Stewart Brand: Can democracies deal with a new energy regime?

Friday, 18 February 2011

Dan McCue

Stewart Brand has lived a charmed life.

A public intellectual in a media-dominated world that often seems too fickle to support them, for more than 40 years he's exhibited an uncanny knack for immersing himself in interesting ideas and groups of interesting people, and coming out of the experience well ahead of the cutting edge.

A one-time member of author Ken Kesey's band of Merry Pranksters -- Tom Wolfe's seminal account of their activities, The Electric Kool-Aid Acid Test, introduces him as "a thin blond guy with a blazing disk on his forehead… and a whole necktie made of [American] Indian beads" – Brand organized the book's namesake event in San Francisco, enlisting the participation of the Grateful Dead, Big Brother and the Holding Company, avant-garde Open Theatre group and others.

If he'd done only that, Brand today would be remembered as a relic of a by-gone era. But the Stanford University trained biologist instead dove into journalism, charting a course from counterculture to cyber-culture to an advocacy of long-term, 10,000-year thinking.

By the early 1970s Brand was known as editor of the *Whole Earth Catalog*, an oversized catalog of "tools" (products, books and more) intended to help readers follow their own inspiration, shape their own lives, and to allow them to share their own suggestions for tools in subsequent editions.

Apple Inc. founder Steve Jobs would later describe the Catalog as the conceptual forerunner of the World Wide Web. In his June 2005 Stanford University commencement speech, Jobs said, "When I was young, there was an amazing publication called the *Whole Earth Catalog*, which was one of the bibles of my generation… It was sort of like Google in paperback form, 35 years before Google came along. It was idealistic and overflowing with neat tools and notion."

Despite his editing obligations, Brand would also begin writing for a number of publications, including Rolling Stone, for which he wrote a December 1972 piece anticipating the coming computer revolution.

Entitled "Spacewar" and subtitled, "Fanatic Life and Symbolic Death among the Computer Bums," it told the story of the late night gaming activities of researchers at Stanford's Artificial Intelligence Laboratory in Palo Alto, Calif.

The rudimentary game they played was a precursor to Space Invaders.

Presciently, the story's first line was, "Ready or not, computers are coming to the people."

During the decades since, Brand has founded a number of organizations, including The WELL – an early virtual community best known for its internet forums – the CoEvolution Quarterly, a magazine on the natural sciences and invention for lay people -- the Global Business Network – a strategic consulting firm best known for its use of scenario planning – and the Long Now Foundation, a San Francisco based cultural institution that seeks to provide a counterpoint to what it sees as today's "faster/cheaper" mindset while promoting "slower/better" thinking.

"And to think, I did it all without traveling," a self-effacing Brand chuckled during a recent conversation with Renewable Energy Magazine.

Turning a bit more serious, the 72-year-old -- who, with his wife Ryan Phelan, continues to live on a tugboat moored in Sausalito on the San Francisco Bay – said probably the most important decision he made when he was young was to enroll at Stanford.

"The main reason was that my older brother went there," Brand said, "But then there was also the fact that while in prep school [Phillips Exeter Academy in Exeter, New Hampshire, about 50 miles north of Boston, Mass.] I read John Steinbeck."

"Steinbeck sung a beautiful siren song of marine biologist Doc Ricketts and Monterey (Calif.) and all that stuff, and as a result, I knew I didn't want to go on to Yale or Harvard, as many of my prep school classmates were hoping, I wanted to go to live on Cannery Row; which, in a sense, I am," he said. "Being in the Bay area, all of this stuff goes on."

Ever the ecopragmatist

Today, in addition to helping to build the 10,000 year Clock of the Long Now, a timepiece to be stored within Mount Washington, south of Great Basin National Park in the US state of Nevada – a prototype of the clock is currently on display at the Science Museum in London – Brand is a prolific writer of books, his latest being *Whole Earth Discipline: An Ecopragmatist Manifesto*.

In it, he lays out positions on renewable energy, nuclear energy and the virtues of genetically modified crops that have put him at odds with some in the environmental community.

Settling into the conversation, Brand mulls the suggestion – espoused by some – that the issues of climate change and renewable energy are really two different discussions, and that it's time to disentangle them in order to better advance the cause of clean energy.

"That strikes me as horse shit," he said. "But it's understandable."

"And, you know, you see the same thing around discussions about nuclear power," Brand continued. "There are a lot of people who like nuclear and who are right-wing enough and hate Al Gore enough, that they are sure that whatever Gore says is right must be wrong."

He laughs.

"They've liked nuclear for years, they don't like Al Gore, and so as far as they're concerned, climate change has nothing to do with nuclear. And as a result they throw away one of their best arguments to make nuclear go forward," Brand said.

"Climate change dominates everything – and it's not even an environmentalist issue [anymore]," he said. "The people I know that are taking climate change most seriously are defense people, security people, all over the world.

"When I was involved in the research and a scenario on abrupt climate change -- this was in 2002, I think – the sponsor of that work was the office of the US Secretary of Defense. And when we came out with the study, it suddenly made it permissible for a lot of people to take climate change personally; as something that would happen on their watch rather that at some time in the future that other people should worry about."

When it comes to energy – and certainly for those that Brand called "the conservation and efficiency crowd," climate change is "the best argument for what they are doing," he said, "along with good economic arguments".

"Renewable energy is getting the kind of support it is today because people are worked up about climate, as they should be," he said.

Nukes? Yes, please

During the 1970s, Brand was among those at the forefront of pushing for the development of renewable energy as an alternative to fossil fuels. From 1977 to 1979, he served as a "special advisor" for alternative energy and environmental matters in the administration of California Governor Jerry Brown (Who was recently re-elected to the same position).

Also during that period Brand was an outspoken opponent of nuclear power, a position he now believes turned out to be a mistake.

"Even the Sierra Club in the 1960s supported nuclear as a substitute for dams, which they hated, probably correctly," he said with a sigh.

Now, however, the prospect of small modular nuclear reactors has caused some – Brand included, although he has other reasons for embracing nuclear as well – to reconsider their earlier opposition to fission-based energy.

"One environmentalist I know in Oregon sees these small modular nuclear reactors as opening up the possibility of taking down, over time, all of the damn hydroelectric dams on the Columbia River," Brand said. "That would let the salmon swim unfettered and allow all the other good things that the river used to be and do. And that is, in fact, a prospect.

"But of course for now you want to keep all the dams because they are clean energy and, like nuclear, they are expensive to build but inexpensive to run, so that's where we are at and I think it's climate that drives the conversation," he said.

The question, in the US at least, where politics is completely polarized, is whether there's still room for reasonable discussion and debate of the issues.

"It's a question of whether you're interested in learning by doing or not learning by arguing," Brand said.

"For instance, one thing I see emerging is the sense that coal has to be made expensive," he continued. "Now, there are two ways to do that: One is with a coal or carbon tax, and the other is insisting that the only coal that can be used is clean coal.

"I used to mock clean coal, and many other environmentalists still do, but I was persuaded by David MacKay, the author of Sustainable Energy Without the Hot Air, that coal is so damn cheap that India and China and everybody else is going to keep on burning it, and so the only hope is to figure out some way to make it clean," Brand said.

"In fact, the Chinese are swarming ahead on this, just as they have on everything else – again learning by doing -- and maybe something will emerge there. [In the meantime], you can liquefy the stuff and inject it under ground, you can bond it into concrete or some other form, whatever it takes to get it the hell out of the atmosphere," he added.

Brand believes until coal becomes expensive, all other sources of energy, be it solar or wind or nuclear, will have to be subsidized simply to stay in the game.

"And that gets tricky because you wind up doing things like subsidizing bio-fuels or the wrong kind of solar, and subsidies, of course, are not a market approach to getting the things you want to happen," he said. "What you want is to make the thing that you don't want expensive, and then let those promoting the other things figure out how they are going to compete with each other in the open marketplace."

Meaningful work is being done

Talk of market share inevitably leads to a discussion of the US renewable market, which in many ways is way behind those in countries like Spain and Germany, and its long dormant nuclear market, which is way behind that of countries like France.

"Personally, I don't give a rat's ass about who makes this stuff, if it's inexpensive," Brand said. "If you can get good, cheap solar collectors from China, that's great. If you can get good, cheap wind turbines from Denmark, that's just fine.

"Now that's not to suggest that there isn't a lot of meaningful work being done in the US in this area," he continued. "There are a lot of people in the US working on solar. For instance, you have Bill Gross and the Idea Lab [a Pasadena, Calif.-based firm that strives to create and operate pioneering technology companies], who are looking at very computer intense, but otherwise very inexpensive, solar thermal.

"And now that people are talking about using molten salts to store the sun's heat during the day to provide power at night, solar thermal is starting to look increasingly viable," Brand said. "Once you solve the storage problem, you might be able to use it to put out energy 24 hours a day.

"But the problem is that solar is just homeopathic in its contribution to the grid at present," he said. "It's great on rooftops and I use it myself in two or three different ways – there's nothing better for keeping your electrified fence electrified or for heating a lap pool -- but as far as feeding into the grid, solar has had 40 years to prove itself and so far, it's proven to be a pipedream."

By comparison, Brand believes wind is becoming far more significant, although even there, it needs to be backed up by hydro-electric power or by gas-fired plants.

"Where it has been done the combination of gas fired pants and wind is working pretty well, and gas is better than coal, but then, it's still a fossil fuel and one would like to go to zero greenhouse gases and you can't do that with gas. But we're getting there," he said.

Sahara as the light source for Europe

Like quantum physicist Freeman Dyson, who was recently interviewed in these pages, Brand believes recent discoveries of significant natural gas reserves will delay the transition away from fossil fuels.

"It’s certainly buying time, and with less greenhouse gases than coal," he said.

But that said, Brand said we still have to keep moving forward on other forms of renewable energy. Like many others, he spoke enthusiastically about the promise of solar energy captured in North Africa and supplied to the region’s neighbors in Europe and the Middle East.

"In the Sahara you have a mineral desert where you can put up as much ground cover as you want collecting sunlight, and it’s not going to hurt anything like it does here in California, where we have a green desert and there are desert tortoises and the rest of it to deal with," he said.

"In the Sahara, you can have vast quantities of sandy land for solar collection -- probably in the solar thermal mode, although it might be photovoltaic – and once you put it into DC mode, you can pump it beneath the Mediterranean with relatively low loss, to Europe," Brand explained. "So literally, you could have Europe lit up at night with sunlight captured in the Sahara during the day – with a lot of efficiency.

"Now, that requires a lot of collaboration, but we’re getting better at that, and I’m sure that North Africa would be very happy to export yet another form of energy to Europe. The same could be done in Australia, and at that scale, it makes sense," he said. "If you can take advantage of our mineral deserts, and then ship the electrons with relatively low losses, then solar looks like it can be a major player over time."

A shift in public policy

When Brand first started touting the possibilities of nuclear, that backlash was fierce – even, or particularly, among long time friends – and the internet was rife with articles purporting to explain "Why Stuart Brand is Wrong"

Recently, however, the conversation – and public policy – has begun to shift.

For instance, the Obama administration’s 2012 budget proposal includes a request for money to help the very "modular" reactors that have been much on Brand’s mind of late; as described by the White House, the allocation of $500 million over five years is intended to help the US Dept. of Energy meet a federal target of reducing its carbon dioxide emissions by relying more on clean energy. Like other federal agencies, the DOE is required by executive order to reduce its carbon footprint by 28 percent by 2020.

The $500 million is projected as half the cost of completing two designs for the modules and securing the approval of the Nuclear Regulatory Commission.

If successfully built, the reactors would be built almost entirely in a factory and trucked to their site, much as mobile homes are today. The reactors would be owned by a utility and supply electricity to a government lab.

On throwing the reactor proposal into its mix of spending proposals, the administration is acting on the belief that if it provides half the money up front and signs a contract to buy the power from the reactor, a utility will be persuaded to buy one.

“A lot of people are jumping on the small modular reactor bandwagon,” Brand said.

“Probably the viable model out there now is a 125 MW reactor, called mpower, from Babcock & Wilcox, which already builds reactors for nuclear submarines,” he continued. “Basically, the way I see these being rolled out is on a one town/one reactor basis, at least that’s one scenario.

“It seems to me this would be a simpler, cleaner, safer – and significantly cheaper long-term solution to our energy problems, and you wouldn’t have to have the long power lines that go along with wind and go along

with grid solar," Brand said. "That's a particularly significant consideration in the US, where it's very, very difficult to get long distance power lines in. You know, local environmentalist get involved and say, 'Forget it.'

"And look, the reason we haven't got any off-shore wind in the US yet is basically because of aesthetic complaints, so I think modular nuclear is going to look increasingly good," he said.

Under the Obama plan, the White House has indicated it would like to see at least four companies submit designs of proposed modular reactors. Brand said there are already several designs on various drawing boards, and some will prove better than others.

"The thing is, you only know which will really fulfill your goals after you start to try them," he said. "Chances are they'll be designed and possibly built here, and then sold in the developing world for the time being, because it's those nations that typically have a greater need to build new energy sources. They are electrifying their countryside and these things are perfect for that.

"At that point, people will get a chance to see them in place out in the marketplace, and I'd expect any number of towns to then say, 'Hell, let's just do it,'" he said.

Regulatory regime still a potential obstacle

But there's another aspect to all this, and one that applies equally to the renewable energy sector – whether the regulatory regime is in place to allow this to happen.

"Yeah, that's a famous problem with nuclear, and particularly in the US," Brand said.

In the US, he said, it has taken as long as 12 years for a reactor to get through the licensing and permitting phase, where in France, it typically only takes three years.

"There has been some streamlining done on the part of the Nuclear Regulatory Commission, and, as is obvious from the current proposal, the administration is obviously trying to ramp up the pace of development in this sector," Brand said.

"Now, that said, what I would like to see is at least some subset of environmentalists say, 'Look, the climate situation is so serious, they we are going to get behind this nuclear, and we want to see the regulations being promulgated become more realistic rather than preventative," he said.

What's the real difference? In a realistic regulatory regime, the emphasis is on getting stuff working, Brand said.

"Again, it's the learn-by-doing aspect," he said. "Rather than trying to anticipate every imaginable problem and somehow heading it off, inevitable delaying everything in the process, you have multiple things going at once, and you determine what needs to be addressed as you go along."

Brand likened the historic regulatory regime for nuclear in the US to the experience of trying to buy a train ticket in India.

"You have to stand on five different lines to get wherever you want to go," he said."A realistic approach to approving these things isn't that sequential. You have to have things occurring in parallel, and then you set in motion a lot of vigilance to catch potential problems as they emerge."

Brand said Westinghouse has a very good reactor design, the AP 1,000, and that China is actually building four of them right now. [Note: Westinghouse also, as of last week, entered the modular reactor market with

a 200MW version of the AP 1,000.] However, the reactors are in limbo in the US due to a Senate oversight committee that said in the aftermath of the 11 September terrorist attacks in the US, all new nuclear reactors need to be impervious to the impact from airliners.

“And the mind boggles,” Brand said.

“That is not a serious issue in real life, it’s an imaginary political issue,” he said. “And to delay getting serious greenhouse gas-free clean energy at scale over stuff like that makes your mind wiggle.

“So that’s a case of -- I don’t know if it was encouraged by the preventers or just encouraged by the political climate, which itself is pretty insane about terrorism -- but the result is you have a delay where you should not have a delay. It’s nothing to do with real safety,” he said.

And Brand believes a similar psychology plays itself out in other areas, including the approval of renewable energy projects and the development of genetically engineered crops.

“That’s one of the reasons you have only large corporations that can do a lot of these things,” he said. “The small players basically get chased out of business by excessive regulation.”

Using the genetic engineering of food crops as his example, Brand said introducing a new development requires completely separate approvals from three different governmental agencies.

“So it’s horrendously expensive and totally unnecessary,” he said.

“To get these technologies going, you need to have just one source, one agency, that has its hand on the clock,” Brand said. “That way you know how long it is going to be before you get a go or no go, and you get full debate from people who have other opinions, and then you have some entity that says, ‘OK, we’ve looked at all the results in a transparent process, here they are, we have the authority and responsibility to make a decision on this and our decision is go ahead.’

“At the same time, this one agency can set in motion a plan to monitor the project and watch the issues that have been raised by critics of the technology or a particular project,” he continued. “That’s the way things should be done, and that takes a combination of government being asked to step up and do its job, and legislators and an executive branch that is responsive to that request.”

“Many times, unfortunately, governments don’t take action until the people say, ‘Damn it, deliver,’” he added.

An open question

With that, Brand was off and running on a critique of democratic government circa 2011, a form of government – in the US, at least – that’s recently been stymied by what he described as “domination by the minority,” wherein the minority party in the US government has been able to block legislation merely by exploiting arcane rules, and lobbyists who can “tangle the process” beyond belief.

“That’s why you have China, a country run by people trained as engineers and scientists who can decide things and act on them, and we feel sort of envious,” he said.

“So the big question is: Can democracies deal with climate change?” Brand said, erupting into a big peal of laughter.

“And it’s an open question, you know? And it is part of dozens of really profound questions that we are dealing with in this century,” he said.

(This is the first of a two part interview.)

For additional information:

Stewart Brand’s web site