

THE INNOVATION DESIGN FRAMEWORK

SPURSE
MIX Lab MSU

INTRODUCTION TO CREATIVITY & DESIGN

1. *Everything is made.* Everything is in the making. Nothing is finished, nothing was not made. This is astonishing and worth lingering on. The mountains, your hands, the stars, laws, social movements -- all made and all on-going. When we speaking of making it is worth sensing how big and remarkable an action we are discussing.

2. *Making and design are essentially synonymous.* All too often design is reduced to conscious human activity -- or reduced even further to the work of making beautiful objects. Conscious human activity is a region of design, and making beautiful object is really a very small province of design. Design is the study and practice of making in all of its forms.

3. *If everything is made then everything has a history.* Design is not immune to this. And my argument for an expanded model of design is not an ahistorical argument but rather it is a speculative claim made with the hope of effect current modes of thinking and teaching design.

4. What is creativity? Here is a working definition: It is the PROCESS of MAKING = ongoing creation. *and* It is the process of making something NOVEL emerge. The first part of this equation stresses that *everything* is created and re-created continuously (*even* the non-novel items of the world -- all the things that stay the same). At each and every moment you are a *process* of becoming (roughly the same). Creation in this sense is continuous. This seemingly obvious truth is very important to keep central to any creative practice because it alerts us to the fact that all reality is process. And as such all reality is open to change via changing processes. The second part of this equation stresses the *novelty*. Creativity is fundamentally a process that produces novelty. Something new. The two forms of creativity are connected. The difference is that novelty involves a change -- a *difference*. A difference, as Bateson would say, *a difference that makes a difference*. THE GOOD NEWS: We find creativity everywhere. It is always ongoing. It is NOT a mysterious property found inside the brains of really creative people. It is a process that anyone can *join* and participate in. THE BAD NEWS: Novelty is tough partner to tango with. The outcomes of creative processes, in that they are radically new/novel *won't make sense*, have a purpose, be good, or useful, or fit existing systems. And on top of all of this: becoming adept at utilizing creative processes is neither easy to learn nor to put into practice since our world privileges norms, sameness, and incremental change.

4. *Hands-on doing is fundamental to creativity.* The new cannot be known in advance. Thus knowing, which is fundamentally tied to what already exists, cannot be the primary path to the new. The new can be approached by letting go of knowing and opting for an engaged experimental practice of doing, following, and co-emerging with what comes next. In innovation, know-how takes precedence over know-what (knowledge).

5. Beauty and aesthetics. Far too often design is thought of something that comes along at the end of the process of making (after the engineers, and technicians have done their work) and it makes it beautiful. This outlook so radically compromises the scope of design. But not only that it trivializes beauty and aesthetics. Aesthetics is the study of composition -- a well made composition is something beautiful. All making involves composing, thus aesthetics is at the very heart of making/design. Beauty is not an objective measure of something. Beauty is the emergent outcome of something coming into being. Perhaps an example would help: take the invention of biking. Many forces, systems, bodies and technologies need to come together in just the right manner (composition). Then we have "biking" -- someone gliding through the air sitting on a frame of spinning wheels, all in balance -- of this we say "beauty". And we can now judge standards and forms of beauty (the coming together and staying together of certain assemblages). But before biking came into being this beauty objectively did not exist. It is in this sense that we could say that beauty both precedes truth and is wider than truth¹.

¹ As Whitehead develops in *Adventure in Ideas*

6. *Care is fundamental to understanding creativity and making.* Care for the new, the precarious, the unknown. Care for the conditions of making. Design and especially creativity can be space of profound carelessness. We equate creativity with freedom, getting out of all boxes, doing anything -- this attitude of hubris makes for a very careless form of thinking and doing. While in a vague and very general sense “anything goes” -- to get anything to go requires great care. Care, creativity and making need to be understood as nearly synonymous terms -- they are three ways to approach the continuous becoming of all things. Creativity and making require a shift in what we care for: from objects to fields, from things to relations, from essences to emergences, from ends to processes, from passivity to dynamic agency, from individuals to ecosystems, the world to worlds, ontology to ontogenesis, multiple cosmologies. Cultivate, become enchanted by -- enamored by, sense the adventure of -- care in being of a world in the collective self-making.

6. *Making in all of its diverse glory is not something that this booklet sets out to tackle.* We are introducing a few useful and pragmatic techniques for creativity, and innovation via a method we are calling *The Innovation Design Framework*. Innovation Design is a comprehensive and synthetic approach to design, creativity and innovation that offers powerful pragmatic tools for innovation.

7. *This booklet's truth claims are all pragmatic procedures for doing.* To say “things are fields”, which we do, is not to claim that things real are fields (which might be true), it is to suggest a procedure that engages with things as fields is useful in relation to creative practices. This work is fundamentally an experimental and pragmatic one. It is about doing, making, acting, testing, entangling, transforming. It is best read in this spirit -- use it. Try things out, change them. Put things to work in your own way.

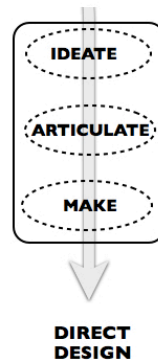
8. This brings us to a final and critical point: It should go without saying that creativity is not the end-all-and-be-all of our lives. Creativity is a process that is valuable in many circumstances but not in every circumstance -- not by a long shot. Sometimes the best answer is to just follow existing best practices. Often responsive design is far better and at other times direct design does a great job. While creativity is the focus on this booklet it does not need to be the sole focus of life or design.

We would like to end with a word about where these concepts come from. The concepts principally come from almost two decades of work with the design collaborative SPURSE where we honed these ideas both in the field and in sustained research. Take a look at our website and be in touch: spurse.org. Over the last few years we have been developing these ideas at Montclair State University as part of the program of the The MIX Lab (Making & Innovating for X). Here we have been actively developing a curriculum of design that evolves these ideas further.

NOTE: This document is a preliminary draft and far from finished. It is a working document that is in flux, and as such it is full of errors, oversights, missing and unfinished sections. It is being shared with the hopes of developing a community of practitioners in new models of innovation and creativity. All forms of feedback are welcome. But, please do not site without express permission or share in a fragmented form.

THE INNOVATION DESIGN FRAMEWORK

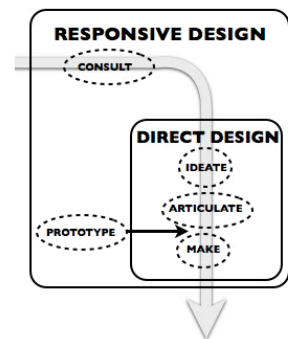
Design, or *Making*, has been classically understood to be a process of turning ideas into things -- a process I would term "Direct Design". You know the story -- you have a vision -- an idea -- and you figure out a way to make it. Perhaps you make drawings, work with fabricators, and other crafts people to realize "your vision." In the end, if everything worked out right, you have the materialization of your original idea. This is the kind of process that is taught exceptionally well in traditional art and design programs. Now there is nothing wrong with this process, but this methodology does not encompass all of design (nor is it especially good at fostering innovation). Design is much bigger than Direct Design. Design is ultimately the process by which anything is realized -- from a painting, to an everyday object, from an insect to a social movement, from a concept to an ecosystem. Design is the process of making. It is really that simple, and broad. Design is prior to the human and extends far beyond the human -- it is not just something we do.



But let's not get ahead of ourselves. Back to Direct Design: For much of the 20th century in the West variations of Direct Design were taught as a type of nearly closed design process where designers have ideas and figure out how to realize them *separate from* a deep engagement with the world (this process of separation and mentalization is considered an ideal). This is still the central logic of many art and design schools -- especially industrial design departments and the studio arts programs -- not because of the effectivity of this process in generating novelty but primarily because Direct Design has a deep historical roots such that our world is suffused with its habits and infrastructure (as well as being a powerful and expeditious way to make stuff)².

The big shift that spelled the end of conflating Direct Design with Design came about with the rise of various social, anthropological, ecological, and systems models of understanding that gave us insight into reality in terms of interwoven dynamic and evolving *systems*. Suddenly it became obvious that human making could not effectively happen separate from the world of users, practices, problems, needs, politics and so on. The model of Direct Design with its reliance of working in a studio and developing perfect products prior to any real social (customer) engagement came to be seen as lacking. It was rightly criticized for being removed, closed, and quite simply not responsive to real world conditions and needs.

From an awareness of the power of engagement a new and expanded form of design emerged: Responsive Design (or what is often now called by the overly broad and inaccurate term "Design Thinking"). Responsive Design is just that -- it begins in a considered response to the world rather than springing from the head of a designer. Responsive Design at its best shifted the focus of design away from the narrow idea of designers and design as being focused on independently making (beautiful) things. Design now became about all the interactive processes needed to make *anything* come into being -- ideas, medicines, political movements, cars, bridges and social paradigms. After Responsive Design in all its various forms Design came rightly to be seen as *Process Design for X* (you fill in the blank).

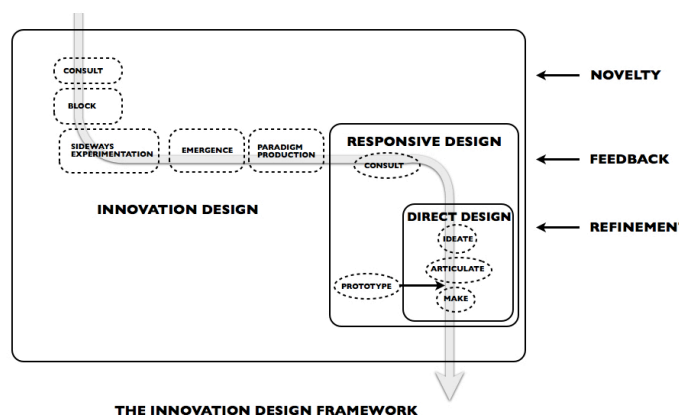


² What about the role of creativity in this process? In this process ideas and thinking -- *separate from doing*, are privileged. The age old fallacious divide between the hand and the mind is kept in place (never mind the connection of body to environment to tools and practices). Brilliant ideas are what count. Creativity is thought of as a type of magical spark that some designers have and others don't. It is something *internal*. For those who do not have the "spark" a whole industry of creativity consultants has emerged to help them become more creative. These experts promise to facilitate access to ones own "source" of creativity ("unlocking") or expanding "creativity". In these models creativity becomes a thing to which access must be gained.

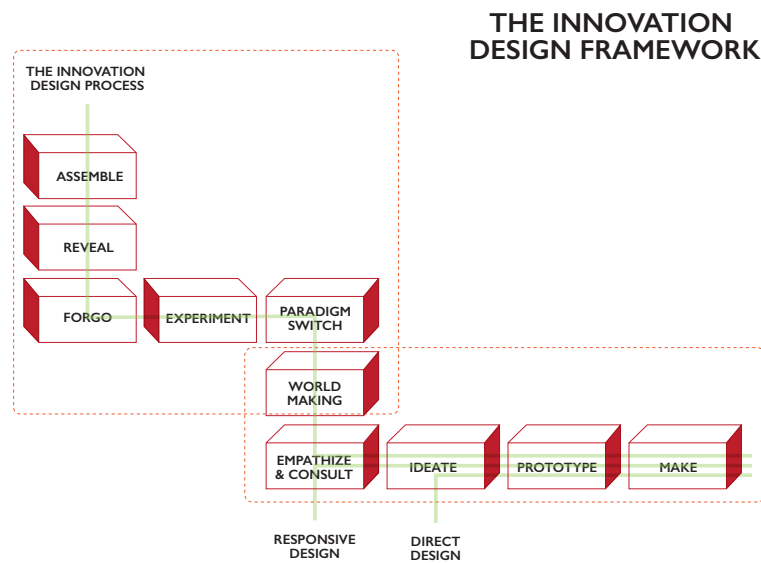
Responsive Design begins the design process by probing the world for actual practices, needs, and problems and from there it initiates a process of ideation and iterative design leading to a solution/product. In a very simple sense Responsive Design adds a consulting step prior to ideation in the Direct Design Sequence (and a more responsive prototyping/making phase). With this shift and expansion of the focus of design carried out by Responsive Design it is important to realize that this model does not replace Direct Design so much as it *subsumes* it. Along with this new model of design came new ideas about creativity that were more collective. The old model of creativity essentially got a group-centric makeover -- brainstorming, group improvisation, and other collaboration exercises were added to the mix.

We need to pause here for a moment and dig a little deeper into the concept of creativity. The irony is that for such a now ubiquitous term: *creativity as a concept is of a very recent origin* (it seems that in the western tradition we had no place for such a concept, but more on this later). It was coined in the 1920's by the philosopher Alfred North Whitehead to define the most basic PROCESS underlying all reality. Reality, for Whitehead, is a creative movement into novelty. From the big bang to hip hop. Whitehead went on to develop the most comprehensive model of creativity as a *process of emergent novelty coming into concrete being* during his tenure at Harvard in the 1930's and 40's. But while his word stuck, his ideas did not. Creativity quickly became a *thing* -- a spark, a special sauce, a pattern of neurons... And the concern for understanding and utilizing *processes* that generate novelty was left to other fields far from the worlds we most closely associate with creativity (ecology, complexity, evolutionary biology, process philosophy to name a few were the fields that took up quest to understand processes of emergent novelty).

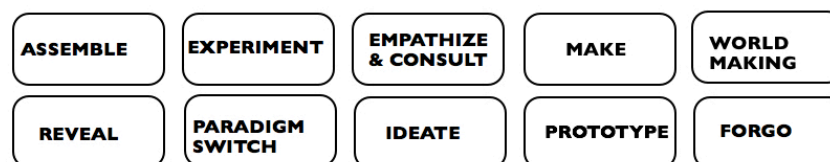
In very simple terms creativity as a process shifts the focus from the mind to engagement with the world and things. Doing matters. Things matter. When we do things, the things we use speak back to us -- the world becomes alive and in this engagement material push and pull novelty emerges. Novelty emerges not from our heads but from the *middle* of action. Whitehead is overturning the long and deeply held assumption "I think therefore I am" and replacing it with "We do therefore I am" -- with the "we" being an expansive list of collaborators that range far beyond the human: pens, roads, microbes, concepts, habits, relations, cars, ecosystems -- these all make up the we. Why does any of this matter? Three things: Direct Design and Responsive Design while being highly effective and critical design strategies (1) miss the crucial *process* aspect of making and creativity, (2) They focus on creativity as a thing (and a mental one at that), and finally (3) by focusing on solving existing problems they cannot innovate at the level of a genuinely novel paradigm. Quite simply while being effective design processes they are poor techniques for generating large scale and game changing forms of novelty. A quick survey of genuinely novel outcomes such as flight (both human and animal), modern technologies (from the alphabet, to the printing press, to the micro-processor), or powerfully transformative social movements (feminism, equality, and reproductive rights) reveals that none of them followed a process anything like Direct Design or Responsive Design -- they all involved processes that were *paradigmatically* transformative and exceeded (or even in some cases totally ignored) ideation. Which is not in anyway to discount either technique, it is simply to state that they are poor ways to generate novelty (more on this later). If creativity is in actuality a process, and it is the process of generating novelty then we can analyze it as a specific design process (or at the very least as a family of design processes). These processes for generating paradigmatic novelty are what I would characterize as "Innovation Design." Innovation Design does not replace or contradict Responsive Design anymore than Responsive Design contradicts Direct Design -- these are interwoven, nested and complimentary design processes that together make up The Innovation Design Framework.



The goal of this framework is to act as an expansion and re-orientation of our most common design tools (such as “design thinking”) to encompass novelty, creativity and innovation. Essentially it is to give us a way of moving from misunderstanding creativity as some impossibly mysterious thing, to a difficult but accessible process of emergent paradigmatic novelty. It is precisely this trio of critical processes (novelty, creativity, and innovation) that the “design thinking” as our current go-to model of making has great difficulty in activating. When the new becomes central to making then the classical “problem solving” ways of Design Thinking need to be significantly rethought. Creativity and innovation do not solve problems, but rather they invent new problems, that, if anything, make the old ones moot. Innovation is *the invention of new problems worth having for worlds worth making*. What is needed today is a full reckoning of how novelty emerges via a tangible process. We can lay out this process in more detail as a series specific procedures:

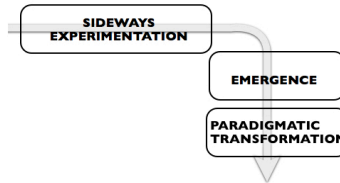


The Innovation Design Framework is a synthesis of these various processes of creation into a robust tool and framework for design. Above is the basic logic of the framework laid out in discreet units. The power of doing this is that we can see that it is both a set of nested processes that can be entered into at many different points in the process -- as well as a set of discreet tools that can be utilized independently of the process as a type of toolkit:

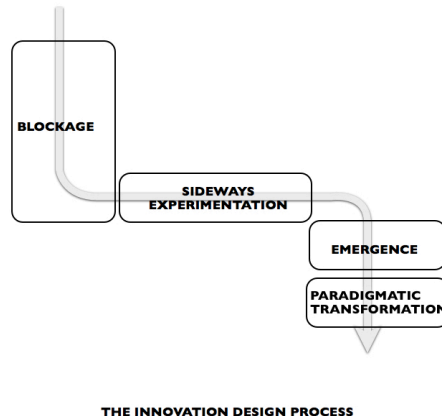


THE INNOVATION DESIGN PROCESS

Let's start simple: This creative procedure consists of three big moves: Emergence, Sideways Experimentation (Exaptation), and Paradigmatic Transformation (see appendix for details). We can lay these out sequentially: An iterative process of Sideways Experimentation leads to the Emergence of new qualities, capacities, and affordances. At some point in this long and multi-branched experimental process one crosses a threshold into a new Paradigm. Dwelling and experimenting from within this new paradigm is the true beginning of novelty.



The question remains: how does one begin? There is one more process to add: Blockage. Blockage is both a simple procedure and a quite complex one. Quite simply to do something different (e.g. creative/novel) you cannot repeat what has already been done. "Blockage" is the process of blocking the repetition of what has already been done. Now to do this well one has to figure out what to block. The easiest process is to figure out the total definition of whatever issue you are concerned with and simply not allow any of its practices.

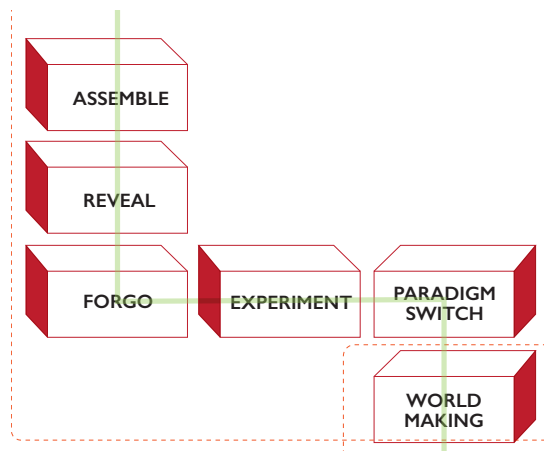


Blockage can encompass much more than this simple act. It is the beginning of any creative endeavor and as such it involves 3 procedures: (1) Assembling with an Issue, (2) a Participatory Process of Paradigmatic Disclosure, and (3) a Strategic Forgoing or Blocking.

1. *Assembling with an Issue*: There is something that is at state -- some issue or matter of concern. Who, what, and where needs to participate in getting this going?
2. *Participatory Process of Paradigmatic Disclosure*: You need to understand the issue from inside and at a paradigmatic (or cosmological) level.
3. *Strategic Forgoing*: Given your concerns what needs to be blocked? What needs to be refused?

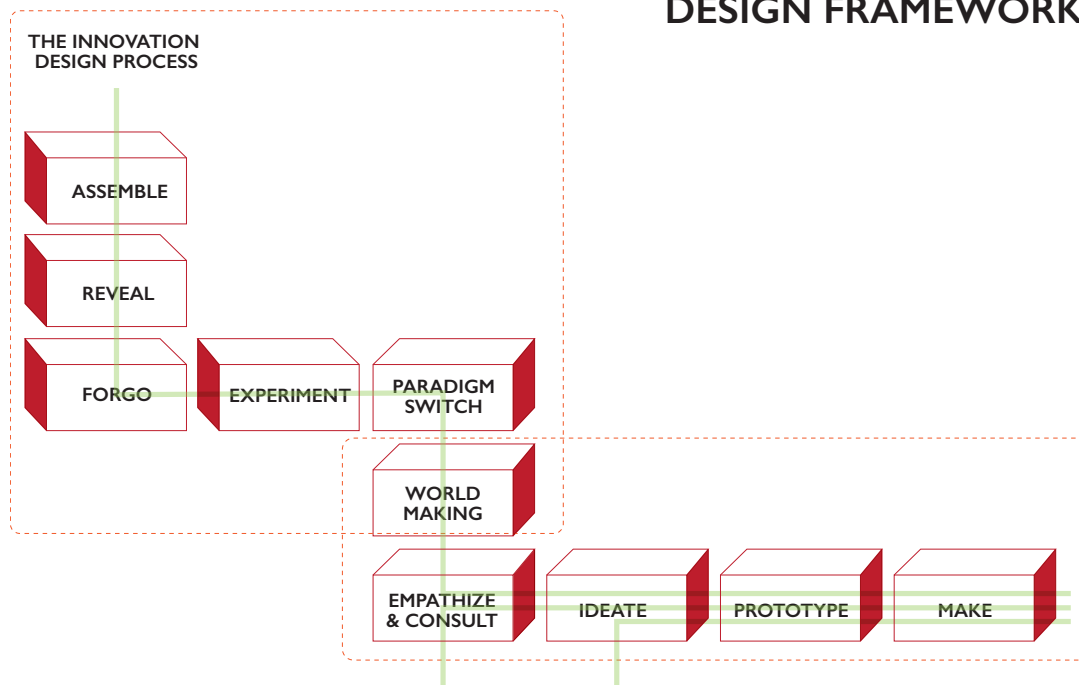
This leads to the process of experimentation. This process of experimentation is specific -- it is an exaptive (sideways) process of experimentation. Exaptive means that it is continuously shifting to new unintended consequences in an iterative fashion (wing process)/
Iterative -- repetition of sideways movement

This process looks like this:



In essence Innovation Design (these four steps) are the first steps of the larger process of design. To this we can add the stages of Responsive Design and Direct Design (plus a little more detail to the four steps of Innovation Design).

THE INNOVATION DESIGN FRAMEWORK



THE PROCESS IN DETAIL:

P H A S E O N E :

ASSEMBLE

Come together around a matter of concern. We say “matter of concern” to deliberately avoid using the term “problem.” Innovation Design does not begin by solving problems. To focus on solving problems at the beginning of the process will significantly narrow the field of possibility. Problem thinking also has a tendency to reinforce crisis thinking (that desire that speaks in terms of “we must solve this problem right now”).

“You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete” Buckminster Fuller

At this point you are putting together a preliminary team. Assemble as humans, non-humans, communities, networks, environments, histories, and concepts -- in a nut shell: everyone/ everything that is entangled in the matter of concern. Asking for non-humans to be part of the assembly is not some flaky idea. Other creatures play a significant role in shaping every part of our lives. They will be critical to reframing issues. Bring in those who are affected. Bring in those who know about diverse areas of the issue. Go out and walk the land, be a sleuth, uncover your participants, the most interesting ones won't be the obvious ones. The usual suspects working in the usual way will lead to the usual answers. Don't begin with an image in your head of who should be on your team or what exactly you are investigating, be comfortable with significant levels of ambiguity.

Key is to find a way to locate yourselves where the matter is most pressing. Don't begin by being divorced from the events at hand.

REVEAL

This step is really conjoined with the previous step. They intertwine. As you assemble you reveal and as you reveal you assemble. Begin an experimental process of research into the matter of concern. This is not simply about data. Disclosure that uncovers underlying patterns, paradigms, processes, techniques, habits, creatures, ecosystems and meta-systems. Develop a deep understanding, especially at a paradigmatic/world view level (ontologies/ ways of being alive).

Do this in the field -- probing and developing questions. Practice methods of sustained immersive engagement. Talk to everyone. Do things. Engage. Participate.

FORGO

Once you are fully situated in a matter of concern you need to pivot away from the normal patterns and habits associated with your matter of concern. This pivot happens via a strategic blocking and refusal of key aspects of the field you are exploring. This stage is critical. There are many different techniques for this (see “Exaptation” in the appendix for more details). Don't block or deny everything -- you need to take some ground with you into the seemingly groundless abyss of experimentation. Nonetheless block in a powerful manner -- when in doubt block/refuse/forgo more. Example: If you want to rethink clothing forgo the existing techniques, materials and patterns.

This step emerges iteratively from the previous step and fold back into it. As you block one part of a practice it opens you up to other parallel processes to research. Example: As you block all forms of human clothing it will lead you to look to how other creatures understand “clothing” -- rolling in mud, fur the waxes and wanes with the seasons, etc. This becomes a new research direction AND point to expand or transform the team (animal physiology experts are now needed to work on “clothing”).

Forgoing is not simply a negative stage (figuring out what to block) -- it is most importantly a stage of developing new powerful abstractions, and working definitions. When clothing move towards non-human creatures we are no longer talking about clothing (something that neatly comes on and off the body) but a practice of “augmented/mediated body-environment coupling.” How these new abstractions are developed profoundly reshapes the issue at hand and sets the stage for experimentation. Pay great attention to developing and testing new abstractions as you Forgo + Revel + Assemble.

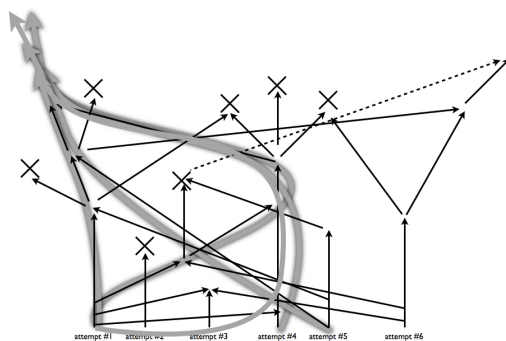
P H A S E T W O :

EXPERIMENT

Experimentation is a phase all on its own. There are many forms of experimentation. From ones that wish to prove or disprove something, or others that are testing a design.

“Most experiments don’t work most of the time. To ignore this fact is to forget what experimentation is doing. To experiment is to create, produce, refine and stabilize phenomena... But phenomena are hard to produce in any stable way. That is why i spoke of creating and not merely discovering phenomena. That is a long hard task. Or rather there are endless different tasks... perhaps the real knack is getting to know when the experiment is working. That is one reason why observation, in the philosophy of science usage of the term, plays a relatively small role in experimental science. Noting and reporting reading of dials -- Oxford philosophy’s picture of experiment -- is nothing. Another kind of observation is what counts: the uncanny ability to pick out what is odd, wrong, instructive or distorted in the antics of ones equipment. The experimented is not the “observer” of traditional philosophy of science, but rather the alert and observant person.” (Ian Hacking)

The form of experimentation we are interested in using we call Exaptive Experimentation. Please take a moment to see the appendix for more details on this term. Exaptation is a term from evolutionary biology for physiological transformations that take advantage of unintended capacities and non-adaptive components of physical features. We use a method of exaptation to flowing unintended capacities of things/practices into the new. Here blockages again play a key ongoing role. Example: if one forgos the intended purpose of a pair of jeans one will quickly find unintended capacities. Following these capacities one can redesign the jeans to become some new thing with a new purpose. This new purpose can in turn be blocked and new unintended capacities followed and used to remake the thing. This process of sideways iterative blocking, finding, remaking, using must be done long enough that something genuinely new emerges.



The Early Phases of Innovation

Exaptive experimentation is best done as a team pursuing multiple distinct paths at once. Members of the team should rotate through the sub groups and at critical moments paths should be fused, hybridized and also dropped. The diagram on the left lays out one example of this: The team is assembled, the matter of concern is abstracted and key normative practices are blocked. Sub groups are formed and exaptive experimentation begins:

While the diagram shows six sub groups at the beginning and two distinct “outcomes” these numbers are simply for the sake of illustration -- you will not know in advance how or what you will end up with.

How long does one keep going? This is the million dollar question. One is looking to crossing a threshold where “change in degree becomes change in degree” or when a “difference that will make a difference” is found. Examples of this: When a dinosaur first became a bird (see appendix), when skate boarders first realized that they where not surfers in training, when John Cage realized music was a form of silence. How long will this take? One cannot say, one really has to trust the process.

The real difficulty is noticing that you have done something different. This is no easy task (and why it is crucial to have a diverse group of collaborators -- hopefully someone notices). And if we notice it -- it usually seems to absurd (music is silence?) that we discount it out of hand. Humor and a delight in absurdity is helpful. Enjoy the discomfort of entertaining the seemingly useless, absurd, and inconsequential. The next big existential issue is that taking the new seriously will involve a significant form of betrayal. John Cage betrays music as we know it. This is no trivial thing.

In the end the experiment succeeds by not solving anything but by open up the possibility of entering a new world...

P H A S E T H R E E :

PARADIGM SWITCH

At some point in this experimentation process you will cross a threshold of qualitative transformation where change in degree becomes change in kind. This is the moment when one understands ones actions to have opened up the possibility of a new mode of being-of-a-world (this is what we mean by “paradigm”).

Paradigm is not simply a realization it is a multi-step process. You begin with your anomaly. The anomaly (your experiment) must be treated *as if* it produces a *crisis*. This is a careful process of nurturing such that it produces a crisis -- a rupture (in the existing paradigm/framework). Now one begins to figure out via a process of abstraction what your experiment means if taking as a portal into a new way of being. The object, if it is an object, is not an end in itself, nor is it a fully worked out conceptualization of a paradigm, it is simply the *portal* or doorway to a world. It is very import to keep things framed in this manner. Example: Jackson Pollack’s first drip that he recognized as a possibility of being an entirely new mode of being art was not anything fully worked out. That first drip was noticed as something odd -- a hunch -- something to follow. This is what is meant by “portal” -- you follow a hunch to see where it leads -- the hunch is not the goal. So to with a portal or door way -- you no not stand back and admire it -- you go through it. The difference between this step and experimentation is that you are now interested in stopping and looking around. You go through this door not to get to the next iteration but to become of a world. This is a phase of growth -- worldmaking.

At this point in the process your experiment needs to be analyzed and abstracted as a new world in terms of five key characteristics:

1. **Not necessarily true:** The new paradigm *does not start out as being true*, important or significant -- it is simply a difference that is treated as if it produces a significant rupture. What this means is:
2. **It must be Exemplary:** i.e. “fruitful” instructive and compelling. It offers a compelling possibility.

3. **It must be Sufficiently Unprecedented:** It is unique/novel enough for people to take notice. You need to understand what you are dealing with to get how unprecedented things might be. Here research helps (or having a diverse enough team that one recognizes this. AND more importantly one needs to protect its oddness from being normalized. You do not want your weak new something to be turned back into what everyone already understands. You need to keep your ugly ducklings from becoming just another beautiful duck!
4. **It will be open-ended with lots of problems:** The example allows lots of people to rethink their own areas of the field and make independent discoveries.
5. **It will join what were thought to be very unrelated problems:** Suddenly things that seemed to have nothing to do with each other connect and a new network evolves.

You are essentially testing and producing a fabulation -- a Borgesian document.

WORLD MAKING

Once through the portal into a new paradigm much work needs to be done to really make this new reality a stable rich "world" of novel possibilities and values. This work should be written out with enough detail that it could be enacted. Concrete drawings, diagrams, examples and techniques, tools and processes should supplement the writings. You are very much making a world. Example: Pollack has a new provisional definition of art, set of techniques, tools, materials, and concepts that allow a world to have an agency to shape outcomes (from subjectivities to objects). To get to this point one is not writing separate from experimenting, testing and evolving (this never stops). Now there is fast and close back and forth between writing and testing. Make good notes. Record everything.

EMPATHIZE & CONSULT

This process of testing is what we are calling consultation. Join and become of this emergent world. Explore it. Consult with it: What does it want? How does it work? What are its values? What are its problems? This empathy -- not what we want or think is right (we are still too tied by habits and custom to the old paradigms) but what it wants on its own terms. Participatory Action Research. Where practitioners of Design Thinking consult with individuals about their problems we as you to consult with emergent worlds...

These three parts (Paradigm Switching, Worldmaking, and Consultation) make up one unified process. It is done in steps but each step loops back through the whole process. Only move on when a powerful robust and resilient world is in place. If it is weak it will just collapse back into the known and the normative.

P H A S E F O U R :

IDEATE

Phase four is the moment of innovation. Now one pivots from making a world to populating that world. Cage begins to compose, Pollack begins to paint. Transistors are made. Now, it is not that this was not already happening -- the testing and experiment of the previous phase produced outcomes. But these while important were not good. The good emerging as the world comes into being. Having tested much and explored much we now can recognize and activate new values, aesthetics and truths. This allows innovation (the making of novel things for a novel world) to happen. Again as in the previous phases the stages (Ideate, Prototype, Make) and interwoven.

What is critical in ideation is that one “brainstorms” what the new world needs free from the assumptions of the object or outcomes that brought one into the phase of Paradigm Switching. Example: Here Pollack is a good negative example, in a certain way he did not realize the larger scope of the world that “he” helped foster. He focused on the drip (what began the his Paradigm Switching Phase), rather than on the fact that the novel world that emerged was more like: Art is action. It was Fluxus artists like Alison Knowles, and Alan Kaprow, or the Japanese Gutai movement that understood this difference (between the drip and the paradigm).

From a fully engaged perspective articulate core concepts, values and practices (knowledge). Catalog your emergent conceptual abstractions. How do they relate to practices, habits and tools? Now speculate on concrete outcomes. Don’t settle on just one. Again working as a larger team you can break into sub-teams and evolve many different possibilities (this is part of why innovation always happens in movements).

PROTOTYPE

Make simple but interesting variations. Multiply the variations. Test, and select. Cull, fuse and hybridize. Slowly evolve from interesting towards a new and emergent “good”. Put to work in your world. Use things as a way to find more possibilities (in things and for more new things). These should feedback into your articulation of the paradigm (the medium is the message).

MAKE

Now fully realized practices, habits, and tools can happen -- you make for and from this emergent new world. ECOLOGICAL ROLE OUT. “Products” can be developed.

REVIEW

THE KEY QUALITIES OF THE CREATIVE PROCESS:

- It is a collective process (need to work & network with others)
- It is not linear
- It involves some form of rupture and betrayal of the given
- It is not based primarily in ideas
- Things play a significant role
- It does not set out to solve anything

KEY VALUES:

- Becoming over being
- Novelty over permanence
- Emergence over Eureka model (something from nothing)
- Sensitive to the liberating force of life, chaos, difference and creativity over the forces of law, order, repetition, and sameness
- Joining, Following, Emerging and transforming with...
- Creation is iterative (but not linear)
- Moves sideways
- Crosses thresholds from difference in degree to difference in kind
- It utilizes non-intended capacities and betrays purpose
- It is “networked” and relational (has no single author)
- It co-evolves with an environment (not adapting)
- It is not simply a human mental capacity (“ideation” centric)
- The “outcome” cannot be known in advance (& is not the final “purpose”)
- The origin of anything need not have any purpose, nor does it directly relate to its current use
- The most interesting “traits” are NON-ADAPTIVE --they are world opening (for a world that does NOT YET EXIST!)
- Needs a space that protects novelty (THE LAB) -- keeps it away from “survival of the fittest” experiments/situations -- and keep it away from having to be “something” as long as possible (needs to iteratively betray multiple “identities”)
- Needs a PIRATE PROJECT (NEVER a pilot project (at this stage)) E.g. “we are making a wing for egg warming” -- not false but a *probe into the unknown* -- open ended -- perturbing a field -- activating emergent unknowable (in advance) potentials -- and then transforming with them...
- Experimentation

What this means:

1. We need to move away from thinking of creativity as a thing -- especially a mysterious internal property to be “unlocked”. (The genius model).
2. We need to foster creative processes. This means developing and following procedures (think of the steps in “design thinking” but for creativity). Creativity is not a willy-nilly free-for-all.
3. We feel inadequate. “I’m not creative.” Need to overcome our sense of self. Then: “why bother -- every form of this has already been invented, nothing new can be done.” This will be the beginning of any creative endeavor. Ignore. Push on. This feeling will always be there.
4. It is messy, challenges our belief in solving problems head on, and requires a lot of seemingly “useless” experimentation.
5. It is going to be messy (figuratively and literally). You need dedicated spaces.
6. It is going to take time -- which will be hard to fit into the semester format, or even in the standard class period. New models need to be developed.
7. Students will be confused, they will fail, and there will be no guarantee.
8. You will need to become a transdisciplinary networker and amateur.
9. Collaboration: all great acts of innovation and creativity happened collectively. With others. It is critical to learn and teach great collaboration skills.
10. Creativity is Creativity Leadership. We are teaching how to be comfortable leading oneself and others into discomfort and open-endedness. Play. Comfort. Seeing ethos and space. Trust the process.

SKILLS TO DEVELOP IN PREPARATION FOR CREATIVE WORK

We need new skills. Being open to sensing “differences that make a difference” require no innate talents but it does require lots of practice.

1. Develop ways to understand and move between differing frameworks, cosmologies & paradigms (learn, collect, develop the knowledge of alternative frameworks)
2. Train oneself to limit moral or factual judgements (follow practices, and ideas with an open mind). Stop the habits of being a “devil’s advocate”
3. Shift your focus from thinking about what some thing “IS” to only considering: “What can it do?” This is a key disposition to acquire to have a truly experimental approach. Once you get good at asking “what can it do?” now ask: “and what else can it do? Don’t stop at one or two options, figure out 10 or more (this is where it gets interesting). (Test, experiment, observe, multiply)
4. Put change at the heart of thinking: feel, sense, and see change (dynamics) at all scales.
5. Everything is both subject and object -- switch perspectives and see systems
6. Causality isn’t linear -- it is crazy. Avoid reducing things to essences, magic bullets, or origins (work at a systems scale)
7. Things shape us. Tools make us. Understand how this works.
8. Multiplicity and Variation. Really really integrate this into everything one does.

APPENDIX

Here are more details on Process, Emergence, Exaptation, and Paradigms.

1. PROCESS

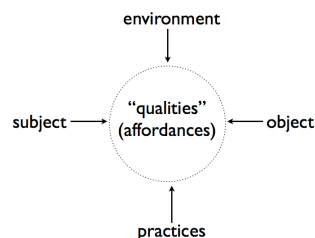
The most important thing to understand about design is that everything is a process³. While the focus of this text is creativity -- one can swap out the words creativity and design, and read this book as being focused on design.

In the context of contemporary science... “nature” does not consist of basic particulars, but fields and processes... there is no bottom level of basic particulars with intrinsic properties that upwardly determines everything else. Everything is process all the way “down” and all the way “up,” and processes are irreducibly relational -- they exist only in patterns, networks, organizations, configurations, or webs...” (Evan Thompson pp. 440-1. My italics)

Thus, the most important thing to understand about creativity is that **creativity is a PROCESS**. Contrary to this most thinkers engaged with creativity approach it as it were a *THING*. To approach creativity as a thing is to understand creativity as some thing that someone could *posses* (most often this is conceived of as a unique mental capacity). This “thing centric” model underpins so much of our current creativity landscape. It even litters our common speech patterns: when we make the claim: “She’s really creative” we are suggesting that she possesses this thing “creativity” in abundance. We talk of “creatives” and the “creative mind”. When we begin from the assumption that creativity is some form of a thing that we possess (or don’t) we naturally come to focus on skills to help individuals develop and expand the thing called creativity. Now the problem is not that these skills are not helpful or even necessary. The big mistake in this approach is that we are operating from within the wrong framework: we assume we are trying to build up a thing: “creativity” when we need to be working on developing an *effective process*. As a process creativity has discreet phases. And each of these phases has multiple practices and skills nested within it. These phases, skills and practices can be observed, understood and taught. This booklet focuses on one (of many) ways to understand this process and teach it. (Most certainly it is not the only way).

2. EMERGENCE

While this is an everyday term in common speech, it is also a technical term developed by complexity science to describe how something novel can come from a previous state of matter, the classical example is how life emerged from non living matter. This process is the key to all forms of creativity. It is how something seems to emerge from “nothing”. It is the process by which the new emerges from the old. It is when a mind emerges from a body.



WE do therefor I & a world co-emerge

In the most simple terms: it's process by which things emerge that are:

1. Greater than the sum of their parts.
2. Irreducible to their parts and “beside” their parts
3. And make their own parts.
4. The emergent phenomena is non-decomposable

Why does this matter for creativity? We so often understand making as a process of addition. We add parts together and get a whole (Think of how we assembled things with Lego as a child). One piece is added to the next in a linear fashion. And once something new is made we can take it back apart. Much of our world operates this way -- our alphabet, cars,

³ Tasks -- actions, an approach -- not ontological claims...

houses, and computers are clear examples of this. One of our most basic form of understanding relies on this: we take things apart, we break them down into their most fundamental components to figure them out. This is a **reductive** model of making (and closely connected to the Onion Model of thinking). We can reduce the final product to the parts and the process. Cars can be built this way, and atoms split this way -- it is a powerful method and it serves us well, but reduction cannot give us insight into how novelty emerges in the universe. Why? The genuinely new does not *come about* in an additive manner, or have a fundamentally reductive character: it is greater than , and irreducible to the sum of its parts. The mind is a good example of this it arises out of a brain+body+environment+habits context but is irreducible to any of these parts. To take apart the body is to lose the mind (you die). The mind cannot be “found” in any part of this complex. Emergence = a synthesis that becomes a “plus one” -- the totality and everything increased by one... (the emergence is a new level in a nested hierarchy (i.e. neurons allow emergence of mind -- now mind is both a (relational) “thing” (event/process) beside/above neurons but dependent on them).

1. That new entities (things) can emerge from components without being reducible (or explainable) to these component parts.
2. That the causal qualities of anything exceed the functional qualities of that things.
3. That these causal qualities are relational properties (they are not “in” anything, but are none-the-less real).

Let us look at the parts of emergence abstractly and set by step:

- 1.A network of inter-related components acting in a non-linear manner (our pool, water, temperature, human diver, skills, diving board, distances, mind set, body form, etc.)
- 2.Gives rise to an emergent process (the diving as an activity)
- 3.And these processes realize or instantiate emergent properties (liquidness, pleasure, buoyancy, etc.)
- 4.But the process and the properties act in a global (irreducible) manner to shape their constituent parts (left).
- 5.They shape and transform us (the bird is made by the emergent process and properties of flight).

Key Aspects of Emergence for Creativity:

1. Change relations and new qualities emerge (experimentally change relationships -- techniques)
2. Change bodies and new qualities emerge (experimentally transform bodies -- forms, habits, techniques)
3. Things open up the possibility of entering a new world (Technologies are world making -- world opening tools before they are simply things -- experiment with tools to open worlds)
4. Think of all qualities as relational -- better yet think of qualities as “AFFORDANCES” -- they afford (allow) something to happen -- (develop the habit of locating qualities in the middle of a event -- experiment from the event out)
5. Creativity always involves making new affordances -- which cannot be known in advance

What this means:

- Creativity involves worldly emergence. We can only know the new by doing, therefore ideation follows after experimentation. Ideation alone, or as “problem solving” is a dead end...
- The goal of tools (technology) is not to solve a problem but to make a new possibilities emerge. These possibilities are relational. Relational emergence = world, ecosystem.
- Creativity needs ecosystem building.

SO -- What is Creativity?

“The EMERGENT **PROCESS** that creates something *genuinely new*”

3. EXAPTATION

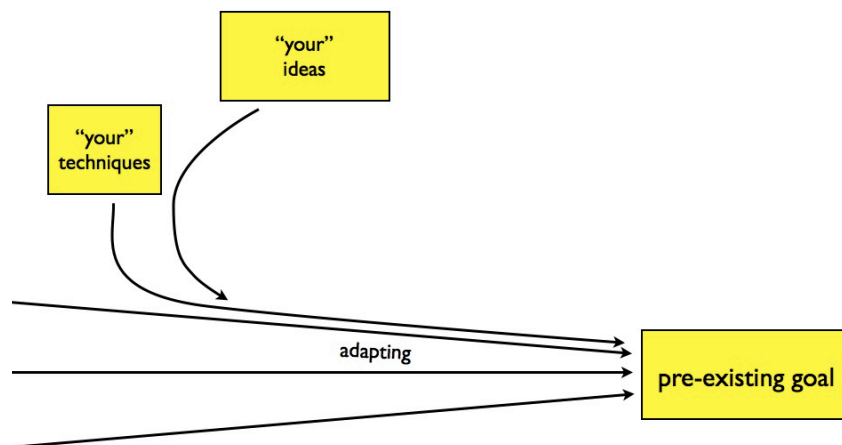
Discovery moves sideways. A story: Lets begin with a few seemingly simple questions: How and why did the wing evolve? What is the purpose of the wing? The obvious, but incorrect answer is: flight. Why? Let's start with the feather (since we will focused only on feathered wings and flight). The feather did not first emerge for flight. It came into being long before dinosaurs began to fly. It's original purpose was to sequester toxic minerals from the body. This then had the unintended capacity to keep the body warm (the feather was hollow). This (side)effect was adopted as the new purpose of the feather which led to larger and more varied feathers allowing dinosaurs to spread into new environments. Yes many many dinosaurs of all sizes and shapes were in fact feathered. This insulating hollowness had its own unintended consequences: being able to hold pigments -- colored feathers emerged. Dinosaurs became sexy -- colors, stripes, and dots started appearing, especially on the crests running down their backs and behind their legs and arms. This new purpose had the unintended effect of making some dinosaurs look bigger. As well as when attacked leaving their attacker with only a mouthful of feathers for all of their effort. And so feathers got bigger *where they could* (along the back and behind the arms and legs). This meant that many dinosaurs had what we would

recognize as wings -- not wings for flight -- but wings none the less: many long feathers arranged on the back of their limbs. What were the unintended consequences of these wings? Flight? No -- that is *still* far off in the future -- they had the wonderful unintended consequences of being able to help mother dinosaurs keep more eggs warm... And so the “wing” as a form emerges. Here is where it gets really interesting in terms of flight. Flapping this “wing” does not lead to flight but allows dinosaurs to climb trees despite their quite short forearms because of this fantastic (side)effect: rather than providing lift it pushes the dino into the tree so it does not fall over backward! Experts call this WAIR: Wing Assisted Incline Running. Now, once they are way up a tree their highly feathered bodies allow them to fall out of tree in various manners without terminal consequences. And these new forms of assisted falling lead our dino into a very novel path of qualitatively become something that could never have been predicted. These new practices along, in a new environment, along with a new body lead to a whole new world. But it does not stop -- the wing (for flight) soon becomes a useful tool for swimming, making mating calls, and ten thousand other activities that are the unintended consequences of flight. Each sideways step is an exploration of an adjacent space of unintended/ unknown potentials/effects.

One explores unintended consequences towards adjacent possibilities by not asking “what is it?” -- but by asking repeatedly “now what else can it do?” The difficult thing is that unintended consequences cannot be discovered via brainstorming, or simply thinking about the problem. Unintended consequences can only be discovered by testing the material potentials of the thing in a new context. (And then by materially following what emerges while letting go of previous purposes (the feather is no longer a poison sequestration system!)).

Here are some useful further truths that stem from this story:

6. The current purpose of something does not tell us anything about how it emerged.
7. Evolution is not opposed to revolution.
8. Radical change does not require or only utilize all at once forms of change.
9. You will never know what something “is” (remember Facebook was for a few kids at Harvard to connect). Forms have no fixed purpose, essence or end.

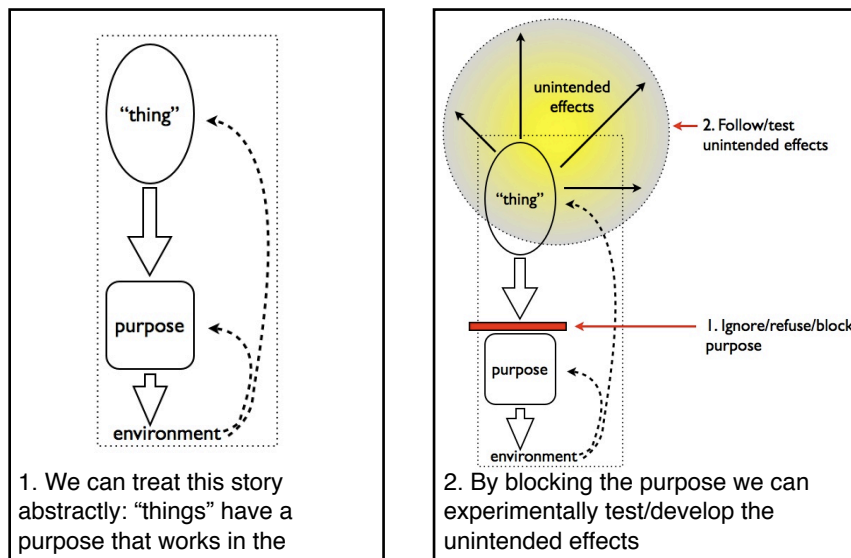


Adaptive Creativity: make it fit what is already out there: **“necessity is the mother of invention”** (convention) = CONSERVATIVE MODEL (i.e. shoe as “hammer”)

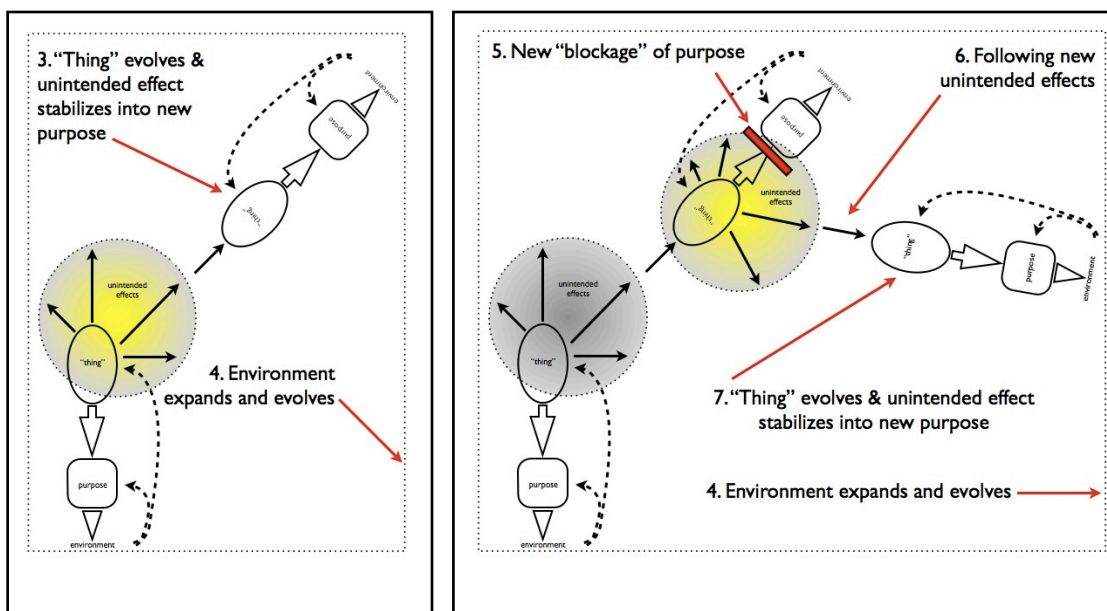
10. Necessity is *not* the mother of novel innovations. Flight do not cannot be thought of as “pre-existing goal”.
11. Not adaptation but exaptation (this is Steven Jay Gould and Elizabeth Verba’s term for the process of sideways evolution that the wing story illustrates. “Ex” meaning outside, thus: exadaptation = outside of adaptation).

Discovery moves sideways. The genuinely new does not come about directly and is unknowable at the beginning of any process. This can sound shocking for after all as designers we design the new. Doesn’t this mean that we think about a product, make a version of it, test it, refine it, and then send it out into the world where people either accept it or reject it? Let’s look at our wing story again (it’s that important): What does it mean to say discovery moves sideways? (1) It means that discovery is not a linear process. (2) You do not set out knowingly to invent what will become the radically new. And (3) things are not reducible to their purpose. Think about it -- if the wing

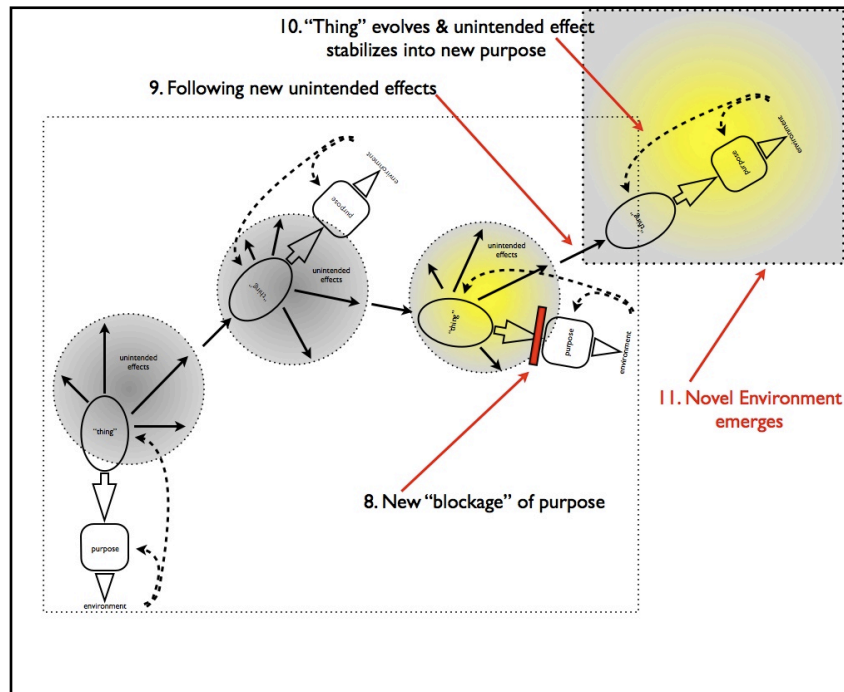
did not evolve for flight then we cannot say that flight is its “purpose” -- rather it is one of the things that wings can do right now. Let’s take a moment and look at this process more abstractly. This will allow us to see how this process could be used in any number of circumstances:



Stage One: The basic logic of “things” and how they relate to an environment.



Stage Two: We can see how these sideways movements expand the environment that the creature can operate in. Note now unintended purpose becomes “purpose”.



Stage Three: this is where things get interesting as the development of the novel feature and its meeting of an adjacent environment lead to the emergence of a novel ecosystem/environment.

- Nothing evolved for its current purpose -- BETRAYAL
- Nothing has a "purpose" (or essence) -- AGNOSTIC
- Does not solve an existing "problem" -- ANTI-UTILITARIAN
- It produces a new way of being in the world -- WORLD MAKING

4. PARADIGMS:

How do we make a novel paradigm? If that is a revolutionary paradigm in a nut shell -- Kuhn does go on to specify a number of key criteria:

0.1 The development of a novel paradigm begins with an anomaly (something odd, peculiar). This could be anything -- an accident, an unintended capacity, or a deliberate act. The "wing" that unintentionally helps you survive a fall...

It is important to remember that the anomaly is only an anomaly in relation to a given context. Often the anomaly is only anomalous in this new context but quite normal in many others (context switching is a great way to produce an anomaly).

1.0 We recognize the anomaly as an anomaly. This might sound obvious, but it is the *hardest* thing to do. Most often an anomaly will go unrecognized for years (just think how many painters must have dripped before Jackson Pollock recognized the drip as an important pathway to a novel paradigm). We cannot see the new as something new -- if we see something at all (for most often we just don't see anything) we see it as a failure, an accident, something irrelevant, dumb or even malignant. We see everything around us as something, as something that fits, as something that fits our current framework (paradigm). We need to get familiarized with mistakes, stupidity, and general oddness not because they are good in themselves but because they teach us how to see. They can teach us how to see pathways.

What are we “seeing”? What does it mean to “recognize” the anomaly? What are we recognizing it as? Sure it is an accident or simply something odd -- but that won’t get us far. *We need to learn how to see anomalies as portals and a pathways.* And just as importantly -- we should not try and see it as a very early version of the final product of our creativity -- it is not a “thing”. Why? This will stop transformation in its tracks. Change becomes reduced to refinement. It is simply something that leads us away from our existing framework. We need to follow this. Turning it into an end (what our normal habits help us do really well) is the opposite of what is needed. We need to stop being leaders and become followers...

2.0 The recognized anomaly produces a crisis. The anomaly has to be nurtured and developed such that it produces a crisis -- a rupture. It is important to note that at this point the paradigm that is developing from this anomaly has five key characteristics:

1. **Not necessarily true:** The new paradigm *does not start out as being true.*
2. **It must be Exemplary:** i.e. “fruitful” instructive and compelling example. It offers a compelling analogy (“just like that”). It is a model to emulate.
3. **It must be Sufficiently Unprecedented:** It is unique/novel enough for people to take notice. You need to understand what you are dealing with to get how unprecedented things might be.
4. **It will be open-ended with lots of problems:** The example allows lots of people to rethink their own areas of the field and make independent discoveries.
5. **It will join what were thought to be very unrelated problems:** Suddenly things that seemed to have nothing to do with each other connect and a new network evolves.

CREATIVITY IS PARADIGMATIC

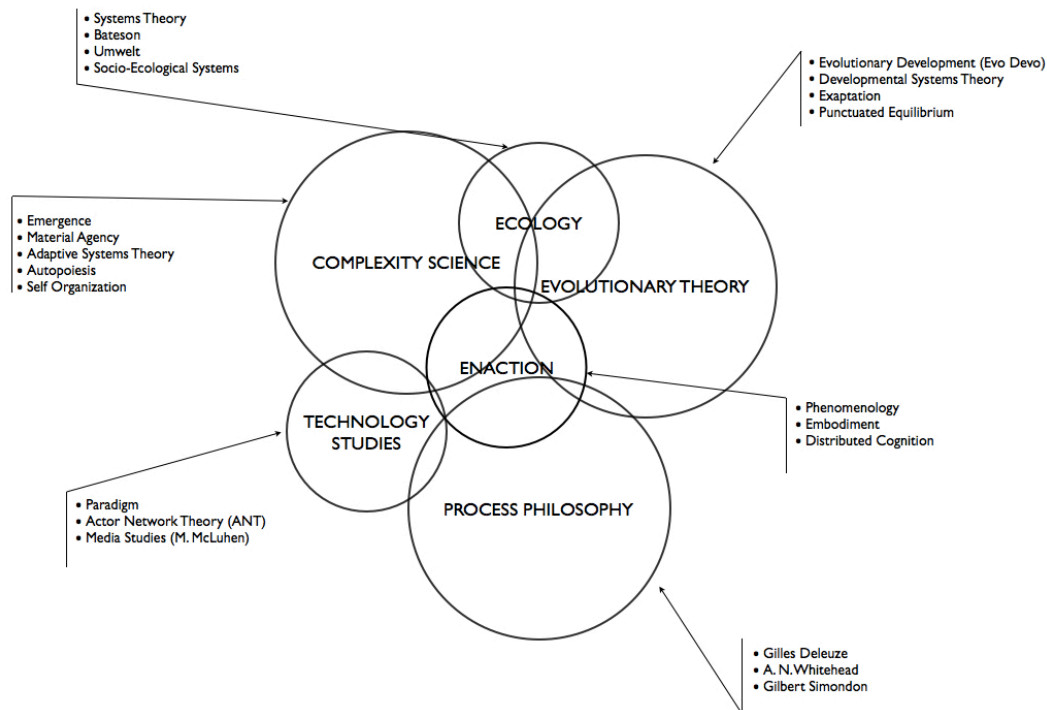
Creativity = The “MAKING” of something *really* new AND the *realization* that you have not just made something novel, but an entirely new way of being in the world (*PARADIGM*)

- Odd (wrong, does not fit, stupid, etc.)
- Can be an accident
- Can be really bad (quality)
- Can be trivial (seemingly)

Note: these are all relational ideas (and they relate to the standards of a field, which they “oppose”)

AN ANNOTATED BIBLIOGRAPHY

This work draws on a number of overlapping fields (see diagram above). The bibliography directs the reader to key books as well as some books and movies that are useful in teaching. It is by no means an exhaustive biography, but the books listed meet the criteria of being critical, accessible, and broad in scope.



Books

Daniel Coe. *Breaking the Maya Code*. This is a very compelling history of the process of rupturing a contemporary paradigm within the field of Mayan anthropology and Linguistics. There is a documentary with the same name that is also good. It is just not quite as thorough. It is an excellent case study of how paradigms change.

Gilles Deleuze. *Postscript on Control Societies*. This is Deleuze's short meditation on how the present has mutated into new forms given rise to different questions of power, control and individuality. Critical reading.

Gilles Deleuze & Felix Guattari. [*A Thousand Plateaus*](#). Perhaps the greatest text ever written on creation. Brilliant, dense, and infinitely provocative.

Michel Foucault. *Governmentality*. *Society Must be Defended*. The first is an essay and the second is a series of lectures that he gave, both cover his philosophical history of the present.

J. J. Gibson. *The Ecological Approach to Visual Perception*. Gibson develops the idea of an "affordance". Critical to understanding how we see as part of an environment.

Martin Heidegger. *Bremen and Freiburg Lectures*. This book contains Heidegger's key set of post WWII lectures on things, positionality, and technology in their original form as a set of joined lectures (which Heidegger titles *Insight into that which is*). The Thing is a key lecture. In addition to this set of lectures, *Building Dwelling Thinking* is key (we could alternatively translate this as *Making Living Thinking* -- which while less accurate get at the conceptual ambitions of this key work).

Thomas Kuhn. *The Structure of Scientific Revolutions*. This is the classical introduction to the logic of a Paradigm and revolutionary change. The anniversary addition has an exceptional introduction by Ian Hacking.

Bruno Latour. *An Inquiry into Modes of Existence*.

Marshall McLuhan. *The Medium is the Message*. Essential introduction to McLuhan's ideas about media. Short and brilliant. Digging deeper into his work is very rewarding.

Donella Meadows. *Thinking in Systems*. This is an exceptionally clear and direct *pragmatic* introduction to systems thinking. Good examples and exercises.

Jeffrey Nealon. *Foucault Beyond Foucault*. An application of Foucault's ideas to the question of *What is the present?* Short, precise and readable.

Alva Noe. *Action in Perception*.

Susan Oyama. *The Ontogeny of Information: Developmental Systems and Evolution*.

Ilya Prigogine & Isabelle Stengers. *Order Out of Chaos*. A classical text by the scientist (Prigogine) and the philosopher (Stengers) on complexity. A good introduction to self organization and its philosophical implications. Stengers went on to write a number of critical books on creation (*Thinking with Whitehead*, and *Cosmopolitiques*) and social action (*Capitalist Sorcery*).

Evan Thompson. *Mind in Life*. An exceptional book that covers (1) how we emerge via situated actions (enaction), (2) Emergence, and (3) a process view of reality. I have found it an astonishing font of ideas.

Jakob von Uexkull. *A Foray into the World of Animals and Humans*. Von Uexkull develops the idea of *umwelt* -- the environment individual coupling.

Albert N. Whitehead. *The Adventure of Ideas*. Whitehead coins the term creativity in the first decades of the twentieth century. This text covers his later thinking on the topic. Quite brilliant.

10 PRAGMATIC RULES FOR CHANGE

1. Welcome the whatever. Change begins with this reality. You cannot start where you want -- there is no clean slate. Begin where you are now -- with all of its constraints, baggage and messiness. Radical change needs a thick messy world underfoot (and *not* the illusion of a clean start or an immaterial realm of pure ideas). Just change your approach -- *know the present experimentally -- what does this mean?* Well, as Bruce Mau likes to say, quoting John Cage, -- *Begin Anywhere*

2. Shake your ass and your mind will follow -- new possibilities come from *doing* things that lead you astray from your habits, comfortable ideas and sense of belonging. Going the other way -- believing "change your mind and your ass will follow" means that you have to figure everything out in advance. That is quite stifling and leads you to do what is well know. Remember: change -- it does not begin in your head but in your body -- in doing

3. Develop new habits. Meaning making is habit making. Change your habits, routines, work environment, change how you move and you will change how you think. Change your environment. Build your own furniture. Tape one arm to your leg and go for a walk...

4. Habits are not the enemy. The problem is sticking to the wrong habits. Habits are the basis of culture, meaning, sociality and much else. We need them -- we are them. While you can change your habits, you cannot get rid of habits -- they are as much a part of us as our bones. So just get to work on their experimental transformation

5. Emotion is more basic than thinking. Affect precedes and exceeds information. Ideas are very complex achievements, and long before you have one you will be *moved* by something -- you will feel something. Perplexing sensations. Affect crosses into "brute matter" -- the world of life, including non-organic life is responsive. The new begins here in sensing differences that make a difference, not in the comfort of brainstorming

6. Resist the present. Richard Foreman says this is his goal as an artist. It is a useful rule to keep in mind if you are interested in any form of change. To resist, or be different than the present means is that you are going to have to know what is really going on. Develop multiple histories of the present

7. The new will not be understandable when it first appears. We never recognize the new when it first appears -- how could we? -- recognition is always of *known* things (it involves a comparison for starters). If something is genuinely new there is simply nothing similar to compare it to. This means that at first we miss recognize anything new. Which really means that we *recognize the new as a poor version of what we already know*. This is all the stuff that get called crap, stupid, disastrous, etc. during an experiment (Penicillin was a dirty dish before it was the most important discovery of modern medicine). The new will make no sense. We first see the new as a MISTAKE. Thus making something new involves *caring for mistakes* as clues to new pathways. The new will be non-cognitive and non-conceptual when it first emerges (this is why it can't be in someones head). Which leads to this wonderful paradox:

8. Only "dumb" people are capable of doing something new, and only "smart" people can recognize that they have done something new. You need a special kind of skill to appreciate things that seem terrible, useless and outside of the norms. You gotta become both dumb and smart all at once or some smart-ass will run with your innovations

9. The new will make us. Marshall McLuhan, the great historian of technology notes how the historical cultural shift from the spoken word to the written word transformed how we think, act, and feel.

"The dominant organ of sensory and social orientation in pre-alphabet societies was the ear -- "hearing was believing." The phonetic alphabet forced the magic world of the ear to yield to the neutral world of the eye... The alphabet is... fragmented bits... that have no semantic meaning in themselves, and which must be strung together in a line... Its use fostered and encouraged the habit of perceiving all environment in visual and spatial terms -- particularly in terms of a space and of a time that are uniform, c,o,n,t,i,n,u,o,u,s and c-o-n-n-e-c-t-e-d."

Everything we make has similar effects on us. We are not separate from the change. "We" do not remain unchanged -- we are the outcome of change (that means what we feel, sense, believe and desire)

10. Begin by not being alone

- Work Collectively
- Work with a diverse team -- see things, processes and non-humans as a fundamental part of this team
- Work in the world, at sites thick with entangled diversity
- Love discourse, sharing and experimenting
- Laugh and make copious errors
- Follow the active processes of matter
- Things will not emerge all at once but sequentially over a long period of following
- Let the meaning emerge from use and evolving relations
- Allow yourself to transform -- co-emerge with what you do