

ALL KNOWLEDGE IS LOCAL¹

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There are some strange games played around the notion of ‘local knowledge’. Consider its inverse – I presume we can call it ‘universal knowledge’. Universal knowledge is what can be held to be true over all time and space. Yet as radical scientists have been pointing out for at least two hundred years, we never ‘see’ universal knowledge. There’s too much friction in the world for gravity to play out as it is; too much social and environmental fluctuation for the gene for truth, justice and the American way to express itself in pure form; and there’s too much that’s non-crucial in the world for a crucial experiment (experimental cruces) to ever be fully determinate. Indeed, to the extent that knowledge can be shown to have a very wide range, this can only be done in a highly localized environment, one about which you can say ‘all other things being equal’ (that much parroted phrase of physics textbooks) – a good local environment for universal truth excludes truck rumbings if you are looking for gravity waves, stray molecules if you are looking for a pure reaction and so forth. What is called local knowledge ranges freely through the landscape, what is called universal knowledge is constricted to tiny spaces. (Phrases like ‘indigenous knowledge’ and ‘other ways of knowing’ are equally problematic, but I generally try to keep to one rant per paper).

I start with three stories. The first story is by way of John, from the red letter volume of Alfred Searcy (Searcy 1912), who was a fairly cruel customs officer but whose musings now encased in a beautiful red leather book in a locked shelf in John Greateorex’s house. Searcy tells the story of various massacres, of how the Maccasans were generally an appalling people and how the Yolŋu matched their qualities. Along the way, he tells a really interesting story about going on a kangaroo hunt, driving out to the general site, then going on foot. In the course of the hunt after the kangaroo, they go for miles and miles and miles through some fairly dense undergrowth, dense and high enough so that one couldn’t see where one was going. Eventually they catch up with, wound, and kill the kangaroo, but due to the undergrowth Searcy has no idea of how to get back to the tribe. The Yolŋu that he is with says, ‘oh, just over that way,’ and takes a shortcut all the way back. Searcy asks him how he managed to do that, and the aborigine told

¹ Since this paper was first given in situ I begin with acknowledgements: thanks to Dhanjal and her people for showing their land, thanks to the Yolŋu people for your generosity in spirit in showing your stories and showing your land with this. Thank you to Michael and John, thank you to the folks here at Charles Darwin University who have been so generous with their time and energy and so inclusive of us and this project.

him the kangaroo first went here, and here and here, then it turned over here and it went back there, and then it went this way so all I had to do was work that out in my head and then just go straight back to the car. It is a beautiful story about listening to the space that you're in and listening to the place that you're in. A kind of listening that universal GPS is rapidly getting me out of any remnants I have of that tradition: I have been living in Pittsburgh for a year and constantly use GPS except (and only occasionally except) to get home. I do get to listen to French philosophy on CD, so I guess that's me being universalized again (if *anybody* could call the French universal).

Just before I read that story I was sitting under the house with John and Paul Dourish. Paul and I, being adoptive Americans, abhorred a silence when three perfectly good larynxes were lying fallow. Our adoptive culture would not permit a taciturn and introverted moment, nor would our projective cultures permit a graceful listening forth to our setting. So John took pity on us and told us a story about a Yolŋu friend of his who didn't start school until he was 11 years old. The guy messed up majestically in class at the start: he was put into seventh grade because he was 11 years old, but when asked to read numbers on the blackboard he couldn't. He was sent back to grade one then bounced his way back up to grade 11 in record time, eventually made it down to Victoria where he got a non-commercial pilot's license. Naturally people thought his progress was amazing and asked him how he was able to move through the grades so quickly, telling him how much better he could have done if he'd have been at school from the beginning. He responded, 'If I'd been in school from the beginning I'd never have been able to do any of this. Because I spent the first 11 years of my life in the country listening to the land with the constant intelligence of the wind, the climate, the waves, the vegetation and the changes of seasons in me and around me all the time, I learned how to think and be aware constantly. It's that awareness which allowed me to zip through school and go further than anyone had gone before.' This story is delightfully resonant with Somerset Maugham's *The Verger*, where lack of number learning again leads to fortune through paying attention to one's environment².

The third story is an inverse of the previous two but like any good inverse (Lévi-Strauss 1971) it has a very similar outcome. When we were in Yolŋu country Muthatha described going for some yams one day in the jungle with her husband, and she kept asking him where the yams were. He said, 'Don't ask questions, because if you ask questions you'll never find the yams.' She walked around a bit, got lost, and asked, 'Where's the yams?' And he said, 'Don't ask any questions, you won't find the yams!' Eventually she gets totally lost in the forest, can't find her way out even though it's her own territory and she should have known that area very well. She ends up racing out after several hours. She had been asking questions. She had not been listening to the land. She'd not been part of the land. She had been questioning, she had been pushing. I

2 <http://sinden.org/verger.html>

immediately heard two separate interpretations of why she told us that story specifically from Helen Verran – both seemed great and complementary. The first interpretation was that she was nervous when she was meeting with us because she hadn't known what knowledge to give us and what knowledge not to give us (whites or Balanda), and so she told us stories against herself. Those stories were her way to become comfortable with the sharing of knowledge. (This is a technique I often use in the classroom). The second interpretation – completely different but I think also true – was that she was advising us, as Balanda who have come to the land, to not sit around all day asking questions. Spend your time being a part of the land, listening to the land, and becoming a part of the landscape: that is how you will understand. Do not ask questions, because the answer is a process.

Each story proposes activity (ranging the land) over passivity (sitting in a classroom); it also advocates listening forth (in humility, to the land around you) over asking questions (which arise from your own interior dialogue). I come from a tradition where we are totally fascinated with technology and we live our lives through and with that technology. Our stories are generated by and interpreted in terms of technology in such a way that, according to Leunig, the great Melbourne cartoonist, as soon as we invented cave paintings we decided to look only at the paintings and forgot about the outside world. I think that's a reasonable metaphor for my own knowledge. Indeed, Jungal, one of the Yolŋu participants said: 'Class rooms don't talk to you, the hills, the land, the air are always communicating.' I turn soon to the ways in which classrooms talk to me and the ways in which classrooms are places of both power (in the benign Foucauldian sense of 'power to') and joy in interesting ways.

'Nowadays boats are travelling very quickly but we need to go by paddle, go slowly with the wind, and so going on a boat, mustn't jump on board the fast boat, must go at our own pace, and that's how we need to stay back in our country and rely on the wind to travel.' It is that sense of slowing down and listening to the country, the sense of being part of the landscape that we often associate with what is called local or indigenous knowledge and which were expressed in the three stories above. The theme that I am now going to pursue is that what we think of as Western Universal Scientific Knowledge is actually local in many of the same ways as Yolŋu knowledge. We need to work out ways of understanding that similarity as we create a rich dialogue between the Yolŋu and the Balanda in general.

Let me present two quotes (not, alas, three stories...) from my own life. The first is from a wonderful book by L.P. Hartley called *The Go Between* (Hartley 1953), about a boy mixing in magic who passes secret messages between two lovers. The book was written the year I was born, and I read it in early adolescence. The opening words are: 'The past is a foreign country: they do things differently there.' For many peoples throughout the world, this is emphatically not the case – consider the protagonists of Thomas Mann's *Joseph and his Brothers* (Mann

& Lowe-Porter 1948) or Yerushalmi's brilliant history of Jewish historiography (Yerushalmi 1996). Yerushalmi writes that there was a switch that occurred in Jewish thinking in the 18th century. They went from what was a model that I think the Yonju feel comfortable with, where the past was always present: Daniel, one of the prophets, is in the room with you, when you were remembering him. They went on from that idea to become some of the great historiographers, with Marx and Freud telling specific histories about specific times and places but losing that idea of the ever-presence of the past and I think that that is a huge gift to be able to bring back and share that way of knowing, because I think it is something that we are completely drawn away from. When I grew up in Brisbane, it was very common among white Australians to try to forget where they came from, to think only that they were Australian now. And part of me still buys into that, to be honest, but there is also a sense of loss: there are ways in which I don't understand myself now because I don't understand my family, we got lost in time a couple of generations back. The way I grew up was learning that the past is a very different country, that there are huge changes over time. Charles Babbage, the inventor of the first computer, averred that: '...until the invention of printing the mass of mankind in many respects almost were creatures of instinct.' (Babbage 1837). The idea was that thanks to printing, because now we can record the written word, geniuses like Babbage will be able to receive, 'that highest homage, alike independent of space and time, which their memory shall forever receive from the good and gifted of all countries and all ages.' Babbage himself was a particularly bitter person, so much so that local buskers would gather outside his house at 3 o'clock in the morning and start playing the accordion very loudly. He was after that higher homage, independent of space and time. That is what I group with – it's my native understanding of the way knowledge is in the world and how it exists in the world. Now we have Gordon Bell's *My Life Bits*³ – topic of the execrable *Total Recall* (Bell & Gemmell 2009) – in which future generations not only get to recall your greatest thoughts, but also your furtive thoughts and eldritch gestures.

I am a symbol for everything that's white in the world – I'm an English grammar school boy, now charitably middle aged, and basically bourgeois. I speak English as a native language, have a job I love and drive nice cars. I'm also what is called deracinated – a person without roots – in some of the literature, but I don't consider. There's a wonderful bit by an English minister several years ago that said your citizenship in Britain should be decided by which cricket team you support. I can proudly tell you that I support the Australian cricket team so I guess that would make me Australian⁴ – except that I have US citizenship. I was born in Liverpool, then when I was five years old we emigrated to Brisbane so my parents could go to Queensland University. They were school teachers in England, became university professors in Australia, then my father went back to Southampton to complete his PhD when I was 10 years old. When I was 15 we moved back to Brisbane, and as soon as possible I escaped my parents

3 <http://research.microsoft.com/en-us/projects/mylifebits/>

4 http://en.wikipedia.org/wiki/Norman_Tebbit

and went to Canberra when I was 17 to get my first degree. I spent five years there then went to London for about six years teaching English as a foreign language, got really tired of that, trained as a volunteer and went to Cameroon (in what's called the armpit of Africa) and spent a couple years teaching literacy and language learning there. When I came back to London, I trained as a computer programmer and got a certificate in computer programming. I realized the only way I could get a PhD was to return to Australia. So I went to Melbourne and spent several years studying there; then I went to Paris and worked there with one of my mentors and teachers for about six years. In Paris I met my wife Leigh, and just as I was about to go and live on a permaculture commune in the Pyrenees, I ended up being dragged to California and back. We went to Illinois, in the central United States – more on that later – and then we went to England, then Santa Clara, then last year we moved to Pittsburgh. So I'm not deracinated so much as rhizomatic, but I don't have a home in many ways: I don't have a location, I don't have stories to tell about my home, I have more 'local' knowledge of places I've stayed than many, but this knowledge is not in my body. I travel a lot but I don't consider that a lesser way of being in the world. It's a different way of being. It's just as local a way of being in the world as living on the land.

My first academic job after I met Leigh was in the Midwest, in east-central Illinois. The landscape in Illinois is interesting because the Rockies thrust themselves up in relatively short stages, creating a long rain shadow so close to the mountains there's a very short prairie and as you get further away the natural prairie landscape gets longer and longer as the extended rain shadow (winds prevail from West to East) dissipates. Illinois is an extremely lucky state – in the last ice age glaciers covered the state, and as they receded they pulled the top soil from Kentucky and Mississippi, leaving them very soil-poor and Illinois with the richest topsoil in the world – that's why we grow great corn there. A typical Illinois hill is about ten foot high – basically just scraps of stones left from glaciers (moraines) and coal mining (slag heaps). Like much of America, Illinois is a heavily constructed environment, it has been built almost totally into a grid network such that moving mile by mile through the gridded structure is not about understanding the landscape at all, it is about travelling the roads, about being able to understand how the roads and how the Cartesian coordinate system inter-coordinated. On the microcosmic neighborhood level it is much the same thing, all heavily gridded to the point where it used to be exciting to me to be able to drive on a curvy road (there was one in town). I've lived my whole life totally lacking a sense of direction. I have a visceral awareness of the landscape, but no sense of direction on the street. I am right now totally reliant on the GPS in my car. When I travel around the city I still have no idea where I'm going, I just rely on the GPS to tell me to turn right here and left there – I've distributed my innate navigation function to the technology I'm dealing with. The way I get around is an example of how the landscape can be seen in many ways, and highlights two of the extremes. One extreme is listening to the land and being part of the land; the other is imposing a gridded structure on the land, being

able to forget it, and creating technologies that allow you to be completely unaware of land or where you are travelling. If in addition you're driving in a car with air conditioning it doesn't matter if you have Yothu Yindi or Pink Floyd playing in the background – it's a totally protected environment; you don't have to pay attention.

But I have a sense of having lost my family and myself; there is also a sense of loss of place, the loss of being formed by the space and being of the soil. There are places in which that still exists: the French have a word, 'terroir' which is used mostly to describe grape production, specifically where grapes grow, because certain grapes come from certain soils, but it is also something the French say about themselves – I am of the terroir. There has also been wonderful writing in France lately about what *auchtochtony*, or coming from the soil, means. The Athenians believed that they were the only race to spring from the soil – all other races were travelers. In France I thought I was always going to be the outsider, which is why I never settled there – I would never be an *autochtone*.

Within my world, the ways of power are delegated and secreted. There are ways in which classrooms littered with maps and artifacts are able to speak spatially and ways that laboratories can speak of the world around them. This is equivalent to the traditional layout of the Christian church in Europe (atop a hill or part of the central square) and the layout of the stations of the cross in Catholic church (Halbwachs 1968). Indeed the word 'money' – (that least local of things save the cocaine traces on over 80% of US currency) has been argued to derive from 'Mnemosyne', the Personification of Memory: money is a perpetual reminder of the relationship between the individual and the State (Hart 1999). Place and memory are central in creating collective awareness of the past and possible future: the past and future being central referents for the modern White (Koselleck 2004).

We have a saying in my own religious tradition (I'll deal with that a little bit later) that Catholic churches produce fantastic magic, but the magic is concentrated in the person, power, and presence of the priest – it's not shared with the people. The layout and architecture of the church itself is very interesting in that they bring in the story. The architecture itself tells the story: as you walk through the stations of the cross you walk the path of Jesus on his way to Calvary. The created a landscape within the church that was a distant local landscape, the landscape was brought into the church and became part of the church, part of the building, and part of its built environment. They distributed locality there, the locality remains but now it is in the stones, the paintings, the very walls of the church. I am proud to say that I once taught at the Sorbonne in Paris; the power of the teacher there is very much the same as the power of the priest in a church. The teacher in the Sorbonne stands in the center of an amphitheatre and the space is designed so that power flows to the teacher in the center: the room is built so that he is the focus of the structure. It was a fantastic space in the middle ages, a very dialogic space for

such great teachers as Abelard. The students would sit in the upper tiers and galleries around the philosopher calling out questions, and the philosopher's role was to walk around and pick out the questions to be answered, the philosopher would be flexible and dance with the questions as they were coming in. Aristotle's school was called peripatetic, which means walking, and that is the way he taught philosophy, by walking around through sacred spaces. The Salon is a sacred space, walked through by a philosopher. A space that secreted its power in a very local, universalizing architecture.

And now on to the laboratory, that space which is the canonical scientific creation (Shapin, Schaffer & Hobbes 1989) (even though it is thankfully losing its priority from previous centuries), that place where knowledge occurs and where knowledge grows in many ways. Laboratories are an interesting case of a locality within a locality. The laboratory is somewhere that excludes society, culture, nature and natural phenomena. This is exemplified in the search for gravity waves as it is being conducted today. One can only properly detect gravity waves if there is nothing moving within about several hundred meters of the laboratory – a truck driving by will completely wreck the measurement – so the gravity scientists had to create a completely sacrosanct, non-sacred space from which knowledge can travel. And it is a very strange sort of knowledge that travels out from the laboratory: it can travel only along tight and formal networks like the Internet, it can only be reproduced in other laboratories (try verifying String Theory at home), other local localities that are equally cut off from nature and culture. So laboratories are a very special kind of place, created so that something can become universally true by following a pair of specific exclusions: the exclusion of nature, and of culture. Crucially, this is a sacred space of power: because it is so withdrawn from the world as locals know it and because what comes out of there is unimpeachable truth (pace Climategate) by true scientific authorities. However, there is friction in the world – trucks do drive by, things do go wrong. In many ways we should be studying more of the science of the real world: an extensive local rather than the tiny locals of universal knowledge. In many ways we don't study the world, we try to create the universal precisely through the exclusion of everything possible from the laboratory.

So what kind of person moves and is created within that scientific world? Warren McCulloch, a brilliant computer scientist who first envisioned (with Pitts) the first neural nets outside of ants and humans, relates this story of being questioned by a Quaker priest, 'Warren,' said he, 'what is thee going to be?' And I said, 'I don't know.' 'And what is thee going to do?' And again I said, 'I have no idea, but there is one question I would like to answer: What is a number, that a man may know it, and a man, that he may know a number?' He smiled and said, 'Friend, thee will be busy as long as thee lives.'⁵ This question led to one of the greatest papers of all time.⁶ The

⁵ http://muse.jhu.edu/journals/perspectives_in_biology_and_medicine/v043/43.2arbib.html

⁶ http://www.vordenker.de/ggphilosophy/mcculloch_what-is-a-number.pdf



question is not only what does it take for me to understand numbers, what is it about numbers that I can understand, and what kind of person do I have to be in order to understand them. The question goes both ways, it's not just about understanding the world through numbers, it's about changing my self understanding so that I can understand myself through.

This is a question that has dominated and inflected a lot of my thinking for a long time. What I study is infrastructure, as seen in this cover from the New York Times several weeks ago⁷. A picture of an American city and a picture of the infrastructure that happens underneath it, with trains heading out here, water pipes there, internet cables everywhere. The city itself sits on the infrastructure and its through infrastructure that I can travel, that I am home and that I feel native. I have had to change myself and develop a new kind of culture in order to be the kind of person who can travel through that infrastructure and can feel native to that infrastructure. It's really local, but strangely so. If you want a picture of it, take this image of Chicago:

It is just a rendition (in the pre-toxic definition of the word) of Michigan Street in Chicago with card catalogs underneath it all – card catalogs that are not necessarily easy to get information out of. That is my native territory, I live through the electronic card catalogs and filing cabinets, I organize my life that way and I think that way. Much like in a story told to me by my friend Mark, who, when he first put his computer together created two separate drives: one called the right brain and one called the left brain, and both associate with the function of that half of the brain. It turns out that after a few years he had to do to away with the right brain (associated with creativity) because there was nothing in there.

Bruno Latour described how scientific information travels through the metaphor of the refrigerator truck. In a refrigerator truck, the electricity must be continuous, if it turns off at any one stage the meat rots and the cargo is lost. In the same way you need to maintain scientific information from its creation to the moment it gets to the next lab without transforming it and without changing it. So scientific information operates in a very unusual kind of space where proper reproduction of that space requires that everything be taken from one end of the network to the other, keeping it exactly the same – without letting the electricity turn off, rotting the meat.

⁷ <http://vector1media.com/spatialsustain/nyt-magazine-all-about%20infrastructure.html>

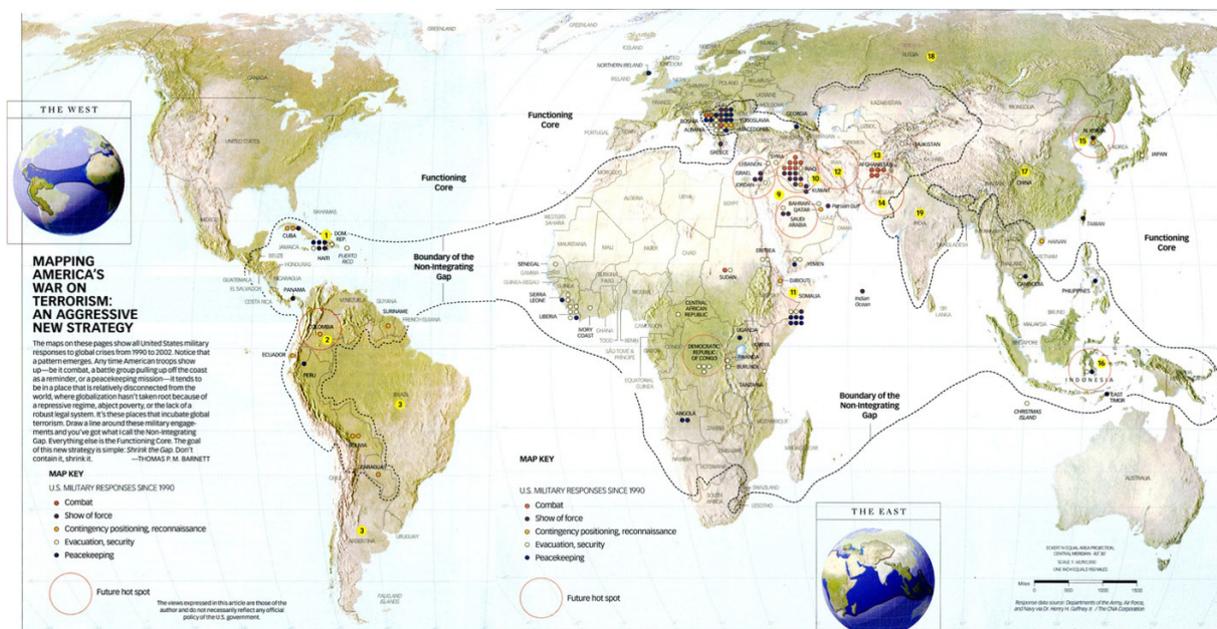
There are ways to try to do this, the Cyc ontology being a classic wrong-headed attempt (and very much the sort of program that Paul Dourish and the others have been part of a strong tradition of fighting) and one of today's numerous attempts towards building what is called the semantic web, towards the goal of creating intelligent web systems that can index and manipulate the world's data. This is been a chimera since the eighteenth century encyclopaedists: a chimera that can last over 200 years is indeed strong (but we have had longer...). The interesting question now, however, is not its possibility (multiply disproven) but its very persistence. The idea is that there can be a single ontology for the whole world. At the apex there is 'thing' and underneath it there are sets and preferences, spatial thinking, terminal thinking, further down is organization, business, professions, transportation, and at the very bottom Michael Christie and myself, existing in the world. This ontology is an attempt to put the whole world within a single structure in a simple way, which is a fundamentally flawed means of understanding the world and it is one of the areas where Yolŋu culture has a lot to teach. It is flawed because ontology changes all the time – the fact of ontological change is what makes the world interesting. What should be created is a computing environment that is sensitive to change, to the way things change along with the seasons, the ways in which climate changes, and even the way rivers change their courses.

One of the things done right now is organizing the world in terms of bar codes, though RFID devices are more in focus now. Bar codes can be problematic, particularly when used on people. There was an old folks home in the 1960s or 1980s in England, where the residents were bar-coded according to their behavior – it was easier than actually getting to know them as individuals. A similar effort is the database of the animal kingdom, where the goal is to database plants and animals using barcodes⁸. Again, this is not an attempt to understand the animal itself, only an attempt to understand that littlest bit of the animal needed to be able to give it a name; so that we can produce ever longer lists, which we can file away, compare, and sort. So just that little bit is bar-coded and we say that that is all we need to know about the animal.

A further example of this mindset is the World Seed Bank, where people are trying to freeze all the existing seeds so that if there is massive climate change and destruction/extinction on earth they will be able to re-grow the lost plants from the original seeds: this really is a stupid idea. Seeds exist in ecosystems, they exist in relationship to other plants, animals and micro-organisms, in specific places. The scientists are not trying to preserve places (since only uninflected co-ordinate space exists), they seek to preserve species, preserve numbers, because that is what they think they know how to do. The current form of local knowledge and transportable knowledge is precisely one that takes only a thin slice of reality, deals only with that reality and tries to exclude all the rest. We even attempt to classify people. Famous experiments have been done, very successfully, where in a classroom a person runs in, steals

8 See for example <http://www.boldsystems.org/views/login.php>

someone's purse, and runs out again. The students do not remember the person that actually did it, or what that individual is like. What they remember is the Hispanic, the black American or the white, and they remember certain kinds of dimensions. However, other incorrect dimensions of the person who came into the room or broke in the building and certain other descriptors, all of which are absolutely wrong will be added to the students descriptions based on the classification of the person the students assigned. We organize ourselves in terms of classification, which is an extremely bad idea. When Melbourne tram tickets first came out, in order to prevent them from being stolen, they would include the height, weight, eye color of the passenger. And that was attached to the ticket given to the conductor – it was organizing people in terms of a set of relatable categories. This method develops so-called universal empires, and one of the ways in which they become universal is in the ability to narrow people down into particular sets of structures, statistics and numbers that are easier to deal with.



This disturbing map is from the Pentagon's new war on terror; part of their new, more aggressive strategy under the Bush presidency. I hope it has been done away by now, but what is interesting about it is that it contains these regions marked out with dotted lines, called the boundary of the non-integrated gap, which end up encompassing the center of the world. The heartland and origin of civilization is now defined as the non-integrated gap, that's where we all came from.

The core of the world is the non-integrating gap and everything outside of it is the core. Makes you wonder what is local and what is not. So you're dealing with some pretty weird language to start with. Future hotspots are marked out in little splashes of red. The interesting thing about this map is that it's an extremely good surrogate map of internet penetration and internet use. The integrated core assumes people who can arrange themselves, describe themselves, and

live on the internet. The non-integrating gap are those poor benighted folks who have not yet framed themselves to become people who are defined by numbers, or to become people who see themselves in terms of classification, organizing their lives in such a way that science seems so natural and universal that their way of knowing seems the only way of knowing rather than one among many local ways of knowing.

Leigh Star and I are both related to the Wiccan tradition in America which is out of an odd mixture of places. Our form was 'discovered' in the 1950s, but claimed naturally to descend directly from the Druids, all the way back in prehistoric England. They claim to have knowledge that was passed on from generation to generation through the killing of witches in the 1600-1700s in the various scourges through various countries. So it is either very old or very new – it certainly feels like both. They have a wonderful phrase in Wicca which to me recapitulates my argument today: it is that we must learn to walk the twisted path. And a twisted path is not the one right true and only way, because there is no highway through life. We all travel twisted paths, and we travel differently along different paths. One of the things I have learned from the Yolju from other friends wherever I go is that the twisted path, and the awareness of your surroundings, of your environment is vital to living a rich phenomenology, and to attempting to save our planet.

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