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If we draw the boundaries of an entity in the wrong place then we can think it is doing well when it is heading for disaster. Rather than aiming for isolation, we must seek balanced connections and interactions.

The unit of survival

Andrew Ballantyne

Every entity evolves in a milieu – its environment – and it needs that milieu if it is going to survive, unless somehow it migrates to a new one that sustains it in the ways that are crucial to it. The surest way to eradicate a species is not to pick off individuals one by one, but to make its environment unsupportive. This applies not only to organic entities, but also to ideas and gestures. The anthropologist Gregory Bateson pointed out how essential it is to see the connection between the things we care about and their environments. The 'unit of survival' is organism + environment. 'There is an ecology of bad ideas', he said, 'just as there is an ecology of weeds'.[1] The bad ideas include making a separation between man and nature such that we can see ourselves in opposition to it – as if 'we' could win something at nature's expense. Félix Guattari used Bateson's good idea as the epigraph of his book *The Three Ecologies*.[2]

Saltaire

An example: the first industrial cities in the UK ran on coal, which was burned to power the steam engines that drove the machinery of mass manufacture. The factories produced fantastic profits for their owners, but their chimneys produced sooty smoke. This made it worthwhile to build the chimneys tall, so that the soot was carried away and fell dispersed at a distance. In some places, like Bradford, there were concentrations of factories and the pollutants from the chimneys seemed to be everywhere in the town. One of the mill owners, Titus Salt, made an early attempt to remedy the problem by moving out of Bradford to a new settlement, Saltaire, which gave his workers better air to breathe.[3] Eventually the UK Parliament would pass legislation, starting with the Clean Air Act of 1956 that sought to ensure that people would have breathable air. The point that needs to be made here is that the legislation had to be introduced to stop conditions being unbearable. Or rather: the contaminants in the air were already deadly, shortening people's lives, and something had to be done to prevent the air from becoming more instantly toxic. The narrowly defined interests of making a profit from industrial production did not have a problem with depleting the air to the point that the environment became a threat to human health. Now it seems self-evident that a city should have breathable air, but for one hundred years from the middle of the nineteenth century, when it became apparent that the factories were producing bad conditions in their surroundings, it did not seem to be imperative to act, because the interests of the people who could do something about the problem seemed to be different from the interests of the people who had the problem.

'The narrowly defined interests of making a profit from industrial production did not themselves have a problem with depleting the air to the point that the environment became a threat to human health.'

We make this kind of 'mistake' whenever we see what we are dealing with as an autonomous object. Everything is connected into its milieu, and one milieu connects with another.

> *Gregory Bateson has clearly shown that what he calls 'the ecology of ideas' cannot be contained within the domain of the psychology of the individual, but organizes itself into 'systems' or 'minds', the boundaries of which no longer coincide with the participant individuals*.[4]

These 'systems' or 'minds' are distributed across social groups or participants in an enterprise, and can include tools or tokens as well as parts of people's bodies and ideas. They can be discussed as 'actor-networks'.[5] The 'actors' here are whatever aspect of things act on the case under discussion, so if we are discussing an object then the actors are the environment—whatever it is in the environment that has an effect on the object. So, if the 'object' is a person who lives in a house, then the environment certainly includes the house, which modifies the person's relations with the world. The house is a shelter and a support for a way of life.

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It keeps some people out, and allows others in. If the unit of survival is the organism + environment, then the person + house is the beginning of the unit, but in fact it would also include more far-reaching aspects of the network that influence the house and the way of life, such as cultural ideas, the availability of materials, and the practices that can be drawn upon to assemble them. I might make a dwelling from the branches and leaves of the trees in the forest around me, or I might go to a catalogue and specify building materials from various regions of the globe, based on their cost or their attractiveness. The alternatives there point to different degrees of connectedness in the world, the second reaching further than the first, and therefore having an environment that is more widely spread.

The Farnsworth House

If I think of myself as an isolated individual, or if I think of my house as a thing-in-itself, then I draw a frame around myself or the house that separates it from its surroundings. If I see a building purely as form, without an understanding of the wider environment in which the building took shape, then I miss a substantial part of what the building is. Take a very well known example of a visually very simple building: the house in Plano Illinois, that was built in the middle of the twentieth century for Edith Farnsworth to designs by Mies van der Rohe. Visually one wants to say that there is very little there: an elegant frame, supporting a planar roof that sits parallel to the horizontal floor plane. It seems to be an ideal place from which to contemplate the surrounding wooded landscape and feel close to nature. Edith Farnsworth in fact found it so challenging as a place to live that she took her architect to court.[6] There were various ways in which the house did not work, which need not detain us here, but I want to draw attention to a feature of the house that is all-but-invisible: its non-structural connection into the ground. There is a tube that brings a water pipe into the house, and a drain out of it, along with electrical cables. There is a water supply, that connects the house to the outside, and drainage that goes somewhere, probably in this rural location to a fairly traditional septic tank. There is electricity, which connects back to a generating station somewhere miles away. The house is not isolated from civilisation. Moreover the inhabitant of the house did not know, and did not need to know, how to generate electricity or how to find fresh drinking water. She was a kidney specialist at a hospital in Chicago, and lived in a society that divided up labour and knowledge in such a way that she could call on specialist knowledge from others (to supply her with light) just as others could call on her specialised knowledge if they had a diseased kidney. There are many societies where specialisation is much less developed than this, where the person who lives in a house might be expected to have built it, where the supply of food and heat might be a matter of foraging rather than paying for it at a shop in the city, or having it delivered. Moreover, the Farnsworth House's building materials depend on industrial processes: the steel columns and large sheets of plate glass are ultimately made of earth, but it is earth that has been processed by heavy machinery and intense heat. The columns were once iron ore, which was crushed and the iron melted out of it before being rolled while white-hot. The glass was once sand, fused by heat and then floated on a bed of molten tin. The processes are a fantastic alchemy that was unavailable to most people through most of time, but which was available in this society at that time. We can tell by looking at the building that it belongs to a particular time in the history of the world. We might be wrong by some margin of error, but not very wrong. Anything we can actually do or think of doing is a possibility because of who and where we are: the society we are in and our place in that society.

'Steel columns and large sheets of plate glass are ultimately made of earth, but it is earth that has been processed by heavy machinery and intense heat.'

Radical empathy

In a functional sense the power supplies and reservoirs are part of the actor-networks of the dwellings in a modern state. We might be able to find ways of living without them, and may be able to develop a degree of autonomy, but on the whole we do not want to, especially if we live in a city. We have an idea that we act freely and impulsively, but in fact many of our actions are predictable, and if we see the actor-networks as the entities with which we should be concerned—these distributed 'minds' in which we (or parts of us) play a role—then we start to look like circulating molecules or switching relays in a chip. Seen from the point of view of a corporation we are commodities or consumers, with capacities that can be triggered or blocked. The thing that makes us feel special and that gives us an alternate and perhaps exaggerated sense of our importance is the fact that we have consciousness and can articulate and assert a point of view. Writing in 1764, Baruch Spinoza said:

> [...] *conceive, I beg, that a stone, while continuing in motion, should be capable of thinking and knowing, that it is endeavouring, as far as it can, to continue to move. Such a stone, being conscious merely of its own endeavour and not at all indifferent, would believe itself to be completely free and would think that it continued in motion solely because of its own wish. This is that human freedom, which all boast that they possess, and which consists solely in the fact, that men are conscious of their own desire, but are ignorant of the causes whereby that desire has been determined.*[7]

This is a daring and imaginative thought-experiment, which carries the idea of empathy much further than we normally would. Can it

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make sense to think of something as inert as a stone to be capable of thinking and knowing? Spinoza's particular point of course is that we are at the mercy of our desires, and we now have a discourse about the unconscious that aims to give an account and perhaps a degree of control of the formation of those desires. That discourse was not available to Spinoza. Most of what goes on in the body is unconscious, but we pay most attention to what is going on in our conscious mind. It is perhaps less of an intuitive leap than Spinoza's to imagine what a kidney might be thinking. A kidney's history of the world would have a story to tell, about evolution and environments, in which humans would be environment carrying kidneys around and connecting them with their nutrition. There might be a special place in such a history for Edith Farnsworth and her work on diseases of the kidney, but in fact the environment would be described in terms of what allowed the kidney to thrive, flourish, and evolve. There would be rapports across species, as kidneys developed in slightly different ways, and they would see the kidneys of different species as being shaped by their differing environments. Normally the kidney is framed as an entity only by butchers and surgeons. It might be considered as an agent when discussing the cleansing of the blood, but normally it escapes notice. However it is an agent (an actor) in the actor-network that is the body, and we know soon enough when it is not doing what we want it to do. It does not have consciousness and so we think of it as technical apparatus that can in extremis be replaced by a dialysis machine, not as an entity that has volition, but if we use Spinoza's method of radical empathy we can see it as an organism that is hungry for blood – or rather for the things in blood that we call impurities. It feeds on contaminated blood and excretes it purified. We value it for that, and are happy to have it living in us. The kidney's description would be different, as the blood arrives rich with what the kidney desires, and leaves depleted of it. A second kidney would not be happy living downstream of the first.

'A kidney's history of the world would have a story to tell, about evolution and environments, in which humans would be environment carrying kidneys around and connecting them with their nutrition.'

The oyster is a creature that, by contrast, we think of as an independent entity. Traditionally it has been used as the representative of the lowest link in the 'great chain of being'.[8] It is no more complex than a kidney, and may be no more conscious. It does build itself a house, by way of a process of biomineralisation. It filters calcium carbonate from the waters around it, absorbs it into its body and sweats it out in mucous that solidifies into the shell.[9] The rough exterior of the shell is built up from the many layers of deposit as the organism grows, while the smooth interior is the recently hardened surface that is in intimate contact with the oyster's body. We are capable of biomineralisation ourselves, but we do not use it for building houses. We use it to build our skeletons inside our bodies, with much the same chemical composition as the oyster's shell or as the rocks on which it sits. In buildings our own practice is more like that of the Caddis worm, which assembles its shell from found materials—usually grains of sand and grit, but the artist Hubert Duprat has placed them in environments with gold flakes and gemstones, which they have indifferently assembled into creations that in human terms are more exotic.[10] Oliver Wendell Holmes (1809–94) was a physician and poet. He made a comparison between the way the Caddis worm assembled its shell and the way a scholar assembles a library, picking up a volume here and there until the volumes make a habitation.

> *A scholar must shape his own shell, secrete it one might almost say, for secretion is only separation, you know, of certain elements derived from the materials of the world about us. And a scholar's study, with the books lining its walls, is his shell. It isn't a mollusk's shell, either; it 's a caddice-worm's shell.* [...] *the caddice-worm is the larva of a fly, and he makes a case for himself out of all sorts of bits of everything that happen to suit his particular fancy, dead or alive, sticks and stones and small shells with their owners in 'em, living as comfortable as ever. Every one of these caddice-worms has his special fancy as to what he will pick up and glue together, with a kind of natural cement he provides himself, to make his case out of. In it he lives, sticking his head and shoulders out once in a while, that is all. Don't you see that a student in his library is a caddice-worm in his case?*.[11]

E-1027

This compares closely with Eileen Gray's observation when she, annoyed by Le Corbusier's appropriation of E-1027, the house she had designed at Roquebrune, repudiated the idea that the house was a *machine à habiter*, rather she said 'it is man's shell, his continuation, his spreading out, his spiritual emanation'.[12] The house is the continuation of the person by other means. In fact had she not (understandably) felt the need to distance herself from Le Corbusier at the time then she might not have made a distinction between the machine and the extensions of the self. There are many parts of the body that can easily be portrayed as mechanical. The heart is a pump. The knee joint is a hinge. We have no problem now with the idea of a transplanted or an artificial heart, or a prosthetic limb. Samuel Butler made the point that we extend the body and its capacities by using tools, which we could see as temporary prosthetics for as long as we are using them. The spade is an enhancement of the arm. The telescope is an enhancement of the eye.[13] The organic machines are not fundamentally different from technical machines, but we find it convenient often to put them into different categories. A hen's egg is

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not fundamentally different from fine pottery, and it would be possible to produce something very similar in a laboratory or even a kitchen. Potatoes can be coated with a mixture of kaolin and lactose that, when dried, produces a layer that looks like stone or eggshell, but remains edible.[14] It is possible to use alginates in the kitchen to produce a film that holds a purée together so that it looks and behaves like an egg yolk.[15]

'A hen's egg is not fundamentally different from fine pottery.'

Deleuze and Guattari approvingly cite Butler on this point, not blurring the line between organic and inorganic machines but insisting that things on both sides of the line are in fact machines.[16] They carry the idea much further when they address Spinoza's question about volition. Our desires are produced, they explain, by 'desiring-machines'. We are not conscious of them, but we are very conscious of the desires that they produce. We can make some indirect inferences about them by analysing what is produced.[17] The processes of unconscious thought (if we can allow that 'unconscious processes' are some kind of 'thought') can be influenced by a great range of things, from the kinds of traumatic experience that are commonly associated with retellings on the psychiatrist's couch, to more immediate things such as our surroundings. If we do not feel safe, for example, then other desires are suppressed. It is difficult to settle to anything else until the fundamental aspects of the environment have been addressed. Where things are interconnected we can easily find examples where decisions were taken in response to local conditions, without understanding their wider impact. What is part of one person's conscious awareness may be part of the unconscious cultural background of others.[18]

These things may not be under our immediate control. Edith Farnsworth's weekend retreat had glass walls, which are solid but transparent. In principle, privacy was not a problem, because the house is in a secluded place in woodland, not close to a road. However the house became so famous that unannounced visitors came to see it. Strangers would let themselves into the grounds and take photographs, which undermined Farnsworth's sense of wellbeing.[19] In a more urban location a house such as this would never have been proposed. A less remarkable house would have served her better, but even a house with conventionally solid walls can leave the occupant feeling vulnerable if there is trouble beyond the walls. Anyone who has had a break-in knows the unease that follows it, even if nothing has been stolen. Territory has been violated and has been shown to be insecure, and the occupant's relationship with the space changes, perhaps permanently. Some environments are so obviously insecure that we would not think of settling there if we have a choice: a nearby war or a volcano would put people off, as might the occupants – real or imagined – of some neighbourhoods. The environment that I inhabit is composed not only of my own body, and the unconscious things going on in it, but also the things that are around me – not only the furniture, roof and walls, but also the ideas that I project on to my surroundings and how I read them and feel about them.[20] Other people are an important part of the surroundings – people who belong in my environment, people who are visiting, people with whom I am in contact by way of electronic communications, people who are passing by, whose voices or vehicles I can hear. Maybe a knock at the door. I am part of other people's environment. We are part of an ecology – or part of various ecologies, depending on where we draw our boundary. In the end everything is connected to everything else, but some connections are closer than others, and the social-machines in which I participate might not have much to do with one another. I can be part of an actor-network that involves other people in my dwelling, which might have little in common with the network in which I participate when I am doing my paid work. In fact I can sometimes work from home, and the boundaries are not clear-cut, but with a conversation in the room I can be part of one network, with an email I can be part of another, and then another message can link me somewhere else altogether, to people and interests invisible to the people at home or at the office. I am a actor in various different networks, a part of various different social machines that work to produce different things: domestic wellbeing, to guide a student who is feeling lost, or to maintain a social bond that allows me to feel that people in far-flung places are part of the ecology of ideas in which I work. There are things that I feel I need hardly mention, like the plumbing and electricity, the local shops that connect me to a supply of nutrition that involves long-distance travel for many of the things on the shelves. In the past – from tens of thousands of years until 150 years in the past – all these things would have been more remarkable or even unimaginable.

Machines

Samuel Butler wondered whether humans were evolving to end up in servitude to machines. The advanced machines of his day were steam engines and locomotives. He explains that we can imagine humans as part of the evolutionary mechanism of the locomotive. The locomotives set the pace of life, and we must do what needs to be done to produce their next more-advanced model. Now that the computer has established itself as part of our means of thinking, the relationship with technical machines is even more intimate. It comes closer, connects more widely and becomes invisible. We are connected in the social machines of corporations and corporate thinking. It is a routine part of our thinking that we should work in ways that are ever-more efficient, in order to produce benefits for an international entity that has no clear presence, but

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an insatiable appetite. It is not conscious and does not give an account of itself. It pays our wages and we spend them back into the system, so everything we take out is recuperated.

Buildings are an important part of this entity, as the resources that circulate in making them and inhabiting them are significant parts of the whole. We participate in this economy whether we own the buildings or merely have access to them. The buildings are part of the cycle of consumption, of the making of money (through speculation and investment) and of the forging of social bonds (by living together, eating together, or allowing us to live in adjacency to work or friends or relatives). Like Spinoza's rock, the corporate entity does not have actual volition that we can hear being articulated, but it behaves as if it did – or rather we infer a logic that seems to be in our own immediate interests and that reinforces its influence on the ways we think and behave. Because people have consciousness and communicate with one another, we feel that we are in charge: we are free to act as we wish, but we choose to act on the whole so as to have a little more money, status that is a little higher, and the social machine locks into place, driven by that desire. We connect with the network not with every aspect of ourselves, and the network is indifferent as to whether or not we believe in it. Going back to Wendell Holmes: it is as if what the corporation needs from most of us is just the use of an incidental aspect of us, while we continue living our lives 'as comfortable as ever'. I just want a place to live, a place to call my own, but when I work through the options that are open to me in my position in a culture and society, then I find myself caught up in the coils of the money markets and all that they entail.[21] What I feel is very different from the international money-system of which I am an infinitesimal part, and it is in many ways indifferent to my feelings, just as we are indifferent to a rock's feelings when it is hurtling through space and doing just what we expect it to do. There is an implacable logic to the circulation of money, which we treat with such great respect that it seems as intractable as the law of gravity, even though it is a human invention.[22]

'Because people have consciousness and communicate with one another, we feel that we are in charge.'

10,000 years

Our dwellings mediate our relations with our environment. At the most fundamental level they make it possible to live in parts of the world beyond the tropics where humans originally evolved. Beyond that, over the last 10,000 years buildings have been involved in our social relations, as agriculture began to draw people into permanent settlements. Shifting from a nomadic to a sedentary life makes possible different kinds of behaviour, which allow greater specialisation in a society and therefore greater complexity and sophistication as people's lives can be preoccupied by things other than the need to find or cultivate food. Our environment is whatever contributes to making possible our way of life, and even in the most primitive state that would include the sun and the rain, and we have not escaped the need for them. As city-dwellers we are now routinely without fundamental survival-skills, and would be lost without access to clothes and vehicles that we do not know how to make, as well as shelter and electricity that we know well enough how to use but only once they are in place. Food supplies are a complete mystery to most of us: food just appears in the shop for us to buy. This liberates us to worry about other things.

At the scale of the individual we have conscious knowledge of our experiences and desires, but maybe very little awareness of why these things happened to us and why we want the things we want. As we group together in entities that are flexibly formed and that rearrange themselves to accommodate arrivals and departures of individuals, we find ourselves co-operating or resisting but certainly participating in larger structures, which are properly called 'political', whether they be at the scale of the household, the neighbourhood, the city, the nation or the corporation. They can be fluid and temporary formations, or might be reconstituted with a frequency that means that they structure our lives. Buildings have an important role to play in configuring these structures. They give us a sense of safety, which means that we can think about other things than self-defence, or where we are going to spend the night. They hold us in proximity to the others who are part of the same household, and separate us to some degree from others. There are places where we meet other people – maybe in the street, maybe at the shops or at work, maybe at a place of worship or a village hall. There are meetings that escape places and buildings – electronic communications for example – but still for as long as we are actual bodies we have a use for buildings and they structure at least a part of our lives. Living in the wild prompts us to look for shelter and protection from predators, which would include other people. If we allow that response to dominate our thinking in the modern city then we can find ourselves in isolated cells, physically adjacent only to services and deliveries, but electronically connected into information, entertainment and social networks. We might feel ourselves to be free, but to an observer from outside we might seem to be incarcerated. Each description has its validity and its limits.

Survival

Our survival depends on our environment, which includes other people and our links with them. No one who reads this text will be unfamiliar with buildings: they are part of our environment and modify our proximity to others. A wall makes it possible to live a short measurable distance from

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another person while never meeting. Conversely a mobile phone makes it possible to feel close to (and have one's emotions modified by) someone on the other side of the world. The buildings are caught up in our interactions in the world: always now part of our ecology, if not part of our identity. The unit of survival is organism + habitat, and the things that make the world habitable for us include of course buildings, but also other sometimes formless material things we need to survive (oxygen, for example) and the habitats in which those material things are produced. We also need to inhabit an ecology of ideas that gives us the means to deal with the world, and gives us hope so that we can continue. There are bad but powerful ideas that can give the impression that we are doing well, when in fact we are damaging the environment that sustains us. If we draw frames around entities and consider them as bounded objects then we can think of them as complete in themselves, and thinking of them in that way gives us a way of understanding that means we look for improvements and perfection in the form and substance of the entity that we have cut off from its surroundings. If, on the other hand, we pay attention to the proper unit of survival then we find ourselves reaching for an understanding of the links across an ecology, and it is the links that are crucial. Then the concern is not the maximisation of one value or another, but keeping everything in balance so that the unit of survival flourishes.

It is a matter of indifference whether the component parts of the unit are organic or inorganic, natural or fabricated, held together by having evolved in the same body, or been brought together by thinking about things. The unit of survival can be considered at any scale, from that of a molecule to that of the universe, but consciousness being what it is, we tend to put the human at the centre of things. This makes sense for a certain kind of description, and of course it can make descriptions that have a special appeal for humans, but there are entities such as corporations, states and cities in which humans participate but which behave as if they had a different kind of will and a different psychology, that brings about depletion of resources and extravagant consumption (such as in war). It is possible to make corrections, but only if we realise they are necessary. If we do not properly construe the unit of survival, and pay attention to the links between things, then we do not survive.

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Author's biography

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