

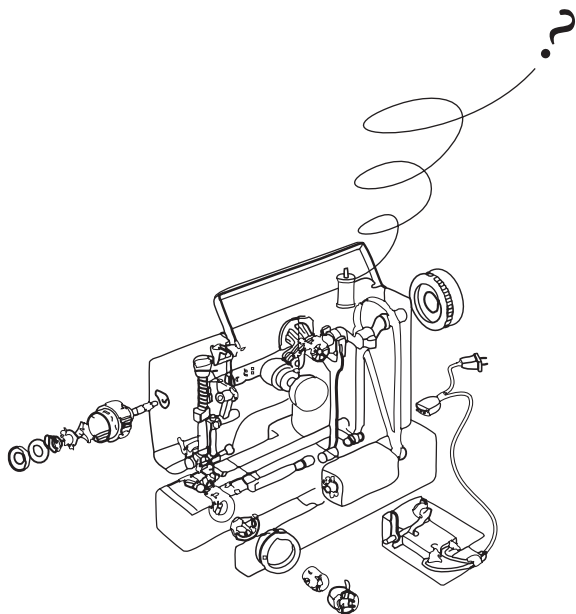
Post-script to Fashion-able

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OR A METHODOLOGICAL APPENDIX
TO ACTIVIST DESIGN RESEARCH.



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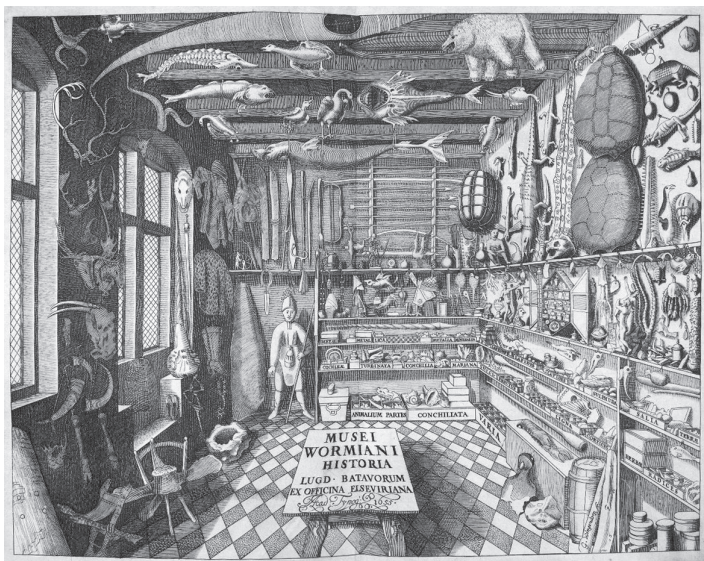
OR A METHODOLOGICAL APPENDIX TO ACTIVIST DESIGN RESEARCH.

This is the edited pocket version of the
methodology appendix of *FASHION-able*
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at the School of Design and Crafts (HDK)
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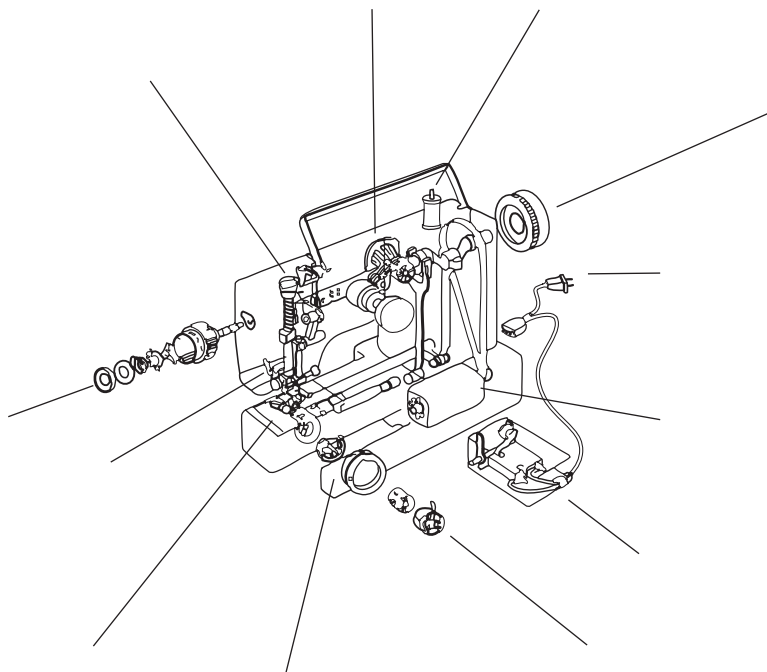
Design by Otto von Busch

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The Wunderkammer of hacktivist research. *This publication exposes a Cabinet of curiosities with a multiplicity of methods which could be applied to design research. The Wunderkammer was originally an encyclopedic collection of thought-provoking objects whose categorical boundaries were yet to be defined by the embryonic natural science of the time. The objects were often theatrically presented and the visitor could meander through the collection, drawing own conclusions and make up own theories and explanations of the wonders of the world.*



methodological appendix

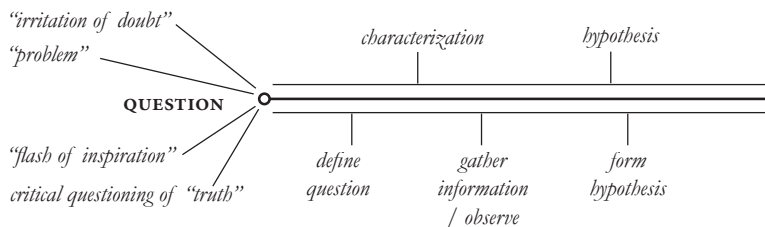
- A METHODOLOGICAL APPENDIX FOR DESIGN RESEARCH DISCUSSING A NUMBER OF INTERSECTING AND OVERLAPPING LINES OF ARTISTIC AND ACADEMIC RESEARCH PRACTICES.

This publication is a slightly edited cut-and-paste of the introduction and methodology chapter from my thesis *Fashion-able: Hactivism and Engaged Fashion Design* from 2008. Some parts reoccur between this book and the pocket edition of my thesis, as the methodological journeys encountered here also could be read from other perspectives than research in fashion design.

My thesis is part of the emerging field of artistic research, in which the studies are not framed and focused on specific research questions and do not aim at results that can be applied independent of the context. This type of artistic research is based on ideas for the development of a new kind of art and on the practice of art and practical projects. It is a matter of using design practice to build on attainable micro-solutions and present unknown possibilities that add up to a larger emergent whole.

Personal ambitions rather than the answering of a certain question drive this type of research, and it does not aspire for a research model leading to an objective output. Aesthetic considerations and judgments always play a major role in the process of such research. Conse-

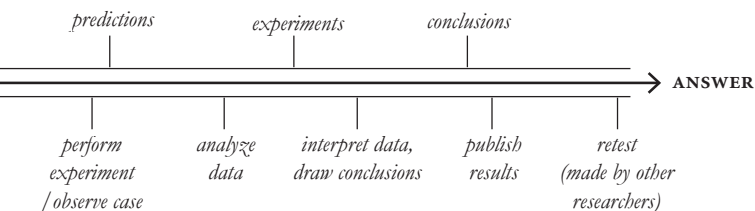
Examples of linear research models



The linear or sequential procedure of research *stabilizes dynamic systems and processes data through a methodological filter, sorting out the preferred spectrum of data. It is a pragmatic model of rigidization in research, reducing noise and producing stable models and conclusions out of disorder.*

quently, in order to achieve results that are useful outside this personal context it is important to present the points of departure and relate these choices with those made during this work to other ongoing processes in society. The continual procedure of position-making constitutes the quality of the artistic research and its value in the process of the knowledge production within the actual artistic practice of design.

However, in artistic research there are no given criteria to which to secure the quality of the research and general proclamations of basic values are of little help. Here it is necessary to continuously relate to different traditions of ways of thinking. Each thesis must find its own way to manifest these relationships so that in the long run a kind of best practice will be revealed. Artistic research is not the only research full of such methodological difficulties. Action research in the



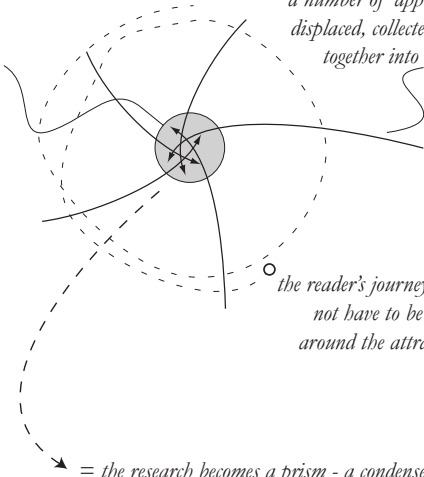
social sciences is another example as it does not relate to one specific existing reality but acknowledges the importance of the situated perspective of knowledge production.

This type of research does not present any overall linear or sequential “tree-like” theory where every argument follows one “root” up to a magnificent crown of knowledge. The discussion has no strict beginning and end, question and answer, and it does not follow a classic progressive or deductive format, validated by consistent data that unequivocally can be turned into a new form of practice. Basically, it relates, cross-examines, articulates and contextualizes a series of experiences and to make use of the understanding gained the results must be interpreted and re-situated. The thesis can be regarded as a refinement of the kind of knowledge production and knowledge distribu-

The prism model of design research

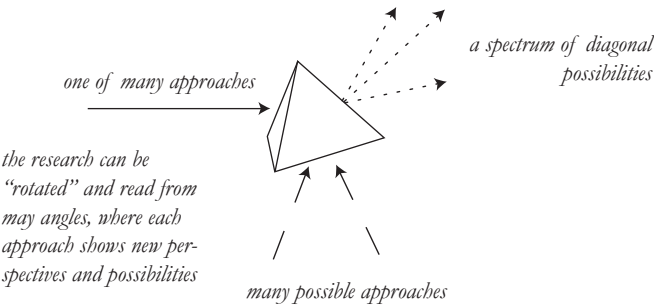
*the attractor point of hacktivism, creates “gravity”,
pulling lines of practice together, but has no
absoulte centre, essence or focal point*

*a number of approaches or “lines”, slightly
displaced, collected into chapters and pulled
together into a whole: the prism/ thesis*



*the reader's journey through the research does
not have to be linear, but can be in orbit
around the attractor or cut across the lines*

= the research becomes a prism - a condensed collection of approaches



tion that normally guides design practice, but with a wider base of research and links. Compared to more technical research in design it might be less “precise” but instead all the more connected.

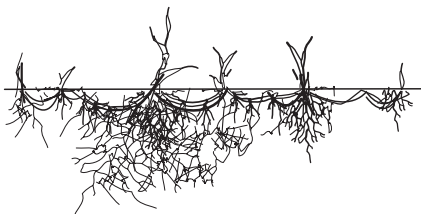
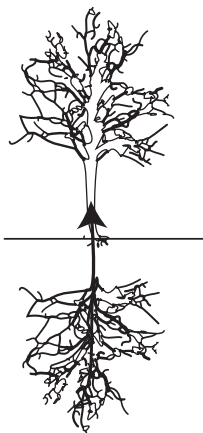
The main quality of these kinds of practice-based knowledge processes is that they do not reduce the complexity to reach clear-cut conclusions. All aspects, aesthetic as well as commercial, are considered as supporting the process of trial-and-error in design. This is carried out through the use of a number of “diagonal” presentations that form a multiplicity of single examples and course of events, yet which in this thesis are all united in a temporary alliance. By use of specific concepts and ways of representation, these experiences become a set of cross-references that allow and open up pattern comparisons, matching and triangulations. Through this type of artistic research a more sophisticated discussion on design practice and a broader intellectual reference can be introduced as a complement to other academic research in the field of design.

Consequently, the thesis does not have any introductory chapter outlining the basic theory, aim and method to prepare the reader for the final chapter’s conclusions. There is no strict question and no proven answer. Instead, we could imagine the thesis as a series of journeys condensed into a prism. This is a prism through which we can see the world from many different angles and where each chapter is one side. As we look through this prism, always in a slight diagonal, we will see that each shaft of light or each approach refracts into a spectrum of new possibilities for practice. This opens for a multiplicity of “designerly” approaches. (c.f. Cross 2001) We can also think of the prism as a considered collection of examples that forms a designer’s Wunderkammer or a Cabinet of Curiosities where we can go, from object to object or from idea to idea, in wonderment and inspiration.

The difference from a traditional thesis in this kind of research is that there are no clear conclusions, yet every chapter is connected to a discussion of my own practical projects and it is for others to draw and build upon their own interpretations. This type of work can never be completed, for it is only a small step on the way towards the formation of new polyphonic practices. There are always new perspectives and approaches that might be added. These may lead in quite different directions and it is for others to continue the work of changing the comprehension and potential in this field of research. However, this does not mean that the selection of projects and perspectives that combine to an entirety is coincidental and of less importance. Like all artefacts it is the whole that really matters. Nonetheless, the whole should not be regarded as a something linear in which every argument is like a tree that grows from linear roots but rather the mesh-work-like unity described by Deleuze and Guattari (2004) as “rhizomatic”. This consists of nothing than overlapping and displaced lines; of multiplicities connected to other multiplicities where there are no points of culmination, termination or external ends. (D&G 2004: 23f)

If we turn to the natural sciences the tradition of research builds on the values of *precision* and *repeatability*. But the main differences of this tradition compared to design is that the main purpose of design is not to describe the actual or here-and-now, as much as propose action plans or present visions. The natural sciences point deeper in reality while design points “forwards” towards one or several possibilities. Or in design researcher Herbert Simons classic words,

The natural sciences are concerned with how things are...design on the other hand is concerned with how things ought to be. (Simon 1996: 114)



Tree and rhizome shapes of research.

But the “designerly” pointing does not come from nowhere, it still adds and builds onto something, it comes *from* somewhere outside the mind of the auteur. Just like the scientist who “stands on the shoulders of giants”, as Newton argued, the designer proposes action plans which also builds on the works of others. But if we think of small interventions and actions I find it important for design to add research in *alliance* or in *resonance* with the works of others; to position the work in relation to the works of others.

The crucial balance for an artistic approach to research is to weight transparency, demystification and clarity with the room of polyphony and a multiplicity of connotations and interpretations. To be systematic and disciplined to build a platform on which new research can be created on which a non-linear complexity can thrive to trigger the emergence of new ideas.

We could turn to music for inspiration to how artistic research in design could be approached. A form of instrumental composition de-

Frè - re Jac - ques, Dor - mez - vous ? Son - nez les ma - ti - nes, Ding, daing, dong ! etc.

Frè - re Jac - ques, Dor - mez - vous ? Son - nez les ma - ti - nes, etc.

Frè - re Jac - ques, Dor - mez - vous ? etc.

Frè - re Jac - ques, etc.

The repetative voices or lines of a canon *can give us an insight in how artistic research can evolve throughout a systematic process, elaborating on a central theme while exploring a wide polyphony of views, perspectives and projects.*

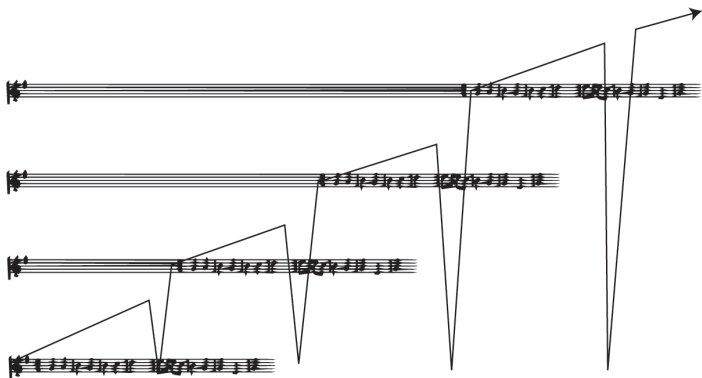
veloped in the late renaissance which was called a *ricercar*, meaning “searching”, itself a development of the *canon*. The canon is a repetitive composition that reiterates a melody with one or more cyclical imitations of an initial theme. As an advancement of the canon, the *ricercar* was an exploratory piece of music which served as a preludial operation to “search out” a key or a mode of composing, building on the technique of the canon. Within a given motif, the *ricercar* would explore the permutations and possibilities of a musical arrangement, following several lines of development. In this form the *ricercar* was an early form of fugue, another canonical composition which in turn matured during the Baroque.

A fugue is a musical research with a number of interlinking parts, which could be referred to as “lines” or “voices”. Several layers of reso-

nating improvisations along the same theme, creating transversal harmonies. A fugue begins normally with what is known as the *exposition*, the thematic point of departure from which several answers develop as the piece progresses. The lines of voices of the fugue form an interlinked procedure of imitative counterpoint where voices echo each other and transpose the exposition along several functions of counterpoint, inverting or retrograding, mirroring and phasing, augmenting or diminishing each successive voice into intricate patterns and scales. A simple theme evolves into a labyrinthine, meandering and multi-layered exposition of harmonic possibilities that in some instances even manage to change key along the way.

We should not dive into music theory and counterpoint, but use the approach of the *ricercar* and fugue as a mode of operation in relation to the development of practice. In their cyclical and iterative form both modes of composition build on a theme in evolving complicity. Without a goal or final orgiastic crescendo the lines interweave into a “higher” complicated forms, spanning and developing a theme into several layers of voices and harmonies. The searching is not aimed at a specific conclusion, but the musical journey builds new understandings of scales, transpositions and practical counterpoint. Both the *ricercar* and fugue are rhizomatic in their form and in their intricate form build complex and bewildering musical experiences.

Yet the central carrier of meaning in the fugue is the expression of each voice, or each line, and as a listener you follow the lines as they evolve; they weave, lace, braid, knit and loop through the piece and they make sense in relation to each other as they form a fabric of meaning. Each line is a speculative act, probing unknown possibilities. The lines emphasise mutual interactions rather than stressing one being the “fittest design” or dominant voice. It is not an ascending



A fugue of practice *where every line is anchored in empirical explorations, with several practical projects or workshops test ideas and allows the method to step into a succession of “higher” or larger scales. The first step can be trials in the studio, the next in a smaller social setting, going into industry settings or initiating world wide programs - but always anchoring every line.*

linear progression but a series of constant mutations and symbiotic exchanges of intensities. Each voice is a journey and meaning is built on a horizontal plane, but nevertheless spans different levels, scales and harmonies.

Like in a fugue, in a rhizomatic thesis the reader can develop own sections, dive from point to point, ride along a line, follow one voice or draw new diagonals and experience tensions between harmonies. As the reader follows the designer’s development of the theme a multitude of new understandings can thrive which in turn can inspire the reader to act on his own accord. In a thesis with such a rhizomatic structure there are many possible points of entry, and likewise several overlapping layers of theories, projects and examples, which all form a polyphonic interpretation of practice.

Perhaps most important the approach to this research followed a stance similar to that described by Brian Massumi in his foreword to Deleuze and Guattari's *Thousand Plateaus*; "The question is not: Is it true? But: does it work? What new thoughts does it make possible to think?" (Massumi: "Translators foreword", in D&G 2004: xv)

A successful design research should of course deal with accuracy, truthfulness and honest intent but should not be judged only by the traditional academic qualities. Such design thesis should rather be focused on opening new possibilities and be judged by the new passages opened and how these are constituted and performed. What new designs does such research make possible to create? What other futures does it make conceivable, discussable and realizable? Or in the case of fashion and my thesis: What other groups of people could be regarded as fashion-able?

A post-critical or affirmative hacking methodology?

Throughout my research period I found a lack of methods that emphasise action and engagement. Rather the academic tradition stress objectivity through disengagement, analytical distance, and if not opposition at least detached criticality. In response to this I instead tried to find methods of engagement and participation to deepen design practice, rather than "academify" design with top-down complicated theory directly imported from other fields. Design is a heterodox practice and design research could flourish with a multitude of design ways of acting *in* design rather than *on* or *about* design.

As the thesis is on hacktivism and takes a hacking stance onto design practice and specifically fashion this also reflects onto the methodol-

ogy of the research. The interventionist and active approach to design has been a fundamental attitude, rather than the distanced and “objective” perspective of case studies or “critical” or even nihilist perspectives. Does it work? What new thoughts are possible to think?

The hacking perspective concentrates on building upon existing systems or infrastructure. With series of own creations the aim is to *plug-in* and add onto the existing structure, bending and tuning its operation into a more desirable direction. From my perspective, this is the opposite of the subversive or oppositional critic who wants to uncover the malicious mechanics behind society, tear down the curtains of illusions, knock down the walls of power, un-plug the “evil capitalist machine”, sabotage the apparatus and *drop-out*. Hacking is a matter of dedicated and systematic curiosity, of understanding a system, reverse engineering it, finding a suitable place for intervention, plugging in, and *keeping the power on*. Hacking is to modify and advance a system it because you love it, not because you hate it.

This hacktivist approach is not only a principle for certain actions, but rather it is the central theme of the whole research methodology, the gravity pulling the lines or voices into harmony and into design-erly action.

This makes the hacker’s perspective different from what we usually see as the critic’s role, and more in line with what Bruno Latour calls a new form of critique:

The critic is not the one who debunks, but the one who assembles. The critic is not the one who lifts the rugs from under the feet of the naïve believers, but the one who offers the participants arenas in which to gather. The critic is [...] the one for whom, if something is constructed, then it means it is fragile and thus in great need of care and caution. (Latour 2004)

What Latour addresses here is a new building form of criticism. It is a criticism that resonates with the ideas of philosopher Manuel DeLanda. DeLanda means that hacking is to go beyond textual analysis to reverse engineer the systems of reality. DeLanda encourages us to "hack reality itself", which means to

adopt a hacker attitude towards all forms of knowledge: not only to learn UNIX or Windows NT to hack this or that computer system, but to learn economics, sociology, physics, biology to hack reality itself. It is precisely the "can do" mentality of the hacker, naive as it may sometimes be, that we need to nurture everywhere. (DeLanda cited in Miller).

As mentioned, hacktivism should not be seen as a phenomenon limited to the practices and politics of actual computers, but rather a mindset of how to perform an *affirmative* critique and collectively build a more desirable world. However, it would be better to describe this mindset as a specific mode of engagement, or of becoming. It is a way of seeing and re-assembling the world, of bending energies into new forms.

A method of expanded Action Spaces

If we approach research with a perspective of hacktivism we will encounter many examples of direct action and practice as the centre of attention is on *doing*, engaging with processes of becoming and using these energies to power-up practice. The projects dealt with in design are not about objects or products as much as the action spaces or possibilities they offer, with what they function – *what they make possible to do*. Any practice or a process takes place within an "action space", the very hands-on opportunities offered to us by the combination of

skills, tools and materials. Over the last years I have discussed this term quite often with the Malmö-based interaction designers Erik Sandelin and Magnus Torstensson and we have come to see it as a zone of distributed potentiality related to our abilities to interact with the world – our room for action. The action space is an area in which we move and make decisions about our lives, our everyday environment, things we think, act and do. It is a domain, geographical as well as practical and conceptual where we feel comfortable to make decisions and take action. Usually this follows accepted or habitual procedures from which we can expect satisfying and predictable results. It is also a field or an agglomeration of possibilities and unbound potentiality, of what we can do with what we have at hand. Some action spaces offer the cultivation of the taste buds, as wine tasting or indirectly advance skills in the kitchen, others open entirely new vistas, like swimming and diving. It is especially in this last sense, of skills and craftsmanship, that I use the concept.

The action space is always emergent and its borders can indeed be seen as fronts, as both interfaces and frontlines where the struggle for control takes place. We use our bodies and skills to try new solutions, to explore new ways to do things; we fight with gravity, the elements, or intangible concepts as we learn to walk, swim, and to discover metaphysical issues. We explore action spaces together as we compete, dance, and discuss our common metaphysical ideas. Our action spaces are thus highly physical, but at the same time conceptual, and most often they go hand-in-hand.

We inhabit action spaces, we are in the middle of them, but we as humans are not lone actors there. For there are also other types of actors such as energies, materials, tools, in addition to routines, skills, practices and norms. All these aspects affects the dynamics of the action space – what it constitutes and what potentials it “offers”. This

means our uses of action spaces are twofold. Firstly they are general practices, routines or everyday action spaces, as in the “practice of carpentry”, which involves a usual set of space, tools, materials and skills. Secondly they are very specific and applied on singular occurrences or unique contexts, as for example, how I do to repair something just this moment.

To expand the borders of our action spaces we use tools to further our reach into potentiality. Tools are weapons on these fronts, with which to expand the capacity and potential of our bodies, but our tools also control us and guide our behaviour. On a piano we can press the keys to bring about a wonderful palette of sounds, but the piano is also constructed to be played in a specific way and it is very hard to bring forth other sounds out from it, such as blue notes and so on. On a computer keyboard we can press keys to write text or activate a wide range of commands, yet tapping it is its sole and very limited function.

In this way action spaces relate to what the interaction designer Donald Norman calls “affordances” which are action possibilities of an object as perceived by an actor (Norman 1990). Norman’s definition of the object’s action possibilities has come to mean more how an object “invites” or “suggests” specific behaviour from the user, whilst I use action spaces more as the direct link between the actor and the performed task. An action space includes everything we can do, think, and use, and as such is beyond the tool itself. Yet, tools are of course central to how we interact with our world.

We use tools to expand our capacities, and these tools also become parts of us. They become a form of prosthesis, an extension of our bodies, like the blind man’s white stick, or a bicycle for the cyclist, a relation Merleau-Ponty exemplified as a subject-object situation be-

tween body and tool (Merleau-Ponty 2002). This intimate connection between body and tool, or between “actants”, is what Bruno Latour calls a “hybrid”: where the tool constitutes a distributed competence, adding to the subjects possibilities to act upon the world (Latour 1993). In the study *Design of Everyday Life* (2007), Shove *et al* examines the scattered competence in DIY craft projects. They emphasise the importance to recognize how technological tools and materials supports everyday endeavours,

not as instruments of deskilling and dumbing down but as agents that rearrange the distribution of competence within the entire network of entities that have to be brought together to complete the job in hand. (Shove *et al* 2007: 59)

The inventors of tools prepare them for specific situations and responses and optimize or “sharpen” their use for specific foreseen tasks. But more often the users are more creative than the innovators, and they apply them to more uses than what was originally intended. A chair is used as a ladder, or a screwdriver temporarily used as a hammer. The action space proves larger than first thought. However, the opposite can be true where the user does not understand the full capacity of a tool. It is common in computer programs where there are far more menus and functions than used by most people, and the full potential of the tools is understood and released by very few. In this last case the offered action space is only partially used.

A central theme throughout hacktivist methods is the question of improving skills as a means to expand action spaces. Thus we might need to understand “skill” better. For me, skill is not only a matter of ability, but also one of curiosity and sharpened attention. Skill is in this sense something more than a linear path forward, it is also about taking an inquisitive look at the adjacent fields and a form of probing

attention or awareness. In this sense, skill is the attentive search for perfection of the same skill, by questioning, distance and reflection, similar to how science historian Sven-Erik Liedman critically includes curiosity in the concept of knowledge; knowledge as the curiosity of inquiry involved in the acquisition of knowledge (Liedman 2002). Action spaces, skills, knowledge and attention are thus tightly interwaved.

An alliance of methods

This methodological appendix consists of several process lines that form methodological interchanges. These displaced lines frequently overlap and they position artistic research as well as support to the efforts of others who want to engage with a hacktivist approach to design research.

The lines in this methodological appendix are triangulations between various approaches to artistic research, action research, development studies, and participation, to just to name but a few. These lines are supportive channels for practice rather than tools for strict analysis. They are meant support processes of *doing* as they offer points of reference as well as conceptual tools for discussing practice. They are not drawn up to filter data or to bring forward a sequential format for processes to take, but are there to encourage further exploration and help guide the future endeavours of other practitioners.

We will first start with a discussion about what the perspective of lines offers and how it related to practice. After that we will follow a series of process or method lines, all connected to practice, diverse actions and forms of interventions and finally gather these lines into a mesh

of “rhizomatic” validity. At the centre of this rhizomatic mesh of lines I come to a discussion of what this means for the redesigning of design practice.

The best way to follow these methodological lines is to see them more as meandering and liberating “lines of flight” than as undeviating intersections through the previous chapters. They are meant to help us break away rather than build new walls. According to Deleuze and Guattari (2004) there is a special form of line, one that escapes control and structure. It is a “line of flight”, that breaches holes and passages between separated lines. These lines are escape routes that “deterritorialize” and break up stratified and territorialized systems. It is a form of transversal mobility pattern, rhizomatic as it daringly connects separated “branches” of arborescent, tree-like lines, connecting multiplicities with other multiplicities. According to Deleuze and Guattari the lines of flight can be compared to music,

“Music has always sent out lines of flight, like so many “transformational multiplicities,” even overturning the very codes that structure or arborify it; that is what musical form, right down to its ruptures and proliferations, is comparable to a weed, a rhizome.” (D&G 2004: 13)

A line of flight is a line of liberation, it is dynamic, creative and unpredictable, breaking out of and undermining the repressive state of contained compartments within a discipline, structure or organism. It escapes to connect one multiplicity with another. With this manoeuvre the line of flight releases hidden potentials and intensifies capabilities. Which is very much like the “mindset” of hacking, building and of connecting one multiplicity with another.

This is how it should be done: Lodge yourself on a stratum, experiment with the opportunities it offers, find an advantageous

place on it, find potential movements of deterritorialization, possible lines of flight, experience them, produce flow conjunctions here and there, try out continuums of intensities segment by segment, have a small plot of new land at all times. It is through a meticulous relation with the strata that one succeeds in freeing lines of flight (D&G 2004: 178)

The hack itself is an escape, but it is paradoxically also a re-structuring and a reterritorialization, as it builds new forms of relations, relations that are yet open, as in open source code and open protocols. The reterritorialization process is unavoidable so it is crucial to be attentive to how to best affect this process and keep the line of flight intensive, open and accessible.

We will now meet a few of the method lines. The complexity of the abstract machine needs to be preserved, but it can be possible to build a more comprehensive viewpoint onto this rhizome of practice by following some of these lines. They are process lines, similar to that of a method, not aiming to sort out data and build walls, but rather to facilitate escape routes.

process lines for a nomadic practice

A research method is usually a kind of procedure that helps a research process to take a solid shape. Traditionally it is a linear exercise, to stabilize a dynamic system of data from observations and experiments, processing it through a rigid framework, and reduce a complex disorder to understandable variables and functions. Method is a set of specialized glasses, a constricted net, or a fine-tuned filter. This is done to calibrate the preferred spectrum of information, to make it rigid, to close its shape, to build up the argument like a powerful for-

tress, so as to build up a solid hypothesis that will stand firm when confronted with the attacks and careful scrutiny of fellow academics.

We can also envision another process, where the method is a procedure that is more of an approach or a course of action and is a line that goes through an unsorted reality or mass of practices or processes of becoming, that preserves its dynamics and imbalances. This method would follow meandering lines through a system, emphasising mutual interactions and intersections between other lines and forces. It is an emphasis on *doing* and *becoming* rather than *having* or *being*.

For my research the idea of lines has helped me articulate a process that allows both a smooth transition through texts, projects and the examples of others and which, as in my own practical work, values each part as equally important. All these lines form an *alliance*, an assemblage of forces that are gathered to shape this thesis, a multiplicity in itself, that gives boost to the reader's energy and encourages him to ride on and try new things. Interpreting the ideas of Deleuze and Guattari (2004) and DeLanda (1997) from a designer viewpoint can frame a set of ideas that could articulate how this type of "nomadic practice" could be understood. Here all lines are interwoven with practical design projects and ideas so as to become a "nomadic practice" that consists of a meshwork of what I would call "lines of practice".

First, a typical characteristic of a design practice is to use tools that work, and not to spend too much energy discussing the tools that do not. This does not mean the use is unreflected, but rather positively pragmatic, subjective and situated within my own practice. The skills of a designer are about doing things and of acting upon the world. The designer's use of tools is *affirmative*, rather than critical and quite

similar to how Brian Massumi, in the foreword to *A Thousand Plateaus*, describes Deleuze and Guattari's "nomadic thought",

"Nomadic thought" does not immure itself in the edifice of an ordered interiority; it moves freely in an element of exteriority. It does not repose on identity; it rides difference. (D&G 2004: xii)

he continues,

The modus operandi of nomad thought is affirmation, even when its apparent objective is negative. Force is not to be confused with power. Force arrives from the outside to break constraints and open new vistas. Power builds walls. (D&G 2004: xii)

This affirmative research method is about following and riding upon the forces of examples and projects, using their immanent energy or intensity, rather than building impregnable walls around the proposed practice. The nomad thought is made from the movements along these energy lines, rather than the manifestation or protection of conquered points or territories. Theory and examples are thus not meant to be parts of a great and structured system, conquering or disproving other methods or theories, but rather form a set of useful concepts or tools to be used for better "riding".

Deleuze's own image for a concept is not a brick, but a "tool box." He calls this kind of philosophy "pragmatics" because its goal is the invention of concepts that do not add up to a system of belief or an architecture of propositions that you either enter or you don't, but instead pack a potential in the way a crowbar in a willing hand envelops an energy of prying. (D&G 2004: xv)

So, to return to the foreword; "The question is not: is it true? But: does it work? What new thoughts does it make possible to think?" (D&G 2004: xv) – or in the case of design – what new interventions in the world does it make possible?

As I have suggested, the core component of nomadic thought is that it is built upon lines, rather than on points. This means it searches for processes that are evolving in world or that are “becomings”, rather than fixed meanings or essences. The question is not: what does it mean? But: what does it do, what does it make possible?

We will never ask what a book means, as signified or signifier; we will not look for anything to understand in it. We will ask what does it function with, in connection with what other things it does or does not transmit intensities, in which other multiplicities its own are inserted and metamorphosed [...] (D&G 2004: 4)

This proposes a method of the *plug-in* (D&G 2004: 5) of connecting lines with others, forming a meshwork of concepts and tools, of energies and forces, of theories, projects and examples. It is a multiplicity in itself, or a rhizome, a rhizome of overlapping lines, where all the lines are of equal importance and that smoothes out space to form an assemblage. Contrary to linear narratives or theories that sorts the concepts around one point and builds walls around *One theory*, Deleuze and Guattari created another form of density of thought which is a meshwork of overlapping lines. “Hence, nearly synonymous key concepts [...] do not exactly coincide in meaning, but are slightly displaced from one another to create this overlapping effect.” (DeLanda 1997; 330)

Similarly, we will now follow several lines of method that are slightly overlapping and displaced from each other. We will not follow *one method* but several lines that form a meshwork of methods, a meshwork of process lines.

one and several process lines

The thesis follows a multitude of different lines, processes, methods, discussions, examples, and projects and is not assembled according *One* theory or “tree-like” line of argument. To clarify this we can examine more closely how Deleuze and Guattari explain what they see as different types of “lines”.

Firstly, they recognize a *subordinate* line, an arborescent, tree-like line, as part of *One* theory that connects the points of its superior dimension (D&G 2004: 556). This is the line of a sequential reasoning or logical deductive argument through systematic use of symbolic techniques that preferably ends with *one* answer.

Their second line is more like the ones we see throughout this thesis. They are diagonal, of the “rhizom-type”,

The diagonal frees itself, breaks and twists. The line no longer forms a contour, and instead passes *between* things, *between* points. It belongs to a smooth space. (D&G 2004: 557)

This diagonal, *rhizome* line is not “subordinated to the One, but takes on a consistency of its own.” (D&G 2004: 557) It connects multiplicities of becoming, rather than structuring countable elements, strict cause and effects or ordered relations. Deleuze and Guattari also propose a third type of line, the “line of flight” that we have discussed earlier.

An immediate conception of a method line would be a horizontal line that connects a research *question* to a research *answer*. This would be the first type of the subordinate line, a line part of the big *One* theory or argument, straight and predictable and very useful for analytic method and one that can readily be duplicated.

In order to preserve dynamics and complexity, this thesis has been built up differently, that is according to the rhizome type, the second type of line. The method lines I propose are diagonal forms of practice and sorting mechanisms that draw on a multitude of lines of practice, a cluster of methods lines, procedures and courses of action. Their main potential lies in just the *alliance* between them. They create what DeLanda calls a *non-reductionistic holism*.

The reason why the properties of a whole cannot be reduced to those of its parts is that they are the result not of an aggregation of the components' own properties but of the actual exercise of their capacities. These capacities do depend on a component's properties but cannot be reduced to them since they involve reference to the properties of other interacting entities. (DeLanda 2006: 11)

The interaction between entities is that which also forms lines. The importance here is that the lines of thought and practice are formed through self-organized communication, repetition, imitation and mimetic behaviour in which ideas travel almost like a virus, like an epidemic. These lines are what the sociologist Gabriel Tarde called "imitative rays" that "echo" between neighbours, like sound-waves, existing only in interaction with other entities (Tarde 2000: 32). This means that the line has no essence, no deeper meaning and does not affect us from "above" like an ideology, or like an inner "logic", "urge" or "need". Instead "social life includes a thick network of radiations of this sort, with countless mutual interferences" (51). For Tarde, the whole world is inhabited by waves and flows of rays, mutating and transforming. These imitative rays are very specific lines, forming a multiplicity, and they are very different from Richard Dawkins's concept of "memes" (Dawkins 1976).

According to Tarde, it is in the interference between two intersecting "imitative rays" that possibilities and innovation is released (Tarde 2000: 32). When they meet,

often they result in mutual alliances, which serve to accelerate and enlarge the radiation; sometimes they are even responsible for the rise of some generic idea, which is born of their encounter and combination within a single head (Tarde 2000: 33)

It is at the intersection of rays or lines possibilities emerge. The connections merge, where “flows boost one another, accelerate their shared escape” (D&G 2004: 243), an escape that we can use in our practical work. We must avoid points or positions, and we must look for the lines. Only then can we draw further on the forces running through this research, plug into them, redirect them, interconnect them, ride them, use them. To explore what it means to be a nomadic practitioner.

It is important to keep in mind that the lines are social, and thus not limited to the author, but flow through the author, who nonetheless might intersect them, propose variations and innovate. This perspective offers grounding for the interplay between rays and lines in which a wide range of participants offer a larger “radiation” that can happen *in-between* people, *through* an alliance or assemblage. This is why the authorship throughout this thesis and my projects have not been highlighted, but with purpose kept slightly obscure or unresolved. This is not a product of a new big auteur but the deliberate formation of an alliance of lines. The authorship is the lines and the rays, and it is the reader who will take part in releasing their potential.

an action line

One of these process lines is an *action research* line. Since it was first mention by the social psychologist Kurt Lewin (1946) action research has been developed as a reflective social research method of address-

ing social issues and working with practical methods to solve them. According to researchers Peter Reason and Hilary Bradbury action research is a

participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging at this historical moment. (Reason & Bradbury 2001: 1)

The aim of this type of research is to intervene into the system or situation researched, not to be a passive observer, distant and non-participative. Instead the aim is to create a dual commitment “to study a system and concurrently to collaborate with members of the system in changing it in what is together regarded as a desirable direction.” (Gilmore *et al* 1986: 161)

The process of action research is a combination of daily problem-solving and reflective research as it approaches its problem systematically and through informed intervention, based on theoretical considerations. Compared to other types of research processes, action research generally involves the people being researched as co-researchers, and engages them in a collective and critical reflection exercise. “Learning to do it by doing it.” (Freire 1982) Likewise, the initiating researcher acknowledges his or hers bias to the participants and throughout the research process. The process is “only possible *with, for and by* persons and communities”, and as such is closely related to Aristotle’s work on praxis and phronesis, using the expertise skills of the researcher, but frames these skills actively within a social context. (Reason & Bradbury 2001: 2ff)

This makes action research affect several social levels. It does not only aim to develop a “personal knowledge” through your action and for your action (Polanyi 1998), but to operate and communicate at a

number of different levels. This is a central part of the argument raised by Reason and Marshall (1987).

All good research is *for me, for us, and for them*: it speaks to three audiences [...] It is *for them* to the extent that it produces some kind of generalizable ideas and outcomes [...] It is *for us* to the extent that it responds to concerns for our praxis, is relevant and timely [for] those who are struggling with problems in their field of action. It is *for me* to the extent that the process and outcomes respond directly to the individual researcher's being-in-the-world (Reason & Marshall 1987:112f).

A manifold perspective such as this is what Torbert (1998) calls first-, second-, and third-person dimensions of inquiry. The first-person practice is carefully reflective, drawing on self-awareness and mindfulness, and primarily aimed at understanding and changing personal skills and approaches. It is a position similar to what Reason calls *critical subjectivity*, which means that

we do not suppress our primary subjective experience, that we accept our knowing is from a perspective; it also means that we are aware of that perspective, and of its bias, and we articulate it in our communications. (Reason 1994: 327)

The second-person dimension of research is that which is cooperative and where a group of participants become both co-subjects and co-researchers, and who all contribute with ideas, actions, analyses and conclusions. At this level, the results are also directly applicable to their life experience, both as groups and as individuals, making the first- and second-hand perspectives closely interlinked (Reason & Torbert 2001).

The third-person research involves people who cannot meet face-to-face, which means it involves an impersonal quality, for example

working with a group of globally dispersed individuals, but who are still a community of practice, sharing resources or experiences. It can also be an even more distanced perspective, where the group works with external data, history, or quantitative methods.

As we see in the examples and projects in this thesis all these perspectives are closely interlinked, and run criss-cross over and in-between each other. Many of the projects start from a very personal perspective, from a personal urge or from “scratching one’s own itch”. They then go into dynamic group practices that are often organized from a third-person perspective as a globally distributed net of contacts, to then again dive back into group dynamics and personal experiences and skills. It is also a mix of personal and anonymous projects, unique singularities with many-layered multiplicities where several lines intersect, but where the same abstract machine is at work.

Often the circumstances surrounding action research is that of a situation of oppression or inequality. It has been a method used for development and empowerment in the context of education and aid situations for the underprivileged, and draws on Gramsci’s notion of the counter-hegemonic “organic intellectual”, which works from a stance of a praxis of solidarity (Weis & Fine 2004). From this position the researcher can work to break the “culture of silence” through education, and help the silenced to find a voice (Freire 2000). According to Paulo Freire’s book *Pedagogy of the Oppressed*, which builds on John Dewey’s influential work *Democracy and Education* (Dewey 1999), this has to be made through other forms of education than the traditional “banking” concept. In “banking” education the “teacher issues communicate’s and makes deposits which the students patiently receive, memorize, and repeat.” (Freire 2000: 72) To liberate the oppressed, Freire asks for a problem solving education which talks back, and

“strives for the *emergence* of consciousness and *critical intervention* in reality” (81) It must act upon reality and be based on praxis, rather than on silenced repetition. This will, according to both Dewey and Freire, result in personal growth, a better and more democratic society, and produce a climate that is favourable to more well informed debate. The main difference is how Freire explicitly sees it as a central tool for liberation of the oppressed.

The researcher and educator is a partisan, who takes sides with his or hers study subjects, and working deliberately with the research to help the community involved towards a better situation. This type of action research converges with participatory research and has often been labelled *Participatory Action Research* (PAR), which highlights the community empowerment aspect of the process.

The aim of participatory action research is to change practices, social structures, and social media which maintain irrationality, injustice, and unsatisfying forms of existence. (McTaggart cited in Reason & Bradbury 2001: 1)

At its core, PAR embraces perspectives of feminism and post-colonialism and opposes hegemonic structures. Although this type of research is closely linked with political education and activism and even expresses an explicit political position as it engages the disenfranchised, it should not be confused with “political activism” or “oppositional politics”. (McTaggart 1997: 6)

The structure of action research is often rigid in the sense that it is based on progressive iterations of repeating cyclic steps, or “moments”, conceptually varying in complexity between researchers, but can roughly be summed up as “plan, act, observe, reflect.” (Carr & Kemmis 1986: 186) This type of progressive linearity between cycles is a guiding procedure for action research, and also a central ingredient in most

design processes, and often a key component in most educational projects in design courses, from foundation courses to professional practice.

From a design perspective, PAR is similar to *participatory design* in that the researcher/designer engages the community, or users, in the process, while still preserving the role of initiator, evaluator, and in the end the designer. Most often participation does not come closer than *user-centred design* where the user is seen as a key actor and target “audience” of the design process. However the user is not allowed to make any decisions, but rather is an observed user in a video-surveilled lab. Compared to user-generated designs, as for example wikipedia, or the role of “user-innovators” (von Hippel 2005, Shah 2005), this type of activism is less empowering as it does not share the tools or skills of the experts with the users. A design practice with more equal protocols for co-design is further investigated in the Small Change Protocol and Pro-Am chapter.

However, the participatory perspective is not uncontested, and all forms of involvement and education are also stealthy instruments for conformity, and it takes a raised consciousness to transform participation into real and practical freedom. There is always the problem of hidden authority as well as an altruistic blindness as the “transformative intellectual” goes out to “save” the oppressed. Already in the beginning of the PAR movement, practitioners had already asked to tread carefully in regard to the tendencies of “the oppressed, instead of striving for liberation, tend themselves to become oppressors, or ‘sub-oppressors’” (Freire 2000: 45). These issues should be kept in mind, but it is a problem to great to handle here.

Nevertheless, there are other problems facing a participatory approach. Especially today, as participation is a method in the hands of

both the New Social Movements of the left as well as the neo-liberal market strategists which to many makes its utopian claims confusing. This has led to sharp criticism of the orthodox use of participation in almost every social project, as it seems to create a new form of benevolent "tyranny" projecting individual responsibility to disenfranchised groups. According to this critique, participation is "empowering" people in "developing" societies to become better consumers, taxpayers, workers, patients or prisoners, reshaping persons into "modern" consumer subjects, delegating responsibility but not liberating them (Cooke & Kothari 2001).

an interventionist line

The interventionist line is quite similar to that of the action research, but it has a more elaborate experimental attitude and emphasises direct action for change more than reflected research. The concept of intervention has become actualized through contemporary art where it has become a common technique in art as a social practice and a relational aesthetic (Bourriaud 2002; Purves 2005).

A first point of departure into interventions is the "pointing" method within art, and it could possibly be seen as a line in itself. It is a silent indication, an artistic gesture, of interrupting discourse where the artwork puts a "spotlight" on a social issue. It is practice, not theory, a gesture of questioning, as proposed by theorist Irina Sandomirskaja (2006). She argues,

Being practical, the pointing of the finger has to be subsumed under a special rubric: it is not knowledge, since all knowledge is discursive and gestures are not. (Sandomirskaja 2006: 4)

In my reading this pointing gesture can be seen as the "classic" way for art to engage in the world, in that it can document the world, show it to the public in a new way, manifest it, create a monument of a certain perspective. Iconic political artwork like this can be Picasso's *Guernica* or the 1930's collages of John Heartfield.

However, as both artistic methods and tactics have expanded it has also used to touch on social issues, through actions, happenings, and workshops, something usually framed as "interventions". The Austrian artist group WochenKlausur explains this development in the following way,

In contrast to the thinking of the seventies, today's Activists are no longer concerned with changing the world in its entirety. It is no longer a matter of mercilessly implementing an ideological line, as it was in Joseph Beuys' idea of transforming a whole society into a Social Plastic, or as it was in the thinking of the Russian Constructivists, the Futurists and many other manifesto writers of the Modern. At the end of the century, Activist art no longer overestimates its capabilities. But it does not underestimate them either. It makes modest contributions. (WochenKlausur n.d.)

Even if modest interventions aim to change practical social conditions. Some constructive actions have also created sustainable solutions that still work after the artists have departed, something that is always a problem in all projects of social change. From this perspective WochenKlausur is an interesting example, as the groups founder, Wolfgang Zingg, took his involvement in social action a step further and went into parliamentary politics, where he is now active in the Austrian Green Party.

However, art has a special possibility compared to ideological or problem-solving parliamentary politics as it can open doors and reveal a situation under a new light.

The motives for concrete intervention based in art should not be confused with an excess of moralistic fervor. As a potential basis for action, art has political capital at its disposal that should not be underestimated. The use of this potential to manipulate social circumstances is a practice of art just as valid as the manipulation of traditional materials. (WochenKlausur n.d.)

The manipulation of both social circumstances and existing material was something that was carried out by the Swedish art group Love and Devotion in 2003. The group was invited to make a public work of art for the University Hospital in Uppsala at the Ulleråker rehabilitation centre. Instead of approaching their work as a form of “decoration” of the space they studied the psychosocial milieu and organized meetings with the staff, politicians, architects and theorists to get a better picture of how and in which context such an institution operates. Their aim was to somehow find a way to change the milieu for the people inside, rather than put a piece of art on top of it.

They started by going through the storage areas looking for unused potential materials. They found some pieces of nice furniture, Swedish and Danish design classics, that they restored and they also changed the lighting in the corridors and rooms. Outside the centre they put up nesting boxes and also a feeding house for the winter for many different species of birds.

Perhaps their biggest intervention was to alter the access to the yard. Instead of only having an enclosed balcony at the side of the house, they opened up the fence and put in stairs to give direct access to the yard from the house. This opened the inner environment to the outer and changed the atmosphere of the institution through a very simple intervention.

Using the existing infrastructure and scanning it for unseen potentialities can make very discreet changes, in order to tune the environment for the better. Through simple recycling, using found ready-made objects and potentials, they not only improved the conditions of the rehabilitation centre they in the end created a form of “decoration”, but one that totally changed the environment of the place.

This interventionist line also relates to the aims of artistic research as defined by the Faculty of Fine, Applied and Performing Arts at the University of Gothenburg who define the aim of the research at the faculty as that of being a “catalyst” for “social change”. A gesture of art is augmented so as to become an “agent of change and source of understanding about real life, the world and society” (Faculty of Fine, Applied and Performing Arts n.d.)

The focus is on art as an agent of change and source of understanding about real life, the world and society, and on the research and development of artistic procedures. (Faculty of Fine, Applied and Performing Arts n.d.)

The borders between social activism, development practice and art are blurred. Here every little gesture of art is part of a “molecular revolution” and art practice itself is a sort of social revolution (Raunig 2007). However, for this perspective to be effective beyond the art scene, white cube, and biennale jetset there is a need to improve tactics and create understanding of how to intervene and inject practice in order to change a system.

The systems theorist Donella Meadows proposed in her article “Places to Intervene in a System” that there are several levels in which to intervene in a system (Meadows 1997). These can be from simple, low levels, like changing parameters or numbers, as politicians negotiate taxes or tariffs, to higher levels of effecting negative and positive feed-

back loops, such as preventive medicine, good nutrition to bolster the body's ability to fight disease, or laws to regulate government transparency.

In her scale the higher interventions affect information flows, reveal new data, or change major rules in the system through lobbying and public debate. Just below the top levels she puts the power of self-organization, where many small interacting parts synergize into resilient systems. At the top she places interventions that change the goals of the system and the paradigm out of which the system arises. According to Meadows the paradigms are not as hard to change as people think,

there's nothing physical or expensive or even slow about paradigm change. In a single individual it can happen in a millisecond. All it takes as a click in the mind, a new way of seeing. (Meadows 1997)

Meadows' ideas have been analysed in relation to sustainability by fashion theorist Kate Fletcher (2008), where she examines where changes in the fashion economy might be put into practice. Fletcher sees changes in materials and working ethics happen at the bottom levels, and new laws and regulations on production being applied through politics and lobbying to the middle ones. The top is very hard to reach, as it will require new ways of consumption and clothes care. To change the goals or the paradigm of fashion requires a multitude of new ideas stretching from new business practices to the way we use fashion in our social lives.

Perhaps these top levels of the system are hard to reach from *within* fashion, but here artistic interventions offers room for experimentation. The gallery, free from some of the logics of fashion, can be a lab for possible changes in mindsets and paradigms. This is what the gallery space has traditionally offered, a free state where a multitude of

viewpoints can be exposed and discussed. Here we can experiment with the “click in the mind, a new way of seeing.” The Hackers and Haute Couture Heretics and VakkoVamps projects could be seen from this perspective.

an interrogative line

Partly running parallel to the “pointing” and “intervention” lines, we could follow an “interrogative” line that exists in the grey area between art and design. It is a form of intervention, but with a pointing intention that questions preconceptions and understandings. Industrial designer and artist Krzysztof Wodiczko who is active at MIT have proposed this design approach. His most famous designs are vehicles for homeless in New York. Parts of his method are similar to those practiced in participatory design, but his intention is to add a critical questioning to the design practice and disrupt and reveal the underlying inequalities that design usually tries to hide. He suggests this is a constructive model for work in the world,

Interrogative design questions the very worlds of needs of which it is born. It responds interrogatively to the needs that should not, but unfortunately do, exist in the present “civilized” world. (Interrogative Design Group n.d.)

It is a design approach that asks questions about the world, often without finding real “solutions” to the problems. What is important is to intervene, to question, and to go more deeply into the world and its functions.

Designers must work *in* the world rather than “about” or “upon” it. In an unacceptable and contradictory world, responsive and responsible design must appear as an unacceptable or contradictory

”solution”. It must critically explore and reveal often painful life experiences rather than camouflage such experience by administering the painkillers of optimistic design fantasies. The appearance of interrogative design may ”attract while scandalizing” – it must attract attention in order to scandalize the conditions of which it is born. Implicit in this design’s temporary character is a demand and hope that its function will become obsolete. (Wodiczko 1999: 17)

Indeed this working method is not so much a way of resisting or opposing a situation as of building complementary systems or new functions, practices that are very close to the social change proposed by the action researchers. It is very similar to how the legendary inventor Buckminster Fuller saw his work: ”You never change things by fighting against the existing reality. To change something, build a new model that makes the old model obsolete.” (Fuller cited in White, K 2001: 101)

However, not all new models can come about at once, so smaller interventionist steps that all aim to a larger change have to be effectuated. These small interventions are a form of designer first aid.

The oldest and most common reference to this kind of design is the bandage. A bandage covers and treats a wound while at the same time exposing its presence, signifying both the experience of pain and the hope of recovery. (Wodiczko 1999: 17)

Wodiczko’s bandage metaphor by can be discussed, as it is quite ambiguous. It is a design solution added on top of a problem similar to the ”remedial” design criticised by design theorist Ezio Manzini. As such the top-added bandage is a counter productive fix to a problem which might even make things worse if nothing is done to heal the wound underneath. On the other hand, the bandage offers a healthy microclimate around the wound allowing it to use the body’s own

ability to heal. In other words, the participation of the body is crucial to make such a design work in the proper way. It is from this reading that I think Wodiczko's metaphor makes sense. Therefore it is of crucial importance to involve the users, the participants and the "silenced", to make them participants in making the bandage, something that is also emphasised by Wodiczko,

The proposed design should not be conceived as a symbolic representation but as a performative articulation. It should not "represent" (frame iconically) the survivor or the vanquished, not should it "stand in" or "speak for" them. It should be developed *with* them and it should be based on a critical inquiry into the conditions that produced the crisis. (17)

Wodiczko's practice is not only participatory, but also critical, as it tries to uncover the reasons as to why the problem emerged in the first hand. In this way, it tries to assume a double agency, both towards the source of the crisis as well as how it is expressed. He emphasises the importance of both practical and communicative skills that are required to reach this point.

One of the objectives of the design is to extend the use of the media of communication to those who have no access to them but who need them the most, and to those who have full access to them but who fail to take critical advantage of them. (17)

However, Wodiczko's practice has its critics, one of whom is Wochen-Klausur, who are sceptical in regard to Wodiczko's work with the homeless, in which they say he does not go far enough in trying to implement social change. They propose that he might even contradict his "interrogative design" as his designs circulate the art world,

Wodiczko's approach - he looks for solutions within the realm of existing possibilities, even if they do seem a little utopian - is

certainly worthy of mention. Still, his carts are only presented in museums. This could even give rise to the suspicion that he is utilizing social destitution for the purpose of creating “valuable exhibition pieces”. (WochenKlausur n.d.)

The problem touched upon here by WochenKalusur is a common criticism that is made when the socially marginalized enters into the gallery or art world, and much discussion has been raised about what “relational aesthetics” or “social practice” really accomplishes, as it perhaps covers up problems more than raising antagonistic politically articulated demands (Bishop 2004 & 2006).

In the world of design a tradition of critical, questioning or conceptual design practice has been formed during the last few decades and which aims to address social issues. There are many examples of this being done successfully by exposing assumptions, stimulating debates, provoking and engaging in critical action and breaking the status quo of traditional hurried design thinking. One such example is that carried out by the RED group at the British Design Council, in what they call “Transformation Design”, which broadens the space for design interrogation and problem-solving (RED 2006). The platform of John Thackara’s *Doors of Perception*, or *Design Of The Times*, DOTT07, can be included here as it also tries to escape the traditional limitations of the design discipline to address the larger changes towards which our civilization is heading (DoP; DOTT07).

Perhaps the greatest contribution this approach can make is to use the craft, skill and material from within design to anchor the work within the mindset of designers and continue to raise social issues. Instead of aiming too high and leaving the tangible quality of material design they use the very “materialness” of design and craft to raise social questions. The intervention does therefore not only have only a social

quality but also a very concrete incarnation around which the “issue” and its community can be summoned. The objects become “boundary objects” that connects two “communities of practice” in order to expose and overcome disharmonies and negotiate further transdisciplinary understanding, such as those between amateurs and professionals, or museum pedagogues and visitors. These objects are preferably material and tangible although they are interfacing different social worlds, but their structure make them recognizable for both, as they are “simultaneously concrete and abstract, specific and general, conventional and customized.” (Star & Griesemer 1989: 408) They can thus be attractors and intersectors between diverse social worlds, perhaps something like the homeless vehicles of Wodiczko.

The discipline of “critical design” makes extensive use of this type of experiment, and at the same time submits the design discipline to a severe critical appraisal. It aims to pose questions rather than provide answers and make complex issues tangible and therefore debatable. It draws attention to the social, cultural and ethical implications of design, aspects we usually do not see (Dunne 1999; Dunne & Raby 2001; Jeremijenko 2004).

This type of criticism that questions design is used by many interventionist groups and often with the aim of engaging the audience in the act of knowledge production, creating workshops and shared public laboratories for experiments. A wide spectrum can be seen, from legitimizing and highlighting unseen practices such as the innovations produced by prison inmates and which are described in Temporary Services’ book *Prisoners’ Inventions* (2005), to the manifestation and creation of public monuments of successful but officially “forgotten” social interventions, like the civil public monuments for the Black Panthers made by Center for Tactical Magic (Gach & Paglen 2003).

The work “Terminal Air” (2007), by the Institute of Applied Autonomy, is also interesting from this perspective as it is a mapping tool, that uncovered the flight paths of the secret CIA “ghost planes”, or “torture taxis”, that illegally transported prisoners across the planet after 9/11. The data revealing these flight paths was in many cases collected and published by globally networked amateur planespotters.

One art group of special interest in this context is the Critical Art Ensemble, as their projects often celebrate the amateur as a key actor in knowledge production, and who promotes the protection of civil society and the heightening of democratic climate of open discussion through “amateur intelligence operations” (1994: 23). For CAE it is important to engage amateurs since they

have the ability to spot contradictions and rhetorical cover-ups within the dominant paradigms, are freer to recombine elements of paradigms thought dead or unrelated, and can apply everyday life experience to their deliberations with greater ease than can specialists. [...] Most importantly, however, amateurs are not invested in institutionalized systems of knowledge production and policy construction, and hence do not have irresistible forces guiding the outcome of their efforts, such as maintaining a place in the funding hierarchy or maintaining prestige-capital. (2004: 147)

The CAE’s work is concerned with engaging broader audiences and amateurs for knowledge production and activism and ranges from hands-on tactics and theorizing on civil electronic disobedience (1994), drawing up methods for supporting tactical media initiatives (2000) to the distribution of simplified labs that can test food for the presence of genetically modified components (2002).

They actively engage amateurs and greatly value their contribution, both to science and to the public and democratic discussion. Bringing science to the public is a high priority in a democratic society, not the

least when it concerns critical issues such as gene modification of both animals and crops. They oppose the view that “science is too difficult for anyone other than a specialist to understand”, a viewpoint which mean is only partly true, but chiefly because it is a dangerous distinction as it separates science from society (2002: 4). They propose that not only information and knowledge must be decentralized but also the tools and labs, procedures with which they are continually experimenting with throughout their projects. For example in “Free Range Grain” where they produced an open mobile lab for analysing genetically modified food, showing that non-scientists can use mythological technology and engage in advanced experiments. Another example is their “Contestational Biology” project that takes up discussions about corporate initiatives to consolidate and control the world’s food supply through patents on plants.

They mean that “artistic creation” can be used to establish public forums for speculation and discussion, where every amateur or cultural producer can “contribute to the perpetual fight against authoritarianism.” (1994: 27)

From this perspective the contribution of the amateur is not meant to be extensive, unique or deeply specialized addition to knowledge or practice, but a small participation in the open debate. The role of the artist or designer is to open a niche for the fellow amateur for gaining access. Every little new interface is a new possibility for change to the better. This addition of many small changes is something we will follow in the next line of practice.

a small change line

Another of the lines is that of “small change”. The small change approach appears throughout this thesis as a perspective on change but it also gives a special approach on how to *do things*. In my view small change accentuates a design-driven, from the bottom-up perspective, and even though it also carries critical implications I see this line mostly from a solution-aimed stance, with what it works. Small change encourages small-scale initiatives, even without any plans to enlarge them or make them a part of a larger ideology. Most importantly it encourages people to get hands-on, to start immediately and to develop the practice through small experiments along the way. For the development practitioner Nabeel Hamdi, the small change is a feasible scale from which things can grow, and we need to study and work with methods on this scale to understand it better. According to Hamdi, it is a serendipitous line, that combines the competence of the development practitioner with a good measure of idealism and pragmatism. The key aim here is to get organized and to create possibilities for emergence and synergies between small projects. This is how the larger movements will start up. This means that no action can be isolated, but development has to mean interdevelopment, “when ‘I’ can emerge as ‘we’, and when ‘we’ is inclusive of ‘them.’” (Kaplan cited in Hamdi 2004: xvi) For practices like this, Hamdi means that

There are few sacred prototypes to follow, no best practice for export, no brand names that guarantee quality. Instead approximation and serendipity are the norm – the search for scientific precision is displaced in favour of informed improvisations, practical wisdom, integrated thinking and good judgement based on a shared sense of justice and equity, and on common sense. (xxii)

To facilitate this process and set the scale for improvisations Hamdi cites the Intermediate Technology Development Group's maxims as ideas for leading practice,

- If you want to go to places, start from where you are.
 - If you are poor, start with something cheap.
 - If you are uneducated, start with something simple.
 - If you live in a poor environment, and poverty makes markets small, start with something small.
 - If you are unemployed, start with using your own labour power, because any productive use of it is better than letting it lie idle.
- (xiii)

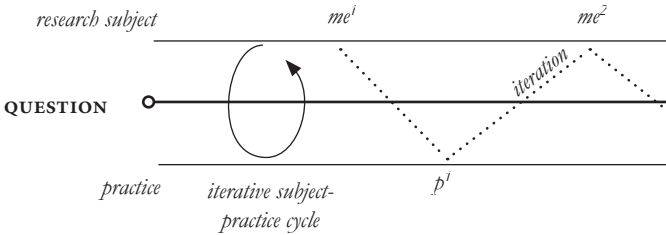
However, according to Hamdi, getting these small-scale initiatives organized and connecting small practices into forming emergence is central to development. He frames emergence as “the ability to organize and become sophisticated, to move from one kind of order to another higher level of order” (xviii).

The reason I stress this small scale and the organization of small initiatives is that in this perspective the small matters. Projects from the kitchen table or from the knitting circle can facilitate change when networked, rather like the amateur programmer who adds his open source code to the Internet-connected community and so building powerful software. Highlighted throughout this research are the connectors or the interfaces that allow the small to reach the others that are small, to form alliances and networks and to reach “higher levels of order”. This point of view accentuates the need to form connections and alliances between parts and it requires us to oscillate between the independent and interdependent.

While many of the artistic interventions mentioned throughout this thesis are very constructive they do not form expressive alliances with other examples or ostensibly build on others experiences often enough. As in most other practices it is important to be “unique”, or the “first” in their practice, it is the avant-garde that counts. Small change is rather the opposite, as exemplified in Buckminster Fuller’s example of the “trimtab”, the small trailing edge at rudder of a big ship that creates the turbulence that makes it turn around. While the avant-garde pushes the bow, small change aims to adjust the trimtab, making the small change practice not the avant-garde but instead the derriere-garde. In the small change perspective the emphasis is different from the spectacle of the big or new, for the intention is to build small additions, draw parallels and open passages between already existing forces and examples. Small change is all about “open source”, sharing code, of building together and on the works of others. Every project is a force for others to use, to ride, to build upon, to hijack and to make their own. It is not so interesting if the idea is your unique contribution – the question is; how does it work together with others?

The process throughout this line does not stress uniqueness, instead it is part of the hacktivist abstract machine, a part of many connected lines and a form of meme shared by many. The initiatives and forces are already out there but following this line of thought the idea is to gather the small embryonic initiatives together in small proposals and to intensify and multiply all small experiments for small change. This might seem like a home-brewing approach to social injustice and to some even appear unfocused or naïve. However, this is the affirmative purpose of the small change projects. They follow the maxim of Buckminster Fuller – “dare to be naïve”!

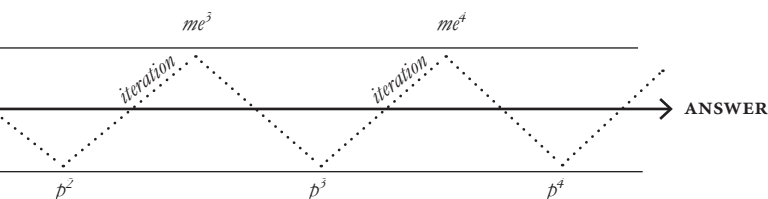
Example of reflexive practice



Reflective practice is a critical observation, iteration and evolvement of practice which is the basis for the improvement of conscious skills. But is also a method trapped in a cycle between researcher and project, or needs and possible solutions. It deepens understanding but might limit the possibility for radical change or evolutionary leaps in practice.

the diffraction between lines

The design theorist Håkan Edeholt (2004) has proposed a mode of thinking in design when he highlights the possibility of understanding design practice by blending diffraction with reflection. Diffraction is originally an optical term used by Donna Haraway to explain a mode of thinking that is different from "reflection", as it optically fragments the rays of light to spread in different angles rather than just mirror an image. As light passes through a prism it bends and diffracts and this allows us to record the different rays of light that was in the original ray. For me, the greatest possibility of using this concept of diffraction is in the division of rays as forms of energy and as frequencies of light or movements. Diffraction offers a way of looking for patterns of difference in energy, and does not try to bring them into one format, or as one reflected ray, or a single linear "tree-shape".



Seen from a specific subjective standpoint it offers us a way of putting an emphasis on practice, on process, on ways to do things, rather than the meaning of things in themselves. It underlines a multiplicity of forces rather than singularities, lines rather than points.

While retaining a place for vision, diffraction is more about registering movement (as when light passes through the slits of a prism and then diffracted rays are registered on something like a screen). Diffraction is about registering histories of movement in a field of moving forces such that the movement of dynamism of forces (contexts and processes) can be reoriented or redirected, that is, disturbed and changed. (Ticineto Clough & Schneider: 342f)

Here we are beginning to look at movement, along lines, energies and forces. From this perspective we can follow several lines and let them intersect so as to create new intensities and new possibilities. Further on Edeholt continues to develop how diffraction can be used

as a nuanced form of criticism that is aimed more at redirecting processes rather than critically debunking them. Here he stumbles on what I before characterized as the abstract machine of hacktivism, that of action.

This is when criticism by diffraction becomes more desirable, if not necessary; when intervention becomes essential, sometimes to stop, but more often to interrupt, redirect, or reorient the process of technological elaboration. (Ticineto Clough & Schneider: 343)

Here the linear root of sequential process is interrupted and diffraction sets out to offer us more possible ways of reading multiple lines of both human agency and technology. Consequently, it involves the intersection, redirection and reorientation of the actors involved. This brings us back to the way it is put into practice and the way we do things and intervene with systems, forces and lines. Using diffraction the perspective is not from the reflection of the author-subject, but from a multitude of situated or “strong” perspectives. As Haraway says,

Reflexivity has been much recommended as a critical practice, but my suspicion is that reflexivity, like reflection, only displaces the same elsewhere, setting up the worries about copy and original and the search for the authentic and really real. Reflexivity is a bad trope for escaping the false choice between realism and relativism in thinking about strong objectivity and situated knowledges in technoscientific knowledge. What we need is to make a difference in material-semiotic apparatuses, to diffract the rays of technoscience so that we get more promising interference patterns on the recording films of our lives and bodies. Diffraction is an optical metaphor for the effort to make a difference in the world. (Haraway 1997: 16)

This means diffraction is not only a mode of thinking or of searching for another base for knowledge, but a perspective where each line dif-

fracts into the multiple, of subject *and* tool *and* skill *and* energy *and* system *and*... (etc). It is a perspective where, to use the words of Deleuze and Guattari “there is no primacy of the individual” (2004: 111).

An interesting perspective on diffraction is that which Edeholt develops and where he sees the method as the bending of light rays so allowing them to light up two sides of design practice. These two sides display on the one hand how things “are”, something which he sees as an engineering perspective, and on the other hand how things “ought to be”, which he sees as an innovative attitude – two forms of reality that are constantly juggled by the designer (Edeholt 2004: 52f).

In Edeholt’s example, science has always been firmly connected to understanding how things “are”, and it has extended this line into time, from history to the future. Historians and archaeologists examine how things “were”, scientists how things “are”, and forecasters how things “will be”, something we could see as being chronological points along one historical line. Edeholt lets the reflective practice proposed by Donald Schön in his iconic book *The Reflective Practitioner*, happen along this line, and sees it being trapped within the perspective of how things “are”, which somewhat limits the designer’s perspectives towards the “possible”. That is why he instead proposes a blending of the reflection with Haraway’s wider diffraction, into how things “ought to be” (Edeholt 2004: 53).

The “ought to be” timeline, was traditionally the arena for cultural debate and the home of utopias and politics, as well as design and of discussing how things “ought to become”. The discussion of how this “ought to have been” has been the home of historical revisionists. This “ought to be” timeline has lately fallen out of the discussions in favour of how things “are”, something that is apparent in contemporary politics and cultural debate (Edeholt 2004: 56f), something we

can see in the death of the grand utopian projects. In this sense, as all innovative design is located at the "ought to be" axis, if it goes beyond being just a reaction, all design actually concerns the political, and diffracts into the future as a wide palette of possibilities.

However, it should be noted that Edeholt's proposal on how things "ought to be" is not from a normative or technocratic position, but from a more humble stance of proposals, gestures or offerings, or a designerly "pointing" in the direction of the possible. This possibility is more how things "might be", than "ought to be". This is indeed the perspective of innovation, of the designer helping to create the radical new or the formerly unthought, as it is in the focus of Edeholt's study. However, this idea is slightly different from my research, as the lines we will follow here are not focused on innovation or the radically new, but rather those lines that support emergent processes, intensify energies or amplify potentialities. Most seeds are already out there for the designer to plant and nurture.

Using Edeholt's and Haraway's perspectives of diffraction could offer help escaping the subject-centred and one-line reflective process and instead invite a multitude of lines to meet and intersect. This could better help us to see the forces that can create synergies, co-operations and co-design practices and where not every design comes from the genius mind of the grand auteur. Observing and analysing cases could offer some help with which to describe similar processes, but that implies a distanced observer, stopping to scrutinize one "point" and defending one position, rather than moving along several lines. This is where a diffractive perspective can offer better support for a more direct cooperative practice that emphasises symbiotic or *mutualistic* collaborations. These are potentialities that can be better seen or mapped through a non-linear process of building validity and instead use a rhizomatic form of validity.

rhizomatic validity

In order to build up a dense form of argument, while at the same time still emphasising the movement, practices and forces along the lines, another form of validity is required. It will necessarily have to cope with discrepancies and displacements to preserve the desired *non-reductionistic holism* that DeLanda called for (DeLanda 2006: 11). For this holism we should not aim at unity or strict horizontal linearity and nor should we aim at nihilistic relativism, “but partial, contextual ways of dealing and coping with differences that should not be diluted and levelled out.” (Hannula 2006: 76) It will however require a form of what John Rawls calls “reasonable disagreement” rather than a harmonized consensual agreement (Rawls 1973).

What we must find is a validity that does not build walls but lets movement through, one that does not ask “is it true?” but “does it work?” In an article, sociologist Penni Lather (1993) examines what she means is sociology’s “fertile obsession” with validity from a feminist poststructural framework. She seeks to “rupture validity as a regime of truth” and to find a “reconceptualized validity that is grounded in theorising our practice” (674). She seeks multiple forms of validity other than the standard validity of correspondence and interested forms that are non-referential but at the border of disciplines (675). This would be “a nomadic and dispersed validity” which she calls a “rhizomatic validity” that is “to let contradictions remain in tension, to unsettle from within, to dissolve interpretations by marking them as temporary, partial, invested” (681).

Lather’s discourse-centred exploration could be used to explore the way rhizomatic validity “unsettles from within, taps underground” and how it “generates new locally determined norms of understanding” to a form that “supplements and exceeds the stable and the per-

manent” (686). This would be a form of triangulation between the lines followed throughout the research, with the reader weaving a meshwork of discussions and examples. The reader’s meshwork would interlink the forces of the various lines, to breach congealed discourses and the constraints of theoretic authority. This meshwork of lines would be valid in itself, as it covers a wide surface of arguments and counterarguments, yet it would still offer many possible readings and viewpoints.

The beauty of Lather’s rhizomatic validity is how well its lines can be experienced *ad hoc*, as the reader passes through them, building his or her own connections between the lines (yes, reading *between* the lines). The rhizome is in this sense similar to the way an Archimboldo painting forms a face out of fruits, or an image of a duck/hare – consisting of various inseparable, yet independent, forms at the same time. This is close to what architect Charles Jencks calls an *adhocism*, a form of *bricolage*, a localised assemblage or an immediate and purposeful action, which he, for example, sees in the Surrealist Exquisite Corpse:

When the sheet is finally finished, a put together Exquisite Corpse is disclosed which has as many parts and variable interpretations as there are folds in the paper. While this form of *adhocism* is tenuous because its lack of consistent purpose (because it is not controlled by a directive concept and does not contain considered relations between the parts) it still can produce convincing examples. (Jencks & Silver 1972: 24)

The projects and examples presented throughout this thesis form subsets or abstract landscapes through which we can navigate. According to Jencks, *adhocism* should not be seen as arbitrary or complacent. Instead, what distinguishes *adhocism* from random shuffling or other substitutes for thought is that it has a specific *purpose*. (Jencks & Silver 1972: 37)

This purpose is to create a whole that is larger than the sum of the parts which like the Archimboldo painting portrays the model from a specific perspective of what we can call a "poetic exactness". This notion is something elaborated on by the architect Raoul Bunschoten in his project *Urban Flotsam* (2001) where he explores how gaming techniques can be a tool for the collaborative handling of the complexity of urban planning.

Because of the complexity, ubiquity, instability and volatility of the urban condition, it is difficult to image their form or organizational structures. To do so, there is a need for intuitive thinking and even poetic imagining. Such complexity asks for what the Japanese philosopher Koji Take calls "poetic exactness". This exactness needs powerful images and metaphors to communicate and invite participation in proposed undertakings. (Bunschoten *et al* 2001: 20)

In this sense, we might see the lines we follow through the thesis in a new, clearer and more distinct light. We can follow the lines to find a meshworked rhizomatic validity shaped from the intersections of a multiplicity of "poetically exact lines".

a meshwork for redesigning design

This brings us to a convergence of the previously discussed process lines and their rhizomatic system. We can see how they interweave in a form of symbiotic or living system where they interact to heighten the connectivity to the proposed examples and projects and the abstract machines that run through the practices of hacking, heresy, fan fiction, small change and amongst Pro-Ams.

All these lines share an aspect of "metadesign", as multiple lines of practice and understanding can help to facilitate better understand-

ing of how design can re-design itself. Like a living self-reproducing system or organism, “metadesign” is engaged in what the biologists Humberto Maturana and Francisco Varela call *autopoiesis*, a living organism’s reproduction and change guided from the inside (Maturana 1997). This self-organized process is dynamically created by a multiplicity of interacting parts redirecting and transmitting flows of energy from outside. This ecological and systems theory perspective of metadesign is examined by design theorist John Wood in his “attainable-utopias” projects (Wood 2008).

Wood’s point of view on the problems addressed by design is that the problems are simply too big to be handled, even by specialists, *within* the diverse but isolated disciplines of design. Instead these challenges must be met through a wider collaboration between disciplines and designers (Wood 2007b). Several interacting and shared open design practices must synergize into an ecosystem of harmonizing practices in order to meet our future challenges. It is not enough to only think “green” or only “reduce, reuse, recycle” – all must interact to form a symbiosis that is able to re-think or re-design design. The aim of a metadesign practice is to make radical systematic and sustainable changes beyond what is considered possible. This is attained by first making the “impossible” discussable, then thinkable, and finally attainable through the tools of design (Wood 2007b). According to Wood, this metadesign practice aims at creating what Buckminster Fuller called a “synergies of synergies” (Fuller 1975), by strongly emphasising co-design and collaboration as the only way forward.

The metadesign approach is thus a furthering of a participatory design that aims at a much broader collaboration of co-designers and of inviting more partners to round table discussions and actions. With the determined use of many fields of knowledge and sharing these,

co-designers can tap into larger pools of skill and knowledge by creating better interfaces for discussion and collaboration. This is the way towards a collaborative design of “micro-utopias” (Wood 2007a). With the involvement of many more stakeholders and collaborators design can re-design itself from within, using the forces of several lines of practice, to change its processes and move towards more co-operative and responsible ends. Indeed, towards possibilities previously considered “impossible”.

Wittgenstein wrote, “one of the most deeply rooted errors of philosophy is that it understands possibility as a shadow of reality” (Wittgenstein cited in Zielinski 2006: 28). On the contrary the opposite might be valid, for in Siegfried Zielinski’s book *Deep Time of the Media*, we can see the roles reversed. These lines are about possibilities, and reality is only their shadow. (Zielinski 2006: 28)

To sum up all these diverse process lines, we have had to follow several process lines that intersect with the abstract machine of hacktivism. This has taken us from the hands-on reflection of action research, by way of artistic interventions aiming at social change to tactic lines of amateur open source engaged projects. We have seen lines diffract to reveal potentiality and how all these lines form a meshwork that provides a form of rhizomatic validity. We have ended with attempts to re-design design practice and seen recent endeavours to frame new dynamic approaches to design where organic collaborations and symbiotic practices have been prototyped. All these lines can help us see the projects throughout this thesis in a new light, but perhaps most importantly they can amplify the hands-on practices of other designers. This is a modest proposal that can add to the further development of both design practice and design education.

De-Closure

The end should not be a closure, it should not finish at a point, demise through a deductive conclusion or become another wall to enclose thought and practice. We must think of method as a tool to liberate from closure and explode in a multiplicity of lines of flight.

Philosopher Cornelius Castoriadis uses the term closure as a specific form of petrification process where meanings become solidified and room for conceptual action limited.

A world of meanings is closed if any question capable of being formulated within it either has an answer in terms of given meanings, or is posited as meaningless. Thus the worlds of archaic or traditional societies are closed, whereas the ancient Greek world or the modern European world (European in the broad sense of the term) is more or less open. (Castoriadis 2007: 157f)

He continues:

Almost all known societies have instituted themselves by means of and within a closure. They have created for themselves a metaphysical niche of meaning, which is tantamount to saying that they have been religious, or that they have been heteronomous in the sense that they cover up the fact of their self-institution, and instead attribute their institution to an extrasocial source. (Castoriadis 2007: 158)

For Castoriadis one must embrace autonomy to find ontological openings and find the possibility of going beyond the cognitive regimes that constitute organizational closure. For Castoriadis democracy is a political tool to open closures at collective levels while philosophy breaks closure at the level of thought (Castoriadis 1992). From this perspective we should think of design practice and research as a method to break closure at the level of the design of ac-

tion spaces. Methods in the artistic mode of design research should break open regimes of thought, create new lines of flight and open a rich palette of new actions.

We can once again approach ecologist David W Orr's notion of design as "the shaping of flows of energy and matter for human purposes" (Orr cited in Capra 2003). If we realize that designs are never finished and engage in their continuous processes of becoming we will find ways to *intensify* thought and action, and to *catalyze* communication (White & Nair 1999). We can learn to interact with dynamic systems and create interventions which aim to catalyze small changes. We should not try to enclose but liberate new spaces for thought and action.

Hactivist action plans

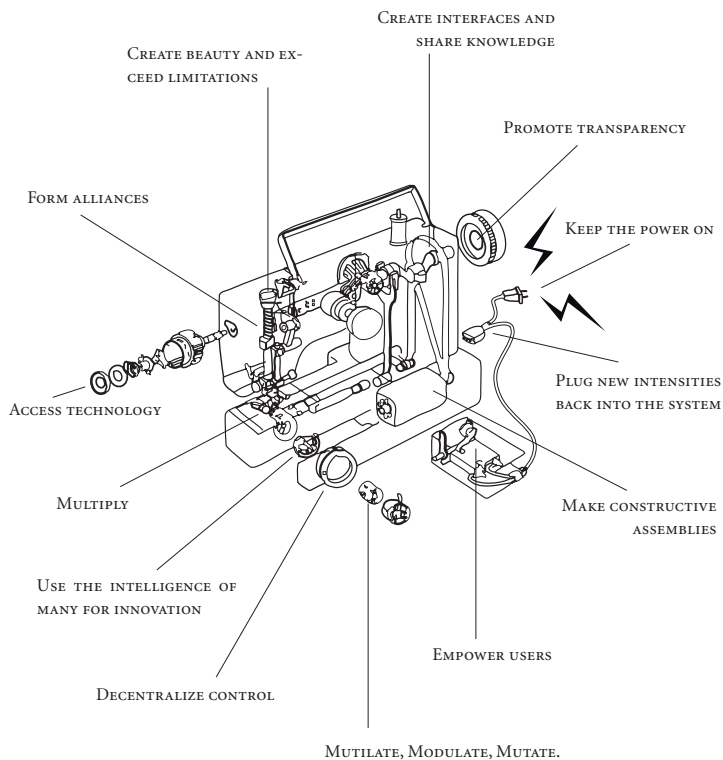
To create an engaged practice of making responsible design is thus our main task. This means to form a special knowledge or craftsmanship to engage in the development of skills. The hope is for a hactivist orchestration of social craftsmanship that leads to new skills and action spaces. This is a social practice on many levels; reverse engineering and understanding systems, developing craftsmanship, showing examples that attract participation, creating manuals that lead the way, organizing workshops that mobilize energy in the right direction, negotiating continuations, and finally plugging the projects back into the system. On every level we will collectively explore new action spaces for fashion.

I would suggest the practice of an engaged hactivist designer could be something like this:

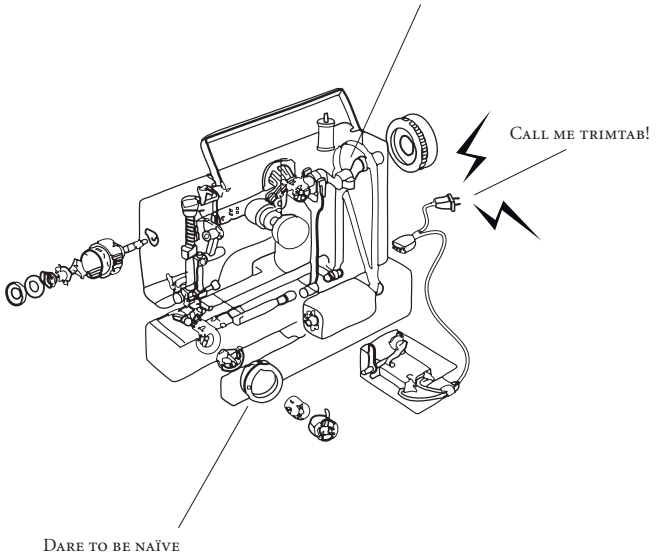
- *Reawakening a spirit:* Inspiring and boosting the thirst for exploration and emergence, expanding action spaces through simple examples, workshops and manuals to form new forms of attention and awareness.
- *Giving voice to the silent:* Creating a language of practice and also encouraging experiments in visual expression. To develop a critical usage of existing media channels as well as creating new ones.
- *Going through informal channels:* Bypass gatekeepers; find your own, low-level paths of action.
- *Building self-reliance:* Teaching simple modular methods or subsystems that can easily be expanded into other interventions and creations, developing a trust and courage in ones skills.
- *Mobilizing resources:* Reorganize production, open new action spaces by recircuiting the existing ones. Use the possibilities of what is considered as junk, making the leftovers of society your pool of treasures.

- *Provoking the “taken-for-grantedness”*: Help to make the virtual or possible imaginable and discussable. Make models and visionary prototypes. Challenge the participants’ imagination.
- *Making micro-plans*: Think in small steps, plan small, but be open for serendipity. Make examples of how the single informal action might be turned into a stabilized activity and a sustainable project or business, at least resulting in richness of dignity and self-respect. Map relations and prototype protocols.
- *Forming alliances*: Engage participants, share resources and skills, collaborate and build assemblages together. Be a rhizome, a pack of wolves, a swarm of rats. But be conscious of its risks and take seriously the responsibilities it demands.
- *Intensifying the power*: Plug the project into a larger energy system, use its potentiality, connect with other lines and ride their shared power, boost the flows, accelerate the participation, celebrate a shared re-engagement.

An abstract diagram of hacktivist research and its methodology could thus look something like this:



YOU NEVER CHANGE THINGS BY FIGHTING AGAINST THE
EXISTING REALITY. TO CHANGE SOMETHING, BUILD A
NEW MODEL THAT MAKES THE OLD MODEL OBSOLETE.



A version of the Buckminster Fuller diagram



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