show two of Christiania’s entrances. Other indicators of a closed system include selective-membership.

Despite Christiania’s continual efforts to change this, Denmark is still a capitalist system. According to studies by economist and political scientist Joseph Schumpeter\textsuperscript{xvii}, creative destruction of existing structures is an essential process for capitalist cities to survive. This indicates that permanent barriers such as those required for the survival of Christiania’s closed system are therefore unsuitable. This outlines the first major cause of Christiania’s failure to instigate the creation of non-hierarchical societies beyond its borders.

The second cause of Christiania’s failure originates from its chosen form of ‘feedback device’ - group meetings that occur habitually in the same way with the same people. Notice that feedbacks do not immediately follow behavior and occur only if consequences are serious enough to worth
mention in meetings. The habitualness and lag-time between behavior and feedbacks thus weaken the power of the feedback device. Moreover, due to the inability of this feedback device to effectively involve too many members at one instance, the Christianites had to divide Christiania into 14 geographical areas, thus creating psychological barriers also within the commune. Nonetheless, Christianites believed that with this feedback device in place, their governance system will therefore be returned regularly to its default hence balanced and non-hierarchical state.

Unfortunately, media coverage of Christiania (2013-2014) suggested otherwise. A Christianite, Ole Sol remarked in an interview (2006)- “we have certain rules that we can maintain because we’re a small community.”xviii The rules Sol referred to include the absence of weapons, hard drugs, gang symbols and bulletproof vests. Nevertheless the hash-sellers often referred to as pushers, see themselves as above these rules. The Times Magazine highlighted that while

“‘non-hierarchical’ consensus-building defines the rest of the commune, Pusher Street is a highly structured commercial enterprise... under the control of biker gangs who protected the franchisees with a highly organized corps of runners and lookouts.”xix

The ineffectiveness of the chosen feedback device led to “crackdowns, violence, calls for eviction, and a generalized sense of intimidation in the neighborhood”xxx. Taking advantage of the situation to encourage normalization, the Danish authorities has therefore argued that Christiania’s self-governance system is a failure since the pushers persisted against the will of other residents. This reveals an uneven distribution of power.

The third cause of Christiania’s failure is the subjective nature of Christiania’s feedback device, which involves many different paradigms of members. The severity of this failure was marked by the burning of a house by a Christianite as conflicts persisted in his area group with regards to who should move in. Although members involved would have attempted to resolve the problem in their habitual meetings, the result was unfortunately escalated tensions. Furthermore, feedbacks were
verbally transmitted, thus allowing more chances of including personal emotions. This observation is based upon interviews with ex-members of other counterculture communes that used the same feedback system (see Figure 8), since Christiania’s group meetings are closed to public.

![Feedback meeting at the hippie festival Nambassa 1976](image)

For example, Pia Søndergaard, ex-member of Anholtsdage, another Danish commune now dissolved, revealed that the group meetings were “daunting” and “the tone was hard and heartless”\(^{xxi}\). Upon contemplation in hindsight, Morten Thing, a founding member of Brøndby Strand, another Danish commune, remarked that the movements’

> “naivety was... (that) we saw it as a political problem while fundamentally it was quite a personal problem; communes preoccupied with politicizing the personal could find it hard to recognize problems stemming simply from psychological or emotional difficulties within the group.”\(^{xxii}\)

Following this line of thought, perhaps non-hierarchy was never the default state of the communes’ governance systems since they lacked the feedback loops to target true generators of hierarchy, i.e. psychological/emotional. Likewise, setting a region apart from the capitalist system was perhaps also futile. Instead they should have resolved spatial relationships, in other words, broke down rigid barriers on a personal/intimate scale within the existing system.
Hence to summarize the weaknesses of Christiania’s governance -

1. **Closed System** – selective membership / exists as an alternative to capitalist city (based on media coverage) / rural escapist environment / physical and psychological boundaries / cannot be implemented in open communities

2. **Habitual Feedback that lags behind input** – adopts unchanging system of feedback via group meetings / habitual group behavior without moderation results in uneven distribution of power / feedback incapable of eliminating hierarchy

3. **Subjectivity** – feedback based on paradigms of other members encouraging hierarchy / verbal feedbacks are often filled with personal emotions.

The weaknesses mentioned above provided the Danish authorities with just enough excuses to impose normalization in stages. Thus after decades of resistance, Christiania finally gave in; on 1st July 2012, Christiania accepted “the most basic, and hated, rule of outside society: land ownership.”xxiii The Times Magazine reported that

“all 84 acres – minus some environmentally protected land – of previously occupied government land will transfer to a foundation run by Christiania for a price of 76 million kroner (nearly $13 million).”xxiv
Reflections
Learning from Counterculture Communes

By the mid-70s, it became clear that technological innovations and experimental societies were unable to bring about the social-revolution that many hoped for. “The loss of the promise of a “flexible city of the future” was profoundly disenchancing.”

In the BBC documentary ‘All watched over by Machines of loving grace’, the acclaimed film producer, Adam Curtis suggested that the failure of the 60s experimental-societies is an indication that self-governance systems based on concepts of Cybernetics are unable to replace “the old hierarchies of power”. Curtis strengthened his argument by highlighting one false belief that captured the public imagination in the 60s called the Great Universal Law of Equilibrium. This law assumes that nature is a self-regulating ecosystem with a natural order that stabilizes itself.

“The trouble is, it’s not true – as many ecologists have shown, nature is never stable, it’s always changing.”

Given that humans are also part of the natural world, Curtis concluded that governance should not be based upon Cybernetics since the default setting of natural systems is not stable, hence not in favor of human societies.

Curtis has, however, made a hasty and biased conclusion. Firstly, although humans are also a member of the natural world, our unique ability to be “introspective – to question the meaning and purpose of our existence and endeavor to find a solution to human suffering… sets humans apart from animals”. Thus our cities and other habitats are not only controlled by natural laws such as gravity, but also defined by knowledge, which we create and continuously refine – Democracy is one example. Furthermore, as discussed earlier in this thesis, the failure of Christiania to influence the wider society is caused by the closeness of its system as well as the habitualness, untimeliness and subjective-ness of its feedback device, such that it lost focus on
eliminating generators of hierarchy. In other words, if we were to create a system with a different set of characteristics and assumptions based on scientific research into human behavior, then self-governance systems based on Cybernetics may still have a chance of delivering non-hierarchical societies. Even if we assume that cities are defined entirely by natural laws, the fact that nature’s default setting is ‘change’ should not be regarded as an obstacle but asset, because only by regularly disturbing the system can one prevent the formation of rigid hierarchies.

Despite many doubts concerning Counterculture’s influence on progress of Democracy such as those highlighted by Curtis, it gives us in my opinion a much ‘better’ image of what a utopian society free of hierarchy may feel like than most utopian architectural projects. The Danish architect Steen Eiler Rasmussen shares a similar opinion. During the 60s, Rasmussen was the lead-architect for the Tingbjerg scheme. It is Copenhagen’s largest municipal housing project that intended to allow “people of all ages to find their place”. However, when Rasmussen reflected upon his own work in 1974, he made references to Christiania as the place that realized many of his ideals that Tingbjerg failed to achieve.

“It had been my dream that in Tingbjerg, people would move away from crowded environments in the city to a better place and to greater freedom. Now, I saw the plan as a distorted image: people adjusted to time schedules in institutions, in which you could govern them from the cradle to the grave. From Tingbjerg at one end of Copenhagen, where everything is pretty heartlessly regulated and normalized, and forced into correct forms, one could with line No.8 go to the other end of Copenhagen to Christiania, where everything is free…”

The idea that Christiania has a different ‘time schedule’ to the rest of Copenhagen reveals another important lesson from the Counterculture movement. That is its tendency to question all conventional definitions and relationships, in this case ‘time schedule’. The importance of this self-examination to our discussion lies in the fact that rigid definitions
and relationships are what enable hierarchy to form. For example the common belief that the higher one’s formal education, the better one’s future prospects, has created rigid prejudice hence divide in our present society between the ‘educated’ and ‘uneducated’. Other definitions questioned in Christiania include ‘hierarchy’, ‘ownership’, ‘freedom’, ‘democracy’, and ‘wealth’. Whereas some relationships questioned include ‘legal versus illegal’, ‘resource versus refuse’, ‘private versus public’, ‘work versus leisure’ and ‘learning versus playing’. The questioning of the last two relationships affected the daily time-schedules of the Christianites, since notions of work-time and play-time blurred.

Architecturally, instead of having a conventional school in which children learn within the spatial constraints of a classroom, the Christianites have a ‘children’s meadow’ with old barrack buildings and a horse stable where children learn through play.

Interestingly, Christiania is not the only ‘project’ that questioned these rigid dichotomies during the 60s and 70s. The Fun Palace initiated by Joan Littlewood and Cedric Price around the same time was also focused on the erasure of “distinctions between work, education and leisure”. In the next chapter, we shall explore how Fun Palace’s governance system differs from that of Christiania and gather clues about system settings that effectively break dichotomies.
Comparison of the Fun Palace

The Fun Palace dream began in London ten years prior to the founding of Christiania. Unlike any of the former projects, Fun Palace involved professionals from a broad range of disciplines, whom were gathered together predominately by two individuals, the architect Cedric Price and the actor, director, producer Joan Littlewood. It all began with Littlewood’s realization that her company, Theatre Workshop set in London can never become “a truly spontaneous and accessible ‘people’s theatre’” due to constrains of traditional theatre settings and commercial forces. Despite Littlewood’s disillusionment hence departure from London, her concept of a ‘people’s theatre’ inspired Price. Thus when Littlewood returned in early 1963, the pair embarked on defining and designing the Fun Palace.

Unlike Christiania, the focus of Fun Palace was not about creating a non-hierarchical society, however it was also deeply concerned with notions of ‘freedom’. Its main goals were “to emancipate and democratize education” by questioning the conventional definitions and connotations of the term ‘learning’. Littlewood believed that the educational aspects of the Fun Palace would effectively be “remedies for the shortcomings of the British educational system”, which to Littlewood was elitist, exclusive, technologically outdated, dull and designed merely to perpetuate the status quo. These un-inspiring characteristics of post-war education consequently grouped ‘learning’ with ‘work’, which was considered as the opposite of ‘leisure’. For Price and Littlewood, this old leisure/work time dichotomy had to first dissolve for society to progress.

“The fact is that as machines take over more of the drudgery, work and leisure are increasingly irrelevant concepts. The distinction between them breaks down. We need, and we have a right, to enjoy the totality of our lives. We must start discovering now how to do so.” – Cedric Price

Evidently, the task at hand for Fun Palace was to search for an
architecture that expresses and embodies this “new leisure society.xxxv. After much thought and research, Price and Littlewood realized that the solution lay in the fields of Cybernetics, game theory and computer technologies such that the Fun Palace can “’learn’ behavioral patterns and ‘plan’ for future activities by modelling these according to cybernetics principles.xxxvi. Having loosely defined the building’s behavioral characteristics, Price and Littlewood turned to the ‘Romantic Cybernetician’, Gordon Pask. Pask was at this point becoming increasingly recognized for his interactive teaching machines such as the SAKI (self-adaptive keyboard instructor), which also ‘learns’ from its users in order to ‘plan’ how to react next. Consequently, Pask became the third important figure of the Fun Palace scheme. Not only did his teaching machines become an integral part of Fun Palace by animating ‘learning’ thus blurring the leisure/work dichotomy, he was also responsible for designing Fun Palace’s self-governance system. Figure 9 is one of Pask’s system drawings, which describes how punch card and electric sensors can be used to “establish overall user trends, which would in turn set the parameters for the modification of spaces and activities within the Fun Palace.xxxvii."
Having briefly outlined Fun Palace’s story, we can recognize that both Christiania and Fun Palace were involved in exploring new forms of architecture in attempt to break away from conventions imposed by the capitalist system or elitist governing authorities. Nonetheless, the governance systems adopted in each case to achieve this goal were very different. Their differences can be summarized in three parts, corresponding to the 3 contributors of Christiania’s failure to eliminate hierarchy and influence wider context, discussed in Chapter 02.

Firstly, unlike Christiania, the Fun Palace has an open system. This is apparent in Price’s diagrammatic drawings of the Fun Palace in which the architecture is very ‘open’ and welcomes all members of the public from all directions, whereas Christiania has only 3 entrances that are closely guarded.
Meanwhile, the professionals in Fun Palace’s consultant team included labor members of the parliament, structural engineers, architects, cyberneticians, producers, journalists, broadcasters, psychiatrists and authors. The depth and breadth of the technical knowledge supporting the design enabled Fun Palace to contextualize itself within the future progress of multiple disciplines. Unfortunately, London was not ready for such innovation. Price and Littlewood always intended to position the Fun Palace within the urban city, “in working class east London, at a location along the Thames River” xxxviii. Having attempted repeatedly to secure land via legal planning procedures, Price and Littlewood were still unable to gain approval from any committees till the bitter end. Despite this, their engagement and interactions with the media and general public during this process highlighted again that the Fun Palace project does not occur in a closed system.

The second difference between the systems of Christiania and Fun Palace lies in their techniques used to generate feedback. As discussed, Christiania’s chosen feedback device is habitual group meeting in which feedback is verbally expressed. Conversely, Fun Palace would have relied upon ‘machines’ to generate feedback. The proposed machines included “the latest computerized punch card system” xxxix, electronic sensors and electronic displays. The Cybernetic Subcommittee led by Pask, envisioned these technologies to maintain the self-regulating environment of the
Fun Palace. Unlike Christiania’s system, the feedbacks of these machines would have been **real-time, continuous and occurring throughout building**. To give an example of this mechanical feedback, we can look at one specific machine, the Pillar of Information, which is

> “an electronic kiosk ... based on the model of the Encyclopedia Britannica... As one person took information from the pillar, a trace would be recorded... (giving) users insight into the interests and queries of other Fun Palace users... the Pillar of Information would gradually develop an extensive network of cognitive associations and slippages as a kind of non-hierarchical information map”

The third and perhaps most controversial difference between the systems of Christiania and Fun Palace relates to the issue of subjectivity. As discussed, one critical problem experienced by many counterculture communes was the inability for feedbacks not to sound offensive as they are often expressed in a “hard and heartless” manner. In addition, the feedbacks are based upon the subjective paradigms of individuals involved; hence disputes would often arise from differences in paradigms/opinions. Conversely, all the feedbacks of the Fun Palace are **based upon one paradigm that is of the ‘machine’ or the system programmer**. Since the machine would be in control of the entire feedback loop, clashes in paradigms would effectively be minimized; notice that the interaction, unlike that of Christiania is on a much more personal scale between user and machine. Some critics, however, have pointed out that this form of mechanical feedback can also be interpreted as a form of **behavior modification imposed by the programmer**. So instead of creating total-freedom, the system may in fact deliver total-control, implicitly altering the behaviors and values of users.

A potential counter-argument to this critique that Fun Palace may be a system of mass-control lies in Pask’s study into **second order cybernetics**, commonly referred to as C2. In Pask’s article “Aspects of machine intelligence”, he stated that

> “Intelligence is a property that is ascribed by an external observer to a conversation between participants, if and only
if their dialogue manifests understanding”.

In other words, Pask believed that “intelligence was in the interaction more than in the machine”xliii. So within the feedback system of the Fun Palace, Pask saw the human “as part of resonance that looped from the human, through the environment or apparatus, back to the human and around again”xliv. Therefore if there were any form of control involved, it would be self-control.

Having analyzed and contrasted the systems of Christiania and Fun Palace, which are both set against the backdrop of the Hippie Counterculture, we shall in the next chapter, fast-forward to Contemporary Times (post 2000) and explore how Pask’s concepts of C2 manifest themselves in on-going studies of Behavior Feedback Loop, Fun Palace’s relevance to present age and how these studies can shed new light on possibilities of designing non-hierarchical space.
Contemporary Relevance//
Fun Palace in the digital age

Nearly half a century has passed by since the final planning rejection of Fun Palace, but the scheme’s ambitious goal is still enticing researchers and academics today – that is creating self-regulating systems with feedback loops via computerized interfaces that interacts with users on a personal scale to enable behavioral changes (through self-control) that is significant on a collective scale.

In 2011, Thomas Geotz, then executive editor of Wired Magazine, gave an inspirational ‘TED Talk’ and published an article about “Harnessing the Power of Feedback loops”xlv. His message was very simple – if technology can provide people with real-time and personalized information of their behaviors in a way that stands out from the sea of information around them, on average 10% of these people would then exercise self-control to alter their behaviors, usually for the better.

A noteworthy case study occurred in 2003, in the school zone of Garden Grove, California. Having failed to reduce speeding with bright speed-limit signs and ticketing-police, the local authorities took a different approach by installing ‘dynamic speed displays’ that detected and displayed drivers’ speed on a large digital readout. To everyone’s surprise, this approach effectively reduced speeding consistently by an average of 14 percent, even though the displays “didn’t tell drivers anything they didn’t already know – there is, after all, a speedometer in every car”xlvi. Figure 11 produced by Wired Magazine describes the feedback loop involved in reducing speeding.
Not long after Geotz’s lecture and article went live online, requests of cooperation and consultancy came pouring in. Thus Geotz went on to set up his company named Iodine that aims “to bring better designed data to the people who really need it”\textsuperscript{xlvii}. Evidently, Geotz has raised the general public’s awareness of feedback loops, which are in fact an important aspect of the interdisciplinary field called Control Theory (CT). Psychologist James K. Luiselli describes that

“CT posits that behavior is a part of a negative feedback loop. The loop is negative because it serves always to reduce the discrepancy between a current state and a reference value (e.g. goal)… According to CT, if the individual perceives a discrepancy… the individual performs a behavior to decrease the discrepancy.”\textsuperscript{xlviii}

Owing to Geotz’s demonstration of feedback loops’ importance to the urban system of our present age, we can acknowledge just how forward-thinking the Fun Palace was in the 60s and 70s to propose the use of ‘machines’
to collect, process and immediately respond to individual users (which initiates users’ feedback loops). Figure 12 shows the feedback loop of a machine interacting with that of a user, which Pask would describe as the interaction between two non-stationary systems. ‘Non-stationary’ is used “to describe systems that do not display statistical invariance and have time dependent changes in their statistical properties.”

![Figure 12 – Diagram of Interaction between two non-stationary systems](image)

Following this line of thought, the next logical question to address is – why can’t we build facilities similar to the Fun Palace today to supplement the existing education system, since “billions of pounds” has already been spent on it, but has made “not a blind bit of difference”\(^1\). Instead of encouraging youths to flourish under constraints of standardized examinations, isn’t it more sensible for education to become ‘personalized’, ‘diverse’ and located beyond traditional classrooms? (These are all crucial factors of learning highlighted by educator Ken Robinson – 2013\(^1\)) Moreover, if built and integrated well into existing systems, the Fun Palace will also become a precedent of a less hierarchical education since students will be regarded less against a rigid scale of performance, but more on a ‘personal’ level.

There are two answers to this question? Firstly, the rise of Open University also in the 60s has meant that

> “many government officials... had become preoccupied with the
Open University, and considered the educational advances offered by the Fun Palace to be equal (or better) realized in the former project.\textsuperscript{lii}

Given that the difference between the two projects \textit{seemed} to only be that one will occur in physical space and the other in cyberspace, officials did not see the need to spend an estimated 5 million pounds (at 1960s market price – about 80 million pounds today) on the Fun Palace. Interestingly, 50 years have gone by and officials are still steadfast in their decision although advancements in technology have reduced realization costs. Moreover, a research conducted in 2010 at Warwick University has also shown that virtual education still lacks important elements such as the sense that you are “part of a shared endeavor” and “present with other people”\textsuperscript{liii}. Both are important factors of learning. Evidently, there are other elements at play.

When Stanley Mathews analyzed Fun Palace in his book ‘From Agit-Prop to Free Space: The Architecture of Cedric Price’, he insightfully stated that

“The Fun Palace might indeed have empowered citizens to redefine the parameters of their lives, and they may have begun to question the definition of their own realities. However desirable this sort of coming-to-consciousness may have been to some people, it was threatening to those charged with the maintenance of an orderly society. Whether or not the Fun Palace would actually have empowered the working classes, the very idea of such a possibility was inherently ominous.”\textsuperscript{liv}

Although Mathews was referring to the authorities of the 60s and 70s, some authorities today seem to have similar concerns. Besides the corruption hence resistance of certain authorities to give up power, another explanation to why authorities may feel threatened by the empowerment of ‘the working classes’ even today is that they may still follow the governance principles of the industrial age. In fact, this is also why dropout rates in UK are so high – they are still adopting the system of the industrial age – educating students on a production line. Their fear is that if the working classes are given freedom within
their education without any form of external control or filter, it will likely lead to a revolution. Given the availability of social networks today, this revolution will not be like those in the past, where old regimes fall to be replaced by revolution leaders and their new regimes. This ‘digital’ based revolution would “happen so fast... (that it) create(s) a vacuum... (which) unsavory forces can fill... typically the old regime, or extremists, or fundamentalist forces”\(^{iv}\). An example of this is what occurred in Egypt (2011-2013) where the Muslim Brotherhood took control of the nation for just a year between the first and second revolutions.

Despite fear of the unknown consequences of open information/ knowledge, Don Tapscott, chairman of International think tank, New Paradigm, pointed out that

“The toothpaste is out of the tube. I mean, we’re not putting this one back. The open world is bringing empowerment and freedom.”\(^{lv}\)

Undeniably, we are in the midst of a digital revolution and it cannot be stopped as cyberspace is beyond the control of any nation state. Thus instead of suppressing educational progress, perhaps the solution is for the public to prepare for this revolution by developing critical thinking skills. That is the ability to judge what is reliable and what is not when confronted by a sea of information. In other words, education should encourage students to exercise self-control when selecting information to take in, process and react towards.

Having explored the contemporary relevance of Fun Palace, we have evidently arrived back at the discussion of ‘behavior feedback loops’. Although the Fun Palace is not focused on the creation of non-hierarchical societies but emancipation of education, the liberating potentials and contemporary relevance of its chosen feedback system is knowledge that can be transferred to our exploration of non-hierarchical space. As discussed in chapters 02 and 03, Christiania’s failure to deliver non-hierarchy and influence the wider society, was not due to its reliance on Cybernetics, but its choice of system settings and assumptions. Given the success of the dynamic speed display case study and potentials of Fun Palace if built, perhaps the more suitable setting for Christiania’s
system or any other systems seeking non-hierarchy both socially and spatially is real-time and personalized information of behavior that is fed into open system to generate immediate feedbacks. The only difference between a system that emancipates education and a system that delivers non-hierarchy is the type of real-time and personalized information to collect. Thus in the next chapter, we shall dive into disciplines beyond Architecture, particularly Behavioral Psychology and explore the types of data input required to generate a non-hierarchical space.
Cross-disciplinary Research //
Parameters of Territorial Dominance

A critical moment occurred in 1968; an International symposium hosted by the American Association for the Advancement of Science (AAAS) was held to discuss “Behavior and Environment – the use of space by animals and men”lvii in Dallas, Texas. The aim of this symposium was to use space “as a frame of reference... (to) open avenues of communication between behavioral scientists, the design community and the decision makers of our society”lviii. Although the proceedings of this symposium were first published in 1971, new editions in 2013 and digital copies are still being circulated today; this hints at its prevailing relevance.

Similar to Price and Littlewood, the Symposium Organizer Aristide Henri Esser was also attempting to break dichotomies, which he believed to be the cause of “many interpretational difficulties and misunderstandings between biological, psychological and sociological disciplines”lix. Thus he dedicated this symposium to discussions of “the use we make of the space we live in”lx, as he believed ‘space’ to be the neutral ground between the disciplines. Interestingly, there were many similarities between materials presented by participants of different disciplines. One particular similarity that is significant to our discussion of non-hierarchical space is that if social systems are left to take their natural courses, hierarchies will form. This is both true within animal and primitive human societies such as the tribes of Andaman Islands. This explains once again why Counterculture communes were not able to deliver non-hierarchy – evidently their ideologies were not based firmly enough upon reliable sources. It is noteworthy that this symposium occurred around the same time as founding of Drop City and a few years before founding of Christiania.

Conveniently, the notion of hierarchy was a theme present throughout the entire symposium. Although most of the participants presented findings on hierarchies of animal communities since there are less ethical issues with regards to experimentation, many pointed out that human communities also have similar traits. For example the ethologist Glen McBride stated that “the maintenance of spacing (which is an “indicator of the social
status of an individual within a group”) is as much a feature of human as animal behavior\textsuperscript{\textperiodcentered xi}. However, unlike animals who tend to remain within one social group, humans “move physically between groups to change activities... the mass movements between work and family groups twice a day is a spectacular example of this behavior\textsuperscript{\textperiodcentered xii}.

Having explained the relevance of this AAAS symposium to our exploration, we will now turn our attention to the notion of indicator of social status/hierarchy, which is an important aspect of Behavioral Psychology. These indicators are essentially characteristics of an individual or its relationship with others within a social system that reveals the individual’s hierarchical status. When these indicators are observed within a space, it means that hierarchy exists within the group that inhabits the space. Thus for a space to be non-hierarchical, these indicators should be reduced or prevented. If we now relate back to discussions of feedback loops in the previous chapter, it is logical that these indicators should therefore be the data that is fed into our open feedback system. This is to encourage users to exercise self-control in preventing hierarchy formation.

After careful study of the symposium proceedings, I have identified five indicators of hierarchy that are spatial in character (to exclude indicators such as ‘battles won’). These five indicators are summarized on the following page, along with potential methods of data collection, both digital-based (active data) and analogue-based (passive data). Figure 13 provides additional information.
1. **Habitual use of space** – There are two types: one is absolute dominance of space, identifiable via space personalization (1a), the second is relative dominance (1b) in which individuals have priority use of space within certain time-spans, however outside that time-span, they lose dominance.
   // Active data: Face recognition based on time over 1 week
   // Passive data: none

2. **Over-crowding** – The more crowded a space, the more rigid the absolute hierarchy.
   // Active data: face recognition per meter square
   // Passive data: change in weight on floor per meter square (pulley-weight system)

3. **Crowd-orientation** – Within a typical classroom, students (crowd) will be facing the same direction, indicating the position of more dominant figure – teacher.
   // Active data: face recognition to identify orientation of majority
   // Passive data: none

4. **Prolonged Enclosure** – crowdedness is judged by individuals based on perception. With the same number of people, the more enclosed a space, the more crowded a space. Sense of enclosed-ness can be reduced by having visual connections with external spaces.
   // Active data: Illuminance (in lux) of natural sunlight
   // Passive data: Light sensitive materials

5. **Distance maintained by individual and crowd over time** – in most cases, the higher up one is in social hierarchy, the larger one’s ‘personal sphere’
   // Active data: distance between crowd and individual with face recognition system.
   // Passive data: difference in weight between individual and crowd (on a balance mechanism)
1a Absolute hierarchy through personalisation

The concept of making a space ‘honey’ is in fact a form of territory demarcation. This is a sign of uneven power distribution particularly in areas that are meant for public use. In the natural world, animals demarcate their territory by scent - warning other animals that they are entering owned territory. Since human scent is not as advanced as that of most animals, most of our demarcation techniques are visual based.

1b Relative hierarchy through habits

This is very common in a school / work environments, where events (i.e. classes or meetings) are held in the same space at a regular basis. In this scenario, most people become accustomed to their position and are likely to choose the same seat every time. Even if more ‘curious’ individuals are inclined to choose a different seat, frequent users of that seat will be inevitably annoyed or defensive.

2 Over-crowding

Many studies have been done concerning the effects of crowding on behavior in both animals and humans. The social hierarchy changes for cats when there are conditions of over-crowding - it becomes absolute hierarchy. In humans, over-crowding increases stress levels and also prevents individuals from getting to know everyone, thus creating divide within group.

3 Crowd orientation

Although there is a practical side to having a single orientation in context of a group of students, extended periods of facing a single direction can either imply habitual behavior or the preconse of absolute hierarchy within group. In terms of teacher-student relationship in less hierarchical schools, the teachers should be learning as much from the students as the students are from the teachers, hence spatially the teacher should never be the only center of attention. (two-way interactive relationship)

4 Prolonged enclosure

Studies have been done on the behavior influences of extended confinement without connections with outside world (both physically and visually - window or tv) on humans. It has been observed that the longer the confinement (or what the participants think the duration will be), the higher the stress level (similar to conditions of crowdedness), thus the more likely of hierarchy formation.

5 Distance maintained by individual and crowd over time

In the animal world, each animal has its own so-called personal sphere - when other animals trespass this sphere, most will be met with hostility. It has been observed that the larger the personal sphere, the higher ranking the animal. This is also true for humans - powerful figures usually keep a radius of clear space around themselves so as not to be disturbed.

Figure 13 - Indicators of Hierarchy
Case Studies//
Non-hierarchical spaces in Ex-Change School

Up until this point in the thesis, we have identified all the crucial components that can be argued as essential to the creation of non-hierarchical space in our present age. The components include

- open system,
- real-time and personalized feedback,
- objective feedback device (either digital or analogue),
- and input data that are indicators of social hierarchy.

Given that we have all the components, we will now explore how they can come together by examining them in context of the on-going hypothetical scheme - Copenhagen Ex-Change School (henceforth referred to as CECS). This scheme originated as a response in hindsight to the design competition launched by the Danish authorities for a “normalized” Christiania in 2003, which “virtually all Danish Architects boycotted... the few designs entered were considered unsuitable and scrapped”\textsuperscript{xiii}. Like some of the submitted designs, CECS also intends to retain Christiania; however it goes further to propose the construction of a skills-school on the boundary between Christiania and Copenhagen. The chosen site for CECS is highlighted in Figure 14 in yellow.
The site is currently occupied by a rentable office building owned by the Danish property developer Mogens de Linde. Due to its proximity to Christiania, the building is not only still unrented, but it has also been repeatedly occupied and decorated/vandalized (2011) by supporters of the “radical squatting movement” called BZ. Although the BZ’s initial intentions in the 1980s were to alleviate “a chronic housing shortage... (and) establish an autonomous youth center outside the control of the city council”, it has unfortunately become a violent gang intertwined with drug-related shootings. Figure 15 shows the result of the occupations; evidently Mogens de Linde will likely come to an agreement or barter, with any party who can generate benefits such as positive social image, for them from the ‘ruins’ without their financial aid. Non-governmental Danish groups such as the Villum foundations will prospectively fund CECS, since they have funded many other “scientific, cultural, artistic and social projects” of similar scale and agenda.
The aim of CECS is for Christiania to revitalize and regain its status as a creative milieu by attracting youths back into the area, such that their enthusiasm and creativity can bring new life to this counterculture relic. In order to achieve this, CECS needs to have a number of ‘WOW factors’. Firstly, classes will be organized based on a non-monetary barter system. In other words, students will exchange barter items, i.e. books/ideas, requested online by teachers for a class, i.e. dance/language. Secondly, utility walls with sanitary and cooking facilities built in will allow students to build their own living spaces as required, which will effectively reduce rent. And thirdly, which also relates to our exploration of non-hierarchical space, learning spaces within school will be interactive in such a way that they encourage non-hierarchy among users. This will also facilitate the non-hierarchical governance system of school. These interactive spaces are designed based on the components
we summarized at the start of this chapter, thus as a collection they can be seen a contemporary attempt to realize Christiania’s grand ideals of autonomy and non-hierarchy.

Figure 16 maps out the locations of these interactive spaces within the CECS. (For more details of the CECS scheme, please refer to the Appendix.)
It should be recognized that CECS’s main infrastructure including its main circulation route (marked in blue) is static. Besides the more practical reasons of cost and safety, the decision to not have more majestic movements such as those proposed by Fun Palace (i.e. “pivoting escalators and moving walkways”\textsuperscript{lxvi}) is due to observations that feedback loops need to be personalized to individuals for them to have influences on behavior. Large movements on a scale of ‘pivoting escalators’ are likely to be responses to generalized or averaged results of large sets of input data. Considering the fact that generalization is less effective but inevitable since we are focusing on hierarchy, the largest interactive space of CECS is therefore limited to about 10m by 5m (maximum distance within space is 11m) or equivalent. This is because although an average person can see and resolve human-scale objects from a distance of just under 3km\textsuperscript{lxvii}, he/she can only “detect the difference between two sound sources that are three degrees apart, about the width of a person at (only) 10 meters”\textsuperscript{lxviii}. Consequently, spatial data that are collected outside a 10m radius of an individual should not be considered as personalized data since human-interaction, such as speech, beyond that range is limited. Nonetheless, there are weaknesses in this justification. For example in the case of a person speaking with a microphone and amplifier, he or she may still retain hierarchical powers over another standing 15 or 20 meters away. Despite this weakness, personalized feedback is still of significance due to its effectiveness relative to generalized feedback. Thus we may have to assume that other feedback loops within the 10m radius of the speaker would have dealt with the situation first.

Having set out the overall picture of CECS, we shall now zoom in and explore the interactive spaces in greater detail. We shall deliberately focus upon two spaces that respond to the same type of hierarchy indicator – that is the distance between individuals and crowd over extended time. The difference between the two spaces will be their data collection techniques, where one is digital and the other analogue.
CASE STUDY ONE – DIGITAL

The first case study is set in CECS’s café (labeled transforming ceiling on plan). The design concept is for the roof consisting of wooden-fabric and electronic pulley mechanisms to deform whenever the video camera system (facial recognition) detects a prolonged segregation of an individual from a nearby group, such that the distance between the roof and ground over the individual is smaller than what is normal. Figure 18 on the following page shows the system circuit of this interactive space.

Evident from figure 18, this system is an attempt to signal formation of hierarchies of an individual over a group (i.e. teacher over students) or a group over an individual (i.e. gang over youth). Notice how the signal is not an aggressive one that forces the group to join the individual or the group to separate, but simply a reminder of user behaviors. Since all users of CECS should be familiar with the collective non-hierarchical goal, when confronted with the signal of a lowering roof nearby, they will then compare their own behaviors with the goal and adjust behaviors accordingly if necessary. In other words, if a person is simply reading a book near a group of people chatting, both parties can then regard the moving roof as a pleasant architectural nuance. Although the signal is still open to interpretation by different user paradigms, the system should still reduce conflicts between users in comparison to what occurs in many counterculture communes, since it is the machine and not another user that points out a concern. The perspective sketches in figure 19 illustrate what the machine sees in space and the anticipated behavior changes if hierarchy is spotted.
CASE STUDY TWO – ANALOGUE
The second case study is set in one of CECS’s social spaces along a circulation route (labeled double axes floor on plan). The design concept is for the floor to be pivoted on two axes such that it tilts whenever there is uneven distribution of people hence weight across the space (all furniture within this space has wheels or are attached to floor). Evidently this is an analogue process since there is no machine detecting the distribution. Like case study one, this system is also attempting to signal the formation of hierarchies of a group over an individual and vice-versa; however it does it through difference in weight between the two parties. Figure 20 illustrates how the floor is pivoted and the anticipated behavior changes if hierarchy is ‘detected’.

Figure 20 – motion of double axes floor
Contrasting with case study one, the signal in this case is more ‘aggressive’ as it may have a direct impact on users’ position in space, particularly when they are on wheeled furniture (e.g. seat). Although this is perhaps more fun hence encouraging of change than the moving roof, it limits activities that can occur within space (i.e. quiet reading). Other weaknesses of this system include multi interpretations of signal similar to case study one and spatial arrangements where the tilting effect is balanced out but distance between group and individual is still maintained. The diagrams below show examples of this.

![Figure 21 – loopholes of the doubles axes floor](image)

Having examined in more detail the workings of each case study, we will now discuss issues that concern both – which are ‘habit’ and ‘abuse’. Ideally, a behavior feedback loop will induce behavior change that will eventually become a good habit for the users. However, in some cases, users may become accustomed to the feedbacks and start disregarding them as backdrops to their activities. Feedbacks that are particularly prone to ignorance are those that are too polite, i.e. the moving ceiling, or too predictable. Nevertheless, feedbacks that are too noticeable/fun also have their own problems – users may start to abuse the system just for fun, i.e. unbalance the pivoted floor on purpose. Although the scheme does not object to having fun, in fact it encourages fun, an excess may mean that systems lose their original focus of highlighting presence of hierarchy. In order to reduce the chances of ‘habit’ and ‘abuse’, the feedback system will therefore have more than one setting that will interchange randomly so that the feedbacks are not too predictable, hence retaining to an extent the ‘shock’ factor of the feedback loops.

To explain this in context of CECS, we can deduce that in terms of case study one, there will be three possible settings – positive feedback,
negative feedback and no feedback. In other words, given the same arrangement of users in space, the roof will either lower itself over the individual, over the group or not at all.

![Positive and Negative feedback loops](image)

In terms of case study two, there will only be two settings – feedback or no feedback. In other words, the pivoted floor will be locked in positions at times and unlocked at other times.

Despite the fact that both case studies have their own set of weaknesses hence still unable to promise absolute non-hierarchical space, they are undoubtedly enhancements to the systems adopted by the Counterculture Communes. Moreover, they can also be seen as tools to raise public interest in readdressing issues of social non-hierarchy, which have lost momentum in recent years.
Conclusion and Introspection/
Hidden Hierarchies of the Digital Age

Through the course of this thesis, we have identified the crucial components of a non-hierarchical system based on lessons learnt from Counterculture, Fun Palace and Behavioral Psychology. Moreover we have also discussed these components in context with CECS's interactive spaces, which reveal how these components can inform design of non-hierarchical spaces in our contemporary world. Although our discussions are mostly based in theory, it is the author’s hope that future studies will carry forward some of the concepts explored here into real-world schemes, such that concepts can be tested and refined.

As discussed earlier, the ability to be introspective is what sets humans apart from animals. Since our discussions have been orientated upon reducing hierarchy, a natural phenomenon of the animal kingdom, it would be appropriate to end this thesis by some introspection about the implications of non-hierarchy in the digital age.

Evident from our discussions of Christiania and Fun Palace, openness is not only remedy for rigid dichotomies, but also key to the formation of non-hierarchical societies. Interestingly, Fun Palace’s ideals of openness are reminiscent of Tim Berners-Lee’s pursue of open data when he invented the World Wide Web in 1989. Likewise, the webs of information and associations that would have been produced by the Pillar of Information in Fun Palace (discussed on p25) also foreshadowed the Internet. As the Internet continues to grow and evolve, openness of information becomes increasingly realizable, suggested by extensive use of online databases like Wikipedia and sharing of digital knowledge (i.e. android operating system) by multi-national corporations such as Google. Although it may seem that openness is inevitable in the digital age, there are still many ‘hidden’ hierarchies that are influencing this openness. One that raises most concern is Internet-facilitated commercial exploitation of children, often organized by hidden hierarchical prostitution rings.
Perhaps equally worrying is that hidden hierarchies are not unique to the criminal domain; many institutions and corporations that are influential on a global scale also share this trait. Apple Inc. is an obvious example.

In 1984, one of Apple’s branding campaigns “portrayed Apple as a symbol of counterculture – rebellious, free-thinking and creative.” Although Apple dropped their rainbow-color logo in 1999, the 1984 message of ‘power to the masses’ remained and developed into what is today an elegant, transparent (see figure 23) and ‘humanistic’ company. Steve Jobs himself would actively promote Apple’s image by walking “around the office barefoot even after Apple was a Fortune 500 company. By the time of the "1984" TV ad, this trait had become a key way the company attempted to differentiate itself from its competitors.”

Ironically, Apple’s internal structure contradicts its branding image. Within Apple’s transparent buildings, decisions are imposed in a top-down fashion. Although Apple encourages certain collaborations such as opening programming interfaces for customers to develop apps, ex-employees revealed that they were often not informed about the purpose of given assignments in order to maintain secrecy. Evidently, Apple’s level of openness is dependent on respective commercial gains. This careful control of openness is also reflected in the architecture of its new headquarter in Cupertino (HR2).
Despite its circular form and extensive use of glass (both potential agents of openness), the spaceship-like building is in fact a closed system. Firstly, the circular form is intended to streamline workflow within the company; although circular forms may appear at first to geometrically resist hierarchy, as there is no head to a circular table, it can also be an infinite loop that creates a rigid inside versus outside dichotomy. Secondly, Apple purchased under a different company title an addition of 450,000m$^2$ of land surrounding the proposed HR2 site for extensive landscaping. This implies that the openness offered by its glass façades is still safely within Apple’s control.

Nonetheless, Steve Jobs’ sudden death in 2011 marked a critical moment of change for Apple. Lacking its spiritual leader, Apple can no longer expect stakeholders to remain faithful without increasing its data transparency. Moreover, “as Apple continues to lag well behind Android in market share, eventually it will be forced to be more open with consumers”\textsuperscript{1xxi}. So finally in November 2013, Apple released a transparency report. Despite this first attempt at openness, designs of HR2 are still unchanged. An article by Harvard Business Review in 2013 titled ‘Why Apple
has to be more open' emphasized, “This is an age of transparency and openness. Hierarchies and tyrants are so 20th century”. Thus if Apple wants to remain influential in the future, it cannot be “obsessed with guarding its intellectual property” as “closed silos hurt serendipity and innovation”lxiii.

As the Internet becomes more affordable and knowledge more accessible, old hierarchies will be challenged and power will gradually transfer from institutions to individuals. In this new digital age, existing institutions such as Apple must adapt for survival by first dissolving hierarchies within their own structures, before dissolving boundaries from the wider system. If we view this challenge in context of earlier discussions, perhaps Apple’s next step should be altering its HR2 designs, whose architectural language is currently static, monumental, and akin to its products by material. Instead, it can integrate interactive feedback interfaces, like those of its products, into its architectural fabric to remind users, particularly those in power that openness means sharing intellectual property but also facilitating boundless imagination and creativity that can open paths to a brighter future.
Endnotes

Chapter 01
iii Felicity D. Scott, Architecture or Techno-utopia (Cambridge MA: MIT Press, 2007) p161
vi Dirckinck, op.cit. Martin Keiding, ‘From building-site-hut to family home’ p44

Chapter 02
xv Dirckinck, op.cit. Jakob Reddersen, ‘Self-management in Christiania’ p21
xvi ‘Is Copenhagen the world’s most livable city?’, http://www.huffingtonpost.com/andrea-adams/is-copenhagen-the-worlds-_b_4519243.html (accessed 02/04/2014)

Chapter 03
xxi Davis and Warring, op.cit. p521
xxii Davis and Warring, op.cit. p.527

Chapter 04
xxiv ‘Exploring Freetown Christiania in Copenhagen’, op.cit.

Chapter 05
xxix ‘All watched over by machines of loving grace’, (BBC, dir. Adam Curtis, 2011)
What is the difference between humans and animals?”, http://www.scienceofidentityfoundation.net/ancient-wisdom-for-modern-living/what-is-the-difference-between-humans-and-animals.html, (accessed 03/04/2014)

Hakan Thorn, ‘In between social engineering and gentrification: urban restructuring, social movements, and the place politics of open space’, (Journal of urban Affairs, V.34, N.2) p159


Chapter 04

Mathews, op. cit. p62
Mathews, op. cit. p68
Mathews, op. cit. p68
Mathews, op. cit. p71
Mathews, op. cit. p73
Mathews, op. cit. p121
Mathews, op. cit. p82
Mathews, op. cit. p118
Davis and Warring, op. cit. p. 527

Chapter 05

‘Harnessing the Power of Feedback Loops’,
http://www.wired.com/2011/06/ff_feedbackloop/(accessed 05/04/2014)
‘Finally make sense of your drug info’,
Pask, op. cit. p7
‘British education system is our ‘greatest national crisis’ says David Starkey’,
http://www.telegraph.co.uk/education/educationnews/8505639/(accessed 05/04/2014)
‘How to escape education’s death valley’,
Mathews, op. cit. p172
Mathews, op. cit. p175
‘Four Principles for the Open World’,
http://www.ted.com/talks/don_tapscott_four_principles_for_the_open_world_1 (accessed 05/04/2014)
‘Four Principles...’ op. cit.
Chapter 06


lviii Esser, op. cit. p. V

lix Esser, op. cit. p. V

lx Esser, op. cit. p. V


lxii Esser, op. cit., McBride, op. cit. p. 64

Chapter 07

lxiii ‘Christiania: 40 years of occupation’


lxvi Mathews, op. cit. p. 78


lxx ‘Corporate culture of Apple’

lxxi ‘Why Apple has to become more open’, http://blogs.hbr.org/2013/03/why-apple-is-going-have-to-bec/ (accessed 08/04/2014)

lxxii ‘Why Apple...’ op. cit.
Bibliography

Books
- Martin Keiding and Marianne Amundesen (eds.) ‘Learning from Christiania’ (Copenhagen: The Danish Architectural Press, 2004)
- James Luiselli and Derek Reed, ‘Behavioral Sport Psychology’ (UK: Springer, 2011)
- Norbert Wiener, ‘Cybernetics or control and communication in the animal and the machine’, (Paris: Hermann, 1958)

Journal/Magazine Articles
- John Davis and Anette Warring, ‘Living Utopia: Communal Living in Denmark and Britain’, (Cultural and Social History, V.8 I.4)
- Hakan Thorn, ‘In between social engineering and gentrification: urban restructuring, social movements, and the place politics of open space’, (Journal of urban Affairs, V.34, N.2)
Films/Videos/Documentaries
- ‘Christiania Dream’ (dir. Ulrika Anzen and Anders Persson, 2006)
- ‘The Sixties: The years that shaped a generation’, (PBS, dirs. David Davis and Stephen Talbot, 2005)
- ‘All watched over by machines of loving grace’, (BBC, dir. Adam Curtis, 2011)

E-Books

Other Digital Materials
- ‘Is Copenhagen the world’s most livable city?’, http://www.huffingtonpost.com/andrea-adams/is-copenhagen-the-worlds-most-livable-city/
- “You are now leaving the European Union”, http://www.vanityfair.com/politics/2013/09/christiana-forty-years-copenhagen
- ‘What is the difference humans and animals?’, http://www.scienceofidentityfoundation.net/ancient-wisdom-for-modern-living/what-is-the-difference-between-humans-and-animals.html
- ‘British education system is our 'greatest national crisis' says David Starkey’, http://www.telegraph.co.uk/education/educationnews/8505639/
- ‘Four Principles for the Open World’, http://www.ted.com/talks/don_tapscott_four_principles_for_the_open_world
- ‘Villum foundation’, http://veluxfoundations.dk
Bibliography

All images by Wendy Lin
Excluding Figures

1 - ‘All watched over by machines of loving grace’, op. cit.
2 - https://www.flickr.com/photos/94852245@N00/1244185274
4 - chisineu.wordpress.com
5 - http://cdni.condenast.co.uk/646x430/a_c/ copenhagen_cnt_6nov09_istock_b.jpg
6 - www.itusozluk.com
7 - www.hfhs.hr
8 - http://www.nambassa.com/
9 - Mathews, op. cit.
10 - Mathews, op. cit.
15 - anarchyisorder.wordpress.com
23 - www.apple.com
24 - static3.businessinsider.com

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