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Describe the world as it is.
Right now the human race divides into four quadrants: *rural poor* (3.5bn), *urban rich* (1.5bn), *urban poor* (1+ bn), *rural rich* (500m at most.) We have two fundamental species-level problems: the living conditions of the rural poor, and the environmental destructiveness of the urban rich. If we can solve these two problems we have made substantial headway towards "making the world work" to use Buckminster Fuller's phrase.

The problems of the urban rich are high tech big investment issues. The thin film solar panel industry has several billions of dollars of investment behind it, for example. The problems of the rural poor, however, are perennially underfunded even though there is a substantial chance that a lot of progress can be made for very little money, *given certain underlying technological trends.* Fifty years ago universal access to basic education for the entire planet would have seemed implausible, now it seems like exactly the kind of thing we will see in a decade or two as the communications network rolls out globally. The same is true for healthcare and other network-supported services.

Five actions can save the lives of about 1/3 of the people who die every year. They are 1) stop smoking, 2) drink purified water, 3) cook without breathing smoke, 4) use a sanitary toilet, 5) learn improved agriculture. Items 2, 3 and 4 are areas in which public domain solutions with excellent technical properties exist. Biosand filters or the Potters for Peace Filtron have excellent microbiological filtration properties and cost around $10. The Sulabh toilet is a $40 system which works well in many climates. These are simple, simple technologies, easier to master than welding, diesel truck repair and other skills which are to be found near most places in the world.

The opportunity here is to *accelerate the rate at which the arrival of the network in the villages brings human welfare.* For populations with substantial access to ecosystem services, which is most of the rural poor, simple devices which they can learn to build themselves with resources online (if the resources are designed properly) can protect them from the worst health effects of being poor. The improvements in public health will turn into more efficient use of land and whatever economic opportunities may exist around them, better education, and a myriad of other benefits. But, first and above all, the basic quality of life will improve.

The basic technologies all exist. Many need refinement and development, all need further localization, adaptation, documentation, translation and training programs. It can be done!

What change do you want to make?
The big strategic vision is going to take the rest of my life to unfold. The network is only slowly reaching the villages, and highly capable end use devices are still too expensive.

In the short term, I have a tactical breakthrough: the hexayurt. It's a simple enough idea - a very small not-quite geodesic dome which costs $100 at US prices, lasts for years, and can be manufactured nearly anywhere in the world within a few days drive of a major city. The instructions are very simple: cut six sheets of plywood in half from corner to corner, and screw these pieces into a shallow cone. Take six more sheets, put them on their sides in a circle to form a wall, then have 20 people lift the roof on to the wall. Screw the roof to the wall and fasten to the ground. Add some pictures and ordinary builders from any country on earth can mass fabricate these shelters are the rate of several per day.

At a quarter of the price of a conventional disaster relief tent, with several years of life rather than six months to a year, this has the potential to revolutionize disaster relief in many areas of

the world. It obviously has applications for displaced populations, refugees, and the very poor as well - alternate materials, microfinancing models, cooperative manufacturing, semi-permanent models involving spray concrete - the sky is the limit once the goal, **zero waste ultra cheap open source housing**, is made explicit. 60m refugees and IDPs, and a few million disaster victims in poor countries is where we would aim to make a difference: training local teams before disasters strike, localizing designs, making training materials, fixing camp. Changing the world.

A lot of pretty big orgs like the hexayurt. So far nobody has been willing to invest in them, though. Humanitarian innovation is glacially slow, the relief tent has changed little in sixty years, and it's unrealistic to expect a sudden change in NGO innovation practices to just make this happen. Enter, stage right, open hardware style innovation funding. Now we have a shot.

What do you want to explore?

I want to master how to do effective global diffusion of life-saving appropriate technologies, pushing ownership (and innovation) all the way to the villages. I'm going to build on top of all the work that has been done in the field so far, with stoves, with solar cookers, with water filters, and all the rest - but I'm going to bring the 21st century toolkit and understanding to the problem.

And I'm going to document everything, fanatically, and bring as many people from the internet on the journey with me as possible. Go to a slum, teach a few local NGOs how to make hexayurts adapted to their client population. Work with local governments in poor countries to train their first responders and get the building industry involved. Technology diffusion.

What are you going to do to get there?

"Flocks of MIT engineers come over here," Metcalfe tells me, leading me up the back staircase at Beacon Street. "They look at this and say, 'Wow! What a great house! I want to invent something like Ethernet.'"

"I have to sit 'em down for an hour and say, 'No, I don't have this house because I invented Ethernet. I have this house because I went to Cleveland and Schenectady and places like that. I sold Ethernet for a decade. That's why I have this house. It had nothing to do with that brainstorm in 1973.'" He pauses for effect, as we arrive at his top-floor office. "And they don't like that story." http://www.wired.com/wired/archive//6.11/metcalfe_pr.html

The Hexayurt Project is alive because I read Thomas Kuhn's *Structure of Scientific Revolutions*. Beacause of that, I was prepared for it to take 15 years from inventing the shelter to an NGO making a mass deployment of the system. I fully understand the NGO absence of research funding, non-innovating cultures, fear of absorbing risk and similar factors. I am doing this in a sustainable, long-haul way. http://guptaoption.com/1.save.php discusses these issues in more depth.

But with funding, I can take the hexayurt to the places in the humanitarian world where innovation is possible. I can go to countries like Bangladesh, with regular, repeated mass evacuation floods and a large poor population, and directly train them how to build hexayurts without having to go through the mainstream NGO infrastructure. I would go from doing the hexayurt with about 20% of my time, as I struggle to make a living solving problems that nobody really wants to think about, to making it a 100% project, and giving me access to international travel and conferences. At root it comes down to spending time with people, day by day, empowering them to build the housing that the people around them need. It comes down to having the money to produce good quality videos documenting the design for builders all over the world. It makes me a dedicated resource again. It's taken nearly ten years to lay the groundwork for having an overnight success. Let's do this.