The Hot & Cold of Right & Wrong:

Metaphors & Inventions toward a Thermodynamic Sense of Ethics

About this Document

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Synopsis

The essay traces my personal search for an ethical framework in the regions past religion, mysticism, and rationalism. I describe my understanding and interpretation of complexity theory principles, and speculate on their application as both metaphorical and literal agents in the search for a human-dimensioned ethics fit for the eve of emergent planetary intelligence.

Key words

Heat. Cold. Ethics. Metaphors. Complexity theory. Self-organisation. Fractals. Emergence. Dualism. Federal Transport Policy. Fatherhood. Limits of perception. Vibes. Optimism.

Right & Wrong: the sacred obsession

This paper is fuelled by my passion for ethics. Here I am burning a log of passion: converting the latent heat of my soul into meme-shaped words, warmed beside a fire that both illumines and shadows the shape of my ethical being. I write from cellular memory. I write from a tortured relationship with the Christian God of popular post-war American conception. To be precise, 1960: the year in which my loving parents began to bathe me in the waters of virtuous living.

A firmness now: I believe there is a right and wrong to every matter that comes before me. And equally, I have so many questions about right and wrong that attempting to act with total moral awareness becomes paralysing. Life is about motion and interplay. To be paralysed—stationary, declining interaction—is to be dead. So there is my paradox: to live without virtue is wrong, and yet to achieve perfect virtue I find myself disengaging from the restless grey-toned flow of being, which is also wrong.

By the time I was a young adult, my rejection of the Christian God was complete: I had decided that the Old Man in the Sky (Armstrong 1993) was a limited device for teaching people how to behave well together, and Christianity itself was a surprisingly narrow practice whose application often appeared to exclude, denigrate, or vilify alternative ethical strategies. As I became aware of other religious/belief systems, I increasingly felt that Christian ethics were far from the complete, foundational reference that my parents believed them to be. Christianity began to fall into place as just one system amongst many possibilities.

An intolerance for difference was an ironic legacy of my Christian upbringing. I often slipped into "preacher" mode, sharing The Message. But to preach, I needed a platform…I was hungry for new ideas to fill Sartre's "god-shaped hole" inside me.

The chops are getting cold and the beer is warm

As new ethical and scientific concepts became familiar, I began to preach fragments of understanding to my friends. "Existence is experienced as a dynamic, yet stable entanglement of energies." "To continue living in an unpredictable environment is a challenge." "To be alive is good." "Ethics helps us see the difference between short-term survival tactics and long-term thrival[1] strategies." "The social dynamics of humans can be better understood through the lens of complexity than religion." Etc.

I became enthusiastic. At the barbie people I hardly knew peered quizzically over their beer while I rabbited on: "Life is a complex system. We know that when energy is added to a complex system, it must convert that energy to a higher level of complexity. So this explains the vector of life, of evolution. It fixes our place and purpose in the world. We are built to transform energy into higher states. Our fantastically nuanced investigation of 'spirituality' is merely an emergent vector of complexification. We're a substrate that supports a higher dimension, perhaps the memetic[2], which is capable of absorbing enormous quantities of lower-dimensioned energies. Don't you see? The sun coaxes forth bacteria, they form a layer that supports plants, which in turn support animals–like us—and thus we must be supporting something too. That's our job! Life wants us to do our job . . . between complexity and thermodynamics, we can derive a fundamental gauge of right and wrong!" and so on . . . the evangelist in action.

Sigh. If a meaningful, ethical life could be earned through a bit of dinner party cleverness, I would surely be a well-fed saint by now. But the reality is that I am bushwhacked every day by my own failure to behave according to the ethics I have devised.

Now, I have begun an inward practice. After all, if this is a holographic universe, I can change the world by changing myself. While I'm busy making my internal universe more healthy, I must be making the external universe more healthy.

Gentle reader, I have another confession. This paper is prompted by an urgency spinning from the great wheel of life: I am expecting to be a father in a few short weeks. How will I discuss ethics with my child? How will I live those ethics as an example? While I listen in despair to the troubles of the world headlined by the miserable corporate media, the focus of my attention presses closer to the heart and hearth.

Following are my notes to date on the connection between complexity and ethics, using hot and cold to sort out right from wrong. I write with a loose usage of the plural pronoun: I'm talking as much about my own internal society as I am about the external one. It's a holographic thing.

Complexity theory offers new metaphors

Is complexity theory a metaphorical tool for explaining something in the "real" world? Or is it a set of principles by which "actual" objects relate? Is it important to distinguish between a metaphoric al landscape and a literal one? If the map is not the territory, and the map is all we ever experience, isn't the map more important?

Metaphors are tongs for grasping the crucible of mystery

We use metaphors constantly. Metaphors are probably the fundamental building mechanism for enlarging the domain of perception. Metaphors are central to our existence: in fact, a strong case can be made that a metaphorical grasp on reality is all we ever have … the slippery "actuality" of things is so ephemeral and quantumly indeterminate as to be effectively meaningless. (circa Chalmers)

We think in metaphor (Lakoff). Metaphors are magnificently powerful:

> The metaphor is perhaps one of man's most fruitful potentialities. Its efficacy verges on magic, and it seems a tool for creation which God forgot inside one of His creatures when He made him. (Ortega y Gasset)

Metaphors are not just of the human realm…they find expression in all life: "Metaphor is right at the bottom of [all living phenomena] being alive" (Bateson)

Metaphors appear to be a good way to get a handle on the unknown, useful for grasping chunks of mystery and dragging them into more familiar territory. But does this metaphoric action yield "usefully accurate" results? Perhaps peeling back the unknown via metaphors invites a compounding of errors: partial truths stacked on top of partial truths. An example of how this happens is illustrated by Steven Talbot's (2003) critique of the well-known metaphor: "the heart is like a pump."

On the other hand, applying metaphor to the (somewhat) unknown is actually the only tool of discovery we have: the truly alien is actually invisible (undetectable).

To me, the cumulative dynamic of metaphor is similar to that of the operation of complex systems. We begin life with very simple "truths", apply metaphor to extend this knowledge, and continually compound the "known" outward in a fit-misfit experimentation (creating feedback loops) to arrive at the shape we're in today. The conclusions we reach as adults (all so incredibly different) recalls the sensitivity to initial conditions we see in complex systems.

Complexity metaphors in the service of the social

By using complexity metaphors (contra religious, political, or economic metaphors) can we gain new insights into the experience of living socially? Can we use complexity to derive improved customs of organisation? Does complexity help illuminate the purpose of my life? Of life in general?

I believe in many cases the answer is yes, and would like to work through some of the central metaphors of complexity theory to illustrate their potential application.

However, it is important at the start to acknowledge the incomplete nature of knowing that complexity implies. In other words, all that I can say or propose is limited to the extent that the causal relations between object and subject are inextricably bound together in a way that defeats linear understanding. It's all fuzzy. Everything. (Dimitrov) So while I have a simple cause-effect intention for highlighting the ethical dimensions of complexity theory, fuzziness reigns supreme.

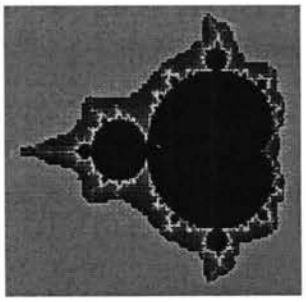
Fractals and Holodigms

Fractals exhibit self-similarity at scale, meaning whatever bit of a fractal system you isolate, there are distinct characteristics in that bit that are reflected in the whole. More simply, "the whole is in every part".



A familiar example of self-similarity is the coastline of England observation: from a satellite, the coastline has a certain rhythm of irregularity (periods of smooth and intricate outline); as we zoom in to bird's eye, then beachcomber, then microscope, the boundary between water and land retains the same degree of smoothness and raggedness.

Some of the most beautiful representations of self-similarity come from the graphic representations of fractal geometry, popularised by mathematician Benoit Mandlebrot[3]. These images, metaphorically, help me to understand the notion that our living reality blossoms in the infinitely complex, and infinitely patterned boundary layer between absolutes. The "living" action is at the dynamic, yet stable, boundary layer between "dead" states of absolutes.



This principle of self-similarity is in effect all around us, and in all living processes (Capra, 2003). It is also one of the defining characteristics of complex systems (Dimitrov).

Fractality implies metaphor: if we can observe and understand some aspect of a system at a familiar level, there is the opportunity to carefully extend this attribution to higher and lower scales, thus generating a model for what might be happening outside the limitations of our immediate bandwidth of observation.

Because the fractal continuum of complexity crosses the boundaries of scale, a new way of seeing evolutionary process is revealed. Lynn Margulis proposes that bi-directional negotiation across species boundaries is the primary mechanism of evolution, calling it symbiogenesis[4]. Michael Pollan sketches a delightful case for plants pushing the evolution of animals in "The Botany of Desire". And it is impossible to ignore Dawkins' proposition of the selfish gene providing the ultimate example of co-operative competition.

Symbiotic causality leads toward a certain humility regarding my own agency in matters of behaviour. Instead of seeing myself as a unitary consciousness entirely free to exercise my will in any direction, I find instead that there are cellular forces pushing me toward certain choices and cosmic tendencies pulling me toward others. I

am largely "unconscious" of these forces. Any productive practice of ethics would seek to enhance an awareness of these forces while encouraging a conscious, cooperative engagement with them.

My society of mind

The capacity to see self-similarity at scale also assists me in shaping my response to world events. I am a cultural refugee from the United States, from which I fled during the first Gulf War (1991) in visceral disgust over the appallingly compromised ethics that my home country practiced on the world stage. As a good "evangelical preacher" I had been obsessed with devising a better society, essentially telling other people what is best for them. My home country wasn't listening, so I left.

Years later, I was getting out of bed one morning and paused for a moment to really listen closely to the racket going on inside my head. Different voices, like little lobby groups, were in full debate. One "faction" was lobbying for an attitude of optimism toward the day's challenges, another was preoccupied with criticism of a friend's conversation the night before; some voices were calming and honest while others were hysterical or sneaky . . . it sounded like a typical day of debate at the United Nations!

Knowing perfectly well that my day would—largely—unfold according to the attitude with which I approached it, I began to ask how it was that I negotiated between the disjoined factions in my mind. In that moment a certain clarity was revealed: I actually had no good idea how or why these factional identities negotiated control over my attitude on a given day. Before my feet even hit the floor, much of the day's "coloratura" had already been negotiated by a pack of virtual strangers inside my head.

"How is it," I asked myself, "that I can pretend to have anything credible to contribute to social process in the big world when I have no idea how the small-world politics of my own mind work?"

Marvin Minsky has written about these complex relationships from a neuro-scientific and philosophical perspective. He proposes imagining our brains as collections of agents, tribes of functionaries, specialists, and generalists who operate together very similarly to the way groups of humans interact.

Through the lens of self-similarity, I gained a very personal appreciation of social complexity. To evolve past war in the world of people, I needed to understand how to evolve past the wars that rage inside myself.

Autopoeisis / Self-organisation

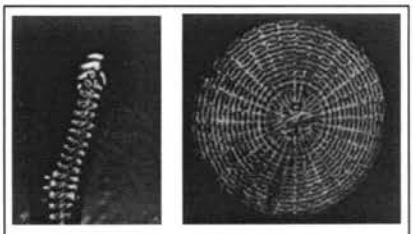
Complex systems are unique in that they appear to arise and organise of their own accord in patterns that are both dynamic and yet stable. These systems are dynamic because they evolve, or change over time (duration), yet they maintain a pattern of coherence that identifies them as a bounded concept.

If there is an assumption that some matter is "inert" or non-living, what constitutes the boundary with living matter? The characteristic of self-organisation is central to the question of defining life as well as giving clues as to how life might arise.

Cymatics

Curiosity around these questions led me to discover the work of Hans Jenny, the Austrian physician and researcher who furthered the esoteric observations of Ernst Chladni (1756-1827) into the effect of sound vibrations on inert matter. Jenny persuasively demonstrated the capacity for matter to arrange itself into highly coherent patterns. These patterns often move around and reorganize themselves in response to tiny variations in external stimuli. He called the study of these phenomena cymatics[5].

Jenny's work suggests, at the very least, that inert matter has the capacity to form physical structures whose arrangement is closely mimicked by living organisms. Metaphorically, cymatics reveals a relationship between matter as a receptive medium and an "anonymous" external force (in this case, sound vibration). The obvious suggestion is that matter can be coaxed (excited) toward a living state. Life (complexity) simply happens: it arises from "inert" matter under certain energetic conditions. How does this help us wrestle with issues of good and bad?



Photographs of sand self-organising on a vibrating steel plate.

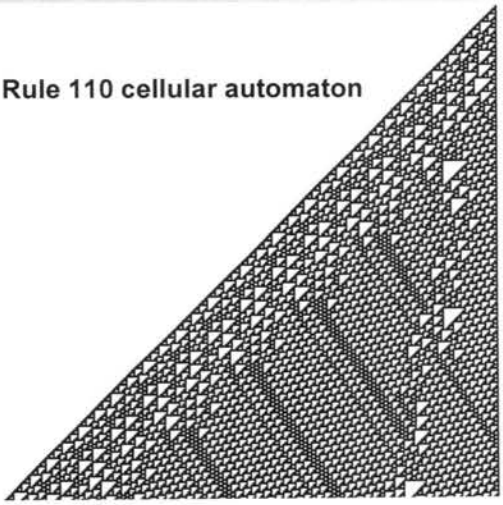
There is a relief in thinking that life arises of its own accord in this universe. It takes the liability and responsibility out of limited human minds and returns it to the ineffable sea of existence. Self-organisation is a property that suffuses all complex interactions, and it has no need of our theorising to establish itself. This humbling realisation puts the onus of ethics back within our personal (social) domains with greater clarity:

> Can we ever imagine how incredibly great must be the magnitude of the self-organizing drive produced by the existential dynamics in simultaneity of their constant interactions at all scales of existence? This drive must act as a gigantic self-propelling engine feeding with energy the whole universe in its astonishing variety of ever-moving phenomena and processes.
>
> We recognize the work of this engine in the blossom of a flower as well as in the waves of the ocean, in the pulsation of a simple cell as well as in the beats of our hearts, in the rhythm of our breathing as well as in the cycles of the solar activity. (Dimitrov, 2004)

Cellular automata

Cellular automata are the favoured tool from another line of investigation into self-organisation. First proposed by physicist and polymath John von Neumann[6], the aim of cellular automata is to provide a modelling environment where complex behaviours can be observed within a minimal context. And yet, when this simple system is iterated thousands of times, astonishingly complex patterns emerge, hold their coherence, and move through the graph with a sort of "intention" that cannot be predicted from the simple ruleset that establishes the experiment.

current pattern	111	110	101	100	011	010	001	000
new state	0	1	1	0	1	1	1	0



A simple x,y grid is populated with an initial condition (cells randomly coloured black or white) on the first row (y=1). A rule for subsequent conditions (y=2,n) is applied, eg, "If a cell is currently white, and both of its neighbours are black, then on the subsequent row it will also turn black. If only one, or none, of the white cell's neighbours are black, it will remain white."

Cellular automata were considered mere curiosities in von Neumann's time, but then Stephen Wolfram picked them up in the early 80's, systemised them, and proposed that they help to reveal the foundation of complexity in nature (A New Kind of Science, 2002).

While Wolfram chants tirelessly about the significance of complex forms of order that arise from extremely simple systems, many people still hold a special regard for the "mysteries" of consciousness, self-awareness, and will. How can black and white squares blinking on a computer screen help us understand the will of god? Perhaps we can help bring this question into focus by considering another complexity characteristic, emergence[7].

Emergence

Emergence is getting a lot of press these days (e.g., Johnson, 2002; Capra, 2003) and as could be expected with a new concept, it is often applied with more enthusiasm than rigour. Essentially, emergence is about the capacity of complex systems to generate "higher" orders of organisation based on the interactions of simple agents. Ant colonies provide a good example.

As humans, we cannot imagine that an individual ant, its brain constituted of miniscule bundle of neurons, possesses the capacity for self-awareness, let alone sophisticated notions of group dynamics. And yet the elegant balance that a colony achieves in relation to its environment is obvious to even casual observers. How do these simple individuals manage to agree on huge social decisions such as the best spot for a nest, the best place to bury dead and rear young, or the most efficient pathways to their food? The details of the answer are far from clear, but the fact that this optimisation occurs is an illustration of emergent intelligence.

While the benefits (and detriments) of emergent intelligence are relevant to individual agents, these agents in themselves would be quite unable to form a theory that specifies and predicts the nature of that emergence. In other words, emergent patterns seem to be established at a scale that exceeds the cognitive capacity of the underlying agents.

I feel this casts a cautionary shadow on many of our attempts to imagine the details of a better society. For example, Stan Rowe's plea for us to adopt an "earth-centric" ethics appears quite unattainable: like ants, we simply do not have the capacity to consciously circumscribe the conditions of that imagined ideal. However, as ants, we do have the capacity to improve our own performance … and the combined effect of our individual excellence should lead to beneficial emergence.

Within my society of mind, for example, I have the capacity to make small, meaningful decisions in every moment. These little decisions, simple in themselves, provide the complex brew to power emergent order at a scale that I cannot imagine directly. Indeed, emergence seems to be happening all the time. My capacity for disciplined concentration appears to be the only limiting factor in amplifying the resonant feedback loops upon which emergence depends. Within this notion of discipline, I wonder about the nature of struggle.

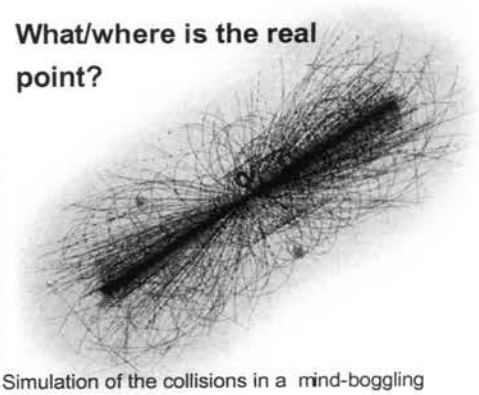
Turtles all the way down

What are we doing for instance, when we square off in the "hierarchical vs egalitarian society" debate? I asked myself this question while reading a recent essay by Mary Clark.

Clark, the firebrand grand dame of science education, discusses her future visions for humanity by objecting to the large, patri/heirarchical structures that characterise Western cultures. In her paper, Clark suggests that the "open dialogic" forms of social organisation were the norm in our matriarchal, egalitarian past, and that is where we now need to return. However, I would defend hierarchies as valid social formations within a given context.

While the ambitions of the current elites are insanely myopic, I would suggest that the hierarchical framework itself might actually be the most efficient way to organise ourselves out of the mess.

What/where is the real point?



Simulation of the collisions in a mind-boggling machine (LHC) whose mission is to reveal the Higgs Boson, a particle so mysterious (yet essential?) that it is referred to as the "God particle". My irreverent intuition is that the Higgs will turn out to be a very curious turtle indeed . . . perched as it is on, yes, yet another turtle. Perhaps called "God's Bitsons"?

Here's one of my favourite illustrations of the power of hierarchies:

In the early days of WWII, the American military realised that they had only a fraction of the ships needed to supply their massive expeditionary forces across Europe and the Pacific. They needed an entire ship-building infrastructure which simply did not exist. An extraordinary solution had to be found or else America was doomed.

On a specific day, without warning, roadblocks were set up all around San Francisco and the stream of surprised commuters found armed soldiers filtering through their midst, picking out healthy men, smart women, and other useful sorts. These people were loaded into military transports, taken to Marinships[8] in Sausalito and told that they were going to create the largest ship building facility in the world. Within 3 months that's exactly what they had done.

And on the day that the first of the "Liberty Ships" hit the water, that group of indignant, surprised people whose personal freedoms had been so rudely circumscribed, stood as a group with tears of pride in their eyes at what they had accomplished.



Acting for the common good in wartime: is this the only context in which we can agree to improve our social behaviour?

Can you imagine if armed LandCare marshals were empowered to scour Sydney's Martin Place at lunchtime? Pluck a few hundred of those intelligent, creative people out of their upwardly-mobile-phone worlds; drop them into a security zone at the AMP tower, and say: "Okay, you have 1 year and a virtually unlimited budget. We want you to create a social campaign that will deliver a sustainable solution to salination in the Murray-Darling. Get moving. Our lives depend on you."

It is completely obvious that these heavy-handed, top-down hierarchical strategies are limited. And yet the "central command" model is astonishingly effective in specific situations.

Clark is ultimately aimed in the same direction as the (male) elites she seeks to castigate. She wants her genes to survive, just as they do. In her closing notes, she hopes for:

> ...the re-instatement of Darwin's own, more tempered understanding of the nature of adaptive evolutionary processes, where survival depends primarily on "fitting-in" better, rather than outcompeting, at all levels of inter-organismic relationships. Future rhetoric, let us hope, will soon reflect this metaphoric model of the universe, replacing today's rhetoric of patriarchal dominance and control.

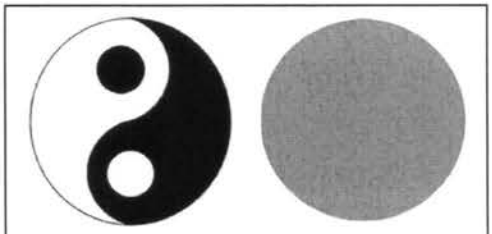
The deep problem is that by positioning decentralisation (matriarchy) as an antidote, as a "replacement", to centralisation (patriarchy), Clark—at the very least—obscures the underlying opportunity to search for the rhythmic interplay between each system, and locate an emergent, third position.

Black + White = complex grey?

The metaphor of emergence gives us a clean pathway to move past polarised debate, or dualistic thinking, without forcing a resolution. Perhaps dualisms[9] are even in some way essential? I find it difficult to locate any aspect of existence that is not differentiated. My brain/being is not built to understand/compute/embody anything more sublime than (fundamentally) black/white distinctions.

For example, the Taiji[10], symbol of the Tao, reminds us of the infinitely recursive nature of being: its swirling black and white fields surround each other. Small dots of opposition (seeds of the "other") appear within each

field. This is a deeply fractal symbol, and meditation on it reveals the transcendental "oneness" of all existence. But the Tao is not represented by a single grey dot: this would obscure its meaning from our minds.



The true Tao is the Tao that cannot be seen?

Much of our debate over ethical issues is expressed as opposition to an "other," fuelling a duelling for authority, a struggling for a singular point[11]. We can use complexity metaphors to see more clearly what is actually happening of significance in these debates: energetic interplay. Perhaps it is the restless shifting tension between two poles that creates a sort of energetic matrix in which emergence arises (like a voltage potential inflating a capacitive field). Essentially, the motion of struggle and debate may be fundamental to our construction: we cannot transcend struggle itself, but we can seek to move it to a higher order of complexity. Indeed, this resolution of dualisms through emergence is happening all the time. A case in point is the fascinating account of Psychology's progress past modernism toward "mutualism" (Pickering).

And looking more closely, this shifting of lower energies to higher domains appears to be more than an option: it may be the central (ethical?) obligation in the contract we hold with life.

To live is to complexify: energy conversion and the 2nd Law

If we are obligated to shift energy to higher states, we need to first address the problem of entropy[12]. Is everything in the universe headed for the cold realm of chaos?

The Second Law of Thermodynamics[13] says that order tends toward disorder, and that process is not reversed in the universe. So the increasing complexity of living systems, driven forward by some evolutionary urge, presents a puzzling, apparently contradictory movement to this Law. The Second Law stands apart from the First and Third Laws in that it deals with a linear notion of time. Life, as we understand it, is also enmeshed with the vector of time.

Ilya Prigogine's study of elemental chemical reactions established how the peculiar dynamics of complex (living) systems can be defined by their ability to absorb energy in one form and convert it to higher orders of organisation: "Prigogine's work…may be providing a theoretical framework for understanding the ultimate example of 'self-catalysis" - the origin of life. Only the unwary or uninformed would fall prey to the invalid argument that the Second Law of Thermodynamics contradicts biological evolution." (Albert)

Prigogine, along with Maturana, Varela and others, provide us with an optimistic view of life based on the "objective" disciplines of science. Far from being trapped in the slow entropic unwinding of the universe, we humans, as members of the class "living systems", are blessed with the capacity to shift energy into higher states of organisation. To be alive, I must conform to: Energy in -> complexity out. The *urge* toward this equation is an *attractor* that keeps me in a state of living vorticity.

Isn't this a tempting point at which to establish a sense of right and wrong? Dancing along the boundary between hot and cold, I find the deepest song in my awareness leads me to continuously ponder: "Am I helping to increase the complexity of existence, or am I carelessly allowing my energy drift toward dark stillness?"

Right & Wrong: it's a vibe thing

In my investigation, I have found one clear message at the heart of every ethical framework: right and wrong are not defined by a code; they are sensed by the whole complex living being. Use good judgement, listen for the quiet voice of the universe to speak, or tune in to an ineffable spirit of love. These mechanisms are, in my view, identical to the process of detecting emergence in a complex system.

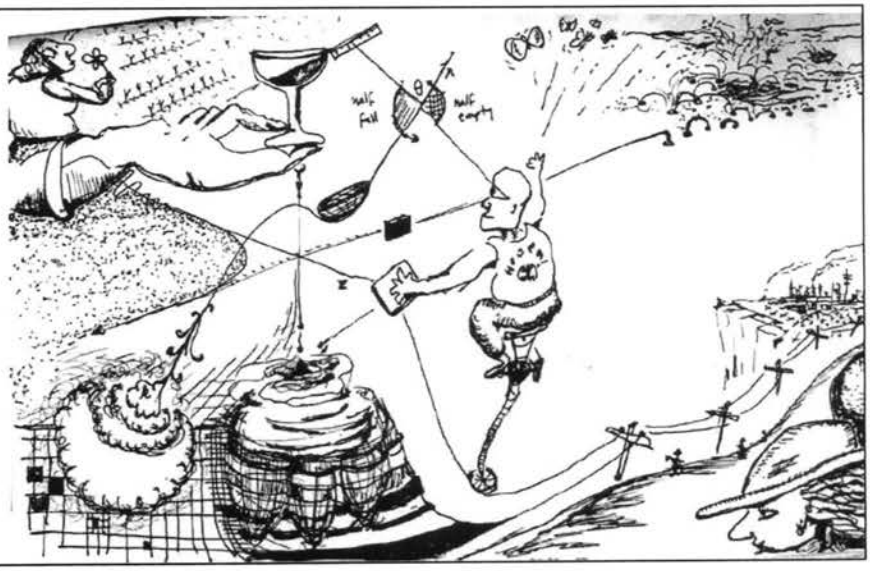
Within the constructs of complexity, the purpose of our being is happily seen simply as an intent to continue being. I find this entirely satisfactory: it allows me sufficient agency (free will) while providing a deterministic limit against chaotic exercise of that free will.

A new system of ethics, arising from the study of complexity and informed by scientific and mystic research alike, would inspire potent exercises to help us sense opportunities for cooperation, for nonzero-sum[14] interactions…within us individually, together socially, and in our environment holistically. The sensitivity to act in the name of what we know to be more right, more holy, more loving, can be seen as an evolutionary learning that yields improved social performance, thus species viability, thus systemic duration, thus we stay in the thermodynamic vortical zone, or "alive".

Application of complexity metaphors to three common dilemmas

The glass is half full *and* half empty.

Mind map showing balance in tension, emergent complexity, technical progress at the edge of the Singularity, The Hand of God, the Mysterious Stranger, and a woman admiring her Garden.



Over-population is wrong

How many people should there be? A very common question, but it's too big for us to answer directly.

1. We have no idea what the planet actually wants us to do. Perhaps the Earth's consciousness has realised it can't sit around waiting for happenstance asteroids, so it has "invented" us to lead the 4th most massive reduction of species in 4 billion years. We may in fact be a self-administered pathogen designed to clear out some space to make room for a new tranche of life . . . Is this a valid interpretation of human destiny? No idea.

2. More is different. Per complexity, emergence is driven by criticality. Whatever humans are "supposed" to become may depend precisely on reaching a certain number of individuals. The emergent intelligence of an ant colony doesn't happen with 10 ants: it happens with 10,000 ants. At what point do we think our own best emergent behaviour will occur? Again, no idea.

The heart of the population problem lies in this humble admission: we are in no position to *know* how many people there *should* be.

The one thing we do know, most certainly, is that the human carrying capacity of the planet is directly proportional to the human ecological footprint. If we chose to live as Buddhist monks, the planet might be able (and happy) to sustain 30 billion people. But that lifestyle choice is dependent on what we, socially, conceive of as a "good life."

The West has been responsible for projecting a completely material vision of the good life to the rest of the world. In spite of our common wisdom (e.g., money can't buy you love, you can't take it with you, the best things in life are free, etc), we have allowed the ideal of materiality to become inseparable from our econo-centric vision of reality.

Unlike points 1 and 2 above, this socially-constructed ideal *is* under our control and within our capacity to change. So the population question can be de-fanged and re-factored by admitting to the complexity limits of any "population optimisation policy" and choosing to focus instead on shifting our material addictions.

The longing for peace

War. What is it good for? Can't we eliminate it entirely? I suppose that depends on what is signified by "war". I have already suggested that struggle in itself may be essential. Robert Wright (Ch 5) looks at war through the nonzero lens and sees:

1. The practice of war is zero-sum: one group wins while the other loses.

2. Within the competing groups themselves, however, war often has an immensely positive nonzero-sum effect: new alliances are formed, the habit of cooperation is practiced, and necessity powers prolific innovation.

What complexity offers us is an opportunity to lift the terms of war: we are wasting energy by fighting over food or power when there's enough of both for everyone. The urge toward conflict can itself evolve. If the peace faction spent more time shifting conflict energy to a higher vibrational state instead of arguing for its simplistic elimination, we might at least learn to lay down the guns.

Who do we serve?

"You might be a sinner, or you might be a saint, but ya gotta serve somebody." (Dylan) Through the lens of symbiogenesis, we can see that people shape themselves to suit their gods. Many of us are competing to become more attractive to our "domesticators."

These people take gratitude and humility seriously: they are the worshipful. Whether they are worshipping rocks, test-tubes, or old men in the sky, these people seem to be getting something "more right" than others do. They are improving their survival fitness through the practice of engaging with the emergent universe both internally and externally.

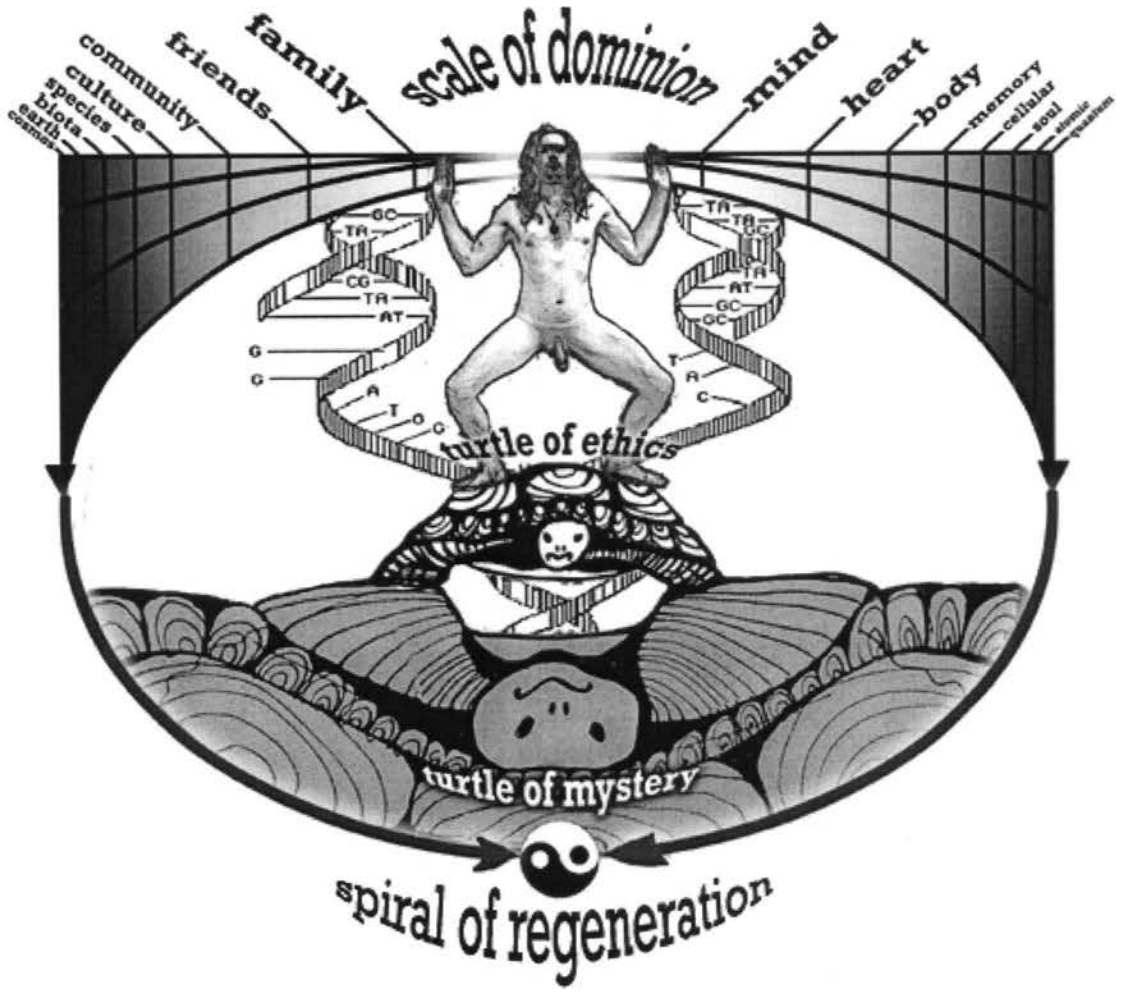
For some, like my parents, the question of an ethical life has already been answered: it's in the Bible. Others turn to the Koran, Nietzsche, or economic rationalism. While there are superficial critiques that one can make of all these ethical frameworks, the underlying truth is that we can not (and should not) aspire toward a single recipe for ethical behaviour. We can, however, sharpen up our comparative critique of ethical narratives through the application of complexity metaphors.

Chilling out by heating up

Instead of seeing ourselves at the pinnacle of evolution, we can see ourselves as part of a complexity continuum, one that extends far past us in both directions. We are incapable of fully explicating the more distant portions of this curve in the same way that dogs have difficulty commenting on federal transport policy (Whitworth 2001). But we can *sense* the existence of the layers above and below. The metaphor of complexity shows us that our best ethical efforts could be directed toward tending to the conditions that encourage emergent organisation.

The point of a new ethics is to figure out how to assist our neighboring layers while at the same time helping ourselves. Ethics is ultimately a dimension of awareness that helps us nurture richer engagement with the rest of life. By tuning in to the emergent signals arising from the cells in our bodies and from the earth we walk upon, we can learn how to better shape ourselves to act as self-interested, cooperative, energy transformation agents. The best place to start with this learning is ground zero: where our hands can hold and our hearts can know.

I hope, through lived example, I can show this to my child.



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Higgs Boson. The Higgs boson, sometimes called the God particle, was first predicted in the 1960s by the British physicist Peter Higgs. *Wikipedia*. 15:29UTC, 25 May 2004 <http://en.wikipedia.org/wiki/Higgs_Boson> More at: <http://www.wired.com/wired/archive/12.04/grid_pr.html >

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One could say but little about "mental states" if one imagined the Mind to be a single, unitary thing. But if we envision a mind (or brain) as composed of many partially autonomous "agents"—a "Society" of smaller minds—then we can interpret "mental state" and "partial mental state" in terms of subsets of the states of the parts of the mind. To develop this idea, we will imagine first that this Mental Society works much like any human administrative organization. On the largest scale are gross "Divisions" that specialize in such areas as sensory processing, language, long-range planning, and so forth. Within each Division are multitudes of subspecialists—call them "agents"—that embody smaller elements of an individual's knowledge, skills, and methods. No single one of these little agents knows very much by itself, but each recognizes certain configurations of a few associates and responds by altering its state.

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matter and energy, which carry off internally generated entropy to the outside." <**Jerry Albert**: http://www.asa3.org/ASA/PSCF/1978/JASA9-78Albert.html>

Ricoeur, Paul. Ricoeur believes that intrinsic to metaphor is both an "is like" element and an "is not" element. The former points to the literary vehicle used to convey the metaphor, while the latter indicates that the referent of the metaphor is not to be found in literal terms. – **GD Robinson** < http://capo.org/premise/95/sep/p950812.html >

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Sartre, Jean-Paul. (June 21, 1905 - April 15, 1980) French existentialist philosopher, dramatist, novelist and critic.

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For if the concreteness of the world is but a secondary reality and what is "there" is actually a holographic blur of frequencies, and if the brain is also a hologram and only selects some of the frequencies out of this blur and mathematically transforms them into sensory perceptions, what becomes of objective reality? Put quite simply, it ceases to exist. As the religions of the East have long upheld, the material world is Maya, an illusion, and although we may think we are physical beings moving through a physical world, this too is an illusion. We are really "receivers" floating through a kaleidoscopic sea of frequency, and what we extract from this sea and transmogrify into physical reality is but one channel from many extracted out of the superhologram. http://www.crystalinks.com/holographic.html

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Westoby, Adam (1944-1994) "The Ecology of Intentions. How to make Memes and Influence People: Culturology" <http://ase.tufts.edu/cogstud/papers/ecointen.htm> "One - but only one - of the ways in which a meme's adaptations can increase its meme's success is by helping its incidence in a human population. The compulsive - though arbitrary - power of culture has much to do with this: a meme tends to succeed among its coexisting and competing memes if, for whatever reason, it can predominate in individual humans and among human populations. In this indirect sense memes are democrats; in order to get selected they must "try" to find ways of getting and staying in human beings. In similar fashion, genes "try" to get incorporated in species (or "gene pools")."

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"A New Kind of Science has two primary purposes: To promote the use of simple abstract systems to supplement and replace traditional mathematical equations in making models of natural systems; and to introduce the empirical study of what simple abstract systems - essentially simple computer programs - actually do. Additionally, there is a less emphasized third track, which is what implications discoveries in the first two have for general thought." *Wikipedia*. (19:21UTC, 8 Jun 2004) <http://en.wikipedia.org/wiki/ A_New_Kind_of_Science>

Wikipedia. Wikipedia is an open-source, publicly-maintained, online encyclopedia < http://en.wikipedia.org/>

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[1] **Thrival**. Combining "survival" and "thriving." A state of inner joy that defies circumstances. Coined by Paul Radde <http://www.thrival.com/>

[2] **Memetics**. The study of memes. A meme (pronounced "meem", and rhymes with "theme" and "dream") is a unit of information that replicates from brains or retention systems, such as books, to other brains or retention systems. In more specific terms, a meme is a self-propagating unit of cultural evolution, analogous to the gene (the unit of genetics). Coined by Richard Dawkins. *Wikipedia*. (13:22UTC, 9 Jun 2004) <http://en.wikipedia.org/wiki/meme>

[3] **Mandelbrot, Benoit**. (1924-) is a Polish-born French mathematician, discoverer and leading proponent of fractal geometry. *Wikipedia*. (06:03UTC, 8 Jun 2004)<http://en.wikipedia.org/wiki/Benoit_Mandelbrot>

[4] **Symbiogenesis**. A theory of evolution arguing that symbiosis is a primary force of evolution, because acquisition and accumulation of random mutations or genetic drift are not sufficient to explain how new inherited variations occur. According to this theory, new cell organelles, new bodies, new organs and new species arise from symbiosis, in which independent organisms merge to form composites. This challenges some standard textbook ideas of how evolutionary change occurs. To some degree, Darwin emphasized competition as the primary driving process of evolution, symbiogenesis emphasizes that co-operation can also be important to the process of evolution. *Wikipedia*. (09:18UTC, 18 May 2004) <http://en.wikipedia.org/wiki/Symbiogenesis>

[5] **Cymatics**. Self-organising patterns in inert matter. (03:56UTC, 4 Apr 2004) <http://en.wikipedia.org/wiki/Cymatics>

[6] **Von Neumann, John**. (1903-1957). *Wikipedia*. (03:10UTC, 4 Jun 2004) <http://en.wikipedia.org/wiki/John_von_Neumann> Von Neumann also introduced the idea of self-replicating machines, which connects neatly with fractal complexity and living systems theory.

[7] **Emergence**. Emergence is the process of deriving some new and coherent structures, patterns and properties in a complex system. Emergent phenomena occur due to the pattern of interactions between the elements of a system over time. Emergent phenomena are often unexpected, nontrivial results of relatively simple interactions of relatively simple components. What distinguishes a complex system from a merely complicated one is that some behaviours and patterns emerge in complex systems as a result of the patterns of relationship between the elements. *Wikipedia*. (12:59UTC, 30 Apr 2004) <http://en.wikipedia.org/wiki/Emergence>

[8] **Marinships**. A Bechtel combine won the shipbuilding contract that resulted in Marinships. Labour was incredibly scarce, but in fact, no one was ever "pressed" into service as I described.

I was told this story in my early years, and have kept it with me ever since. I have often shared it with friends, suggesting that we have every reason to be optimistic about our power to solve common social problems, if only we could learn how to move together pre-emptively and positively toward a common goal. Similarly, the immensely popular "Hundredth Monkey" meme has inspired an entire generation of people to value the importance of their own personal contributions to mass movements. Malcolm Gladwell has further elaborated the Hundredth Monkey in *Tipping Point: How Little Things Can Make a Big Difference*.
For better or worse, both the Marinships meme and the Hundredth Monkey are actually inventions. My dad made up the story about the shipyard, and the research results described in the Hundredth Monkey never happened (ref: http://www.context.org/ICLIB/IC09/Myers.htm) However, lots of minds now have these concepts inside them. I reckon this is a solid illustration of the real power of the meme!

[9] **Dualism**. The term dualism is the state of being dual (or having a twofold division). Dualism doctrine consists of two basic opposing elements. Generally it consists of any system which is founded on a double principle. *Wikipedia*. (22:46UTC, 24 Apr 2004) <http://en.wikipedia.org/wiki/Dualism>

[10] **Taiji**. The Taiji is understood to be the highest conceivable principle, that from which existence flows. *Wikipedia*. (04:20UTC, 9 Jun 2004) <http://en.wikipedia.org/wiki/taiji>

[11] **Monism**. The metaphysical position that only one sort of "substance" or "stuff" ultimately exists. *Wikipedia*. (8:42UTC, 4 Jun 2004) <http://en.wikipedia.org/wiki/monism>

[12] **Entropy**. In this context, the universal tendency to move to lower states of thermal energy.

[13] **Second Law of Thermodynamics**. The second law states that thermal energy, or heat, is special among the types of energies: all the forms of energy can be converted into heat, but in a way that is not reversible; it is not possible to convert the heat back fully in its original form. In other words, heat is a form of energy of lower quality. *Wikipedia*. (06:05UTC, 31 May 2004) <http://en.wikipedia.org/wiki/Second_law_of_thermodynamics>

[14] **Nonzero-sum**. A term drawn from game theory. Designates outcomes that are "win-win" as opposed to zero-sum outcomes where one party's winning is equivalent to the other party's loss. See Robert Wright: Nonzero: The Logic of Human destiny.