



The Conversational Interface: Our Next Great Leap Forward (aka Conversational User Interface, Linguistic UI, Natural UI, Spoken Dialog System, etc.)

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The Cybertwin and the Valuecosm: Your Emerging Digital Self

It seems clear to me that our **cybertwins**, our emerging digital technological agents, which will contain increasingly advanced public and private **context-sensitive preference maps of our values**, will eventually become **our best filters of and interfaces to the growing complexity of online environments. Why? Because that's what we want**--a highly personalized extension of our own memories and desires, that will increasingly represent and motivate us, and that can increasingly act in more uniquely differentiated and creative ways than we can in our slow, biological physical space.

A good intro to and some scenarios for future cybertwins can be found in philosopher **Eric Steinhart's Survival as a Digital Ghost**, *Minds and Machines*, 2007, 17:261-271. In particular we must understand the rationale for some of us to want a *twin*, as opposed to just a very good butler or servant, with its own separate personality, as many will choose instead, at least at first. As systems theorists **Roger Conant** and **W. Ross Ashby** elegantly argued in 1970, every good regulator of a system must be a model of that system. As our cybertwins become better and better regulators of our biological selves, regardless of their initial personalities, they must become increasingly better models, extensions, and twins of that self. At some point, we will learn how to merge even our higher thought with them, via brain-computer interfaces, and will consider them an *indistinguishable part* of us. At that point, when our biological bodies die, this may subjectively feel, to our digital-biological hybrid self, simply like further growth and change, not death. We can make this surprising claim because once the particular patterns of neural synchronization which apparently generate our conscious perception exist across *both* our biological and digital selves, there will be *no subjective cessation of conscious experience* on the death of our biological self.

Furthermore, as our digital self will have both an indefinite lifespan and the ability to backup and continuously fork and reintegrate versions of itself, *no significant information destruction* will have occurred in the loss of the biological body and brain. As our computer technology continues its accelerative and increasingly autonomous growth, these critical patterns will have been progressively uploaded into our cybertwin. From the perspective of planetary complexity, this will represent a major transition in evolutionary development. An irreversible developmental substrate shift (biological to technological) will have occurred, for the leading edge of complexity on our planet. Finally, we can expect that similar shifts to postbiological evolutionary development are likely to occur for all advanced biological intelligences on all Earthlike planets in our universe. If true, these insights have major implications for the nature and future of

SETI (the Search for Extraterrestrial Intelligence). For more, see my 2002 paper, *Answering the Fermi Paradox*.

In the 1980's, technology futurist **George Gilder** talked eloquently about the *Microcosm*, the explosion/new environment/universe of inexpensive microprocessing power, which began in the 1960's, and ushered in the personal computer. In the 1990's he talked about the *Telecosm*, the explosion of inexpensive telecommunications via fiber optics and network technologies, which began in the late 1980's and ushered in advanced new forms of globalization. Futurist **Bruce Sterling**, in *Shaping Things*, and technologists **Chris Stakutis** and **John G. Webster** in *Inescapable Data*, have each talked about the *Datacosm*, the explosion of unstructured data on the web, which began in the late 1990's and has led us to fantastic new automated structuring tools like Google, and new data mining and competitive intelligence platforms.

In the early 2000's I began thinking about next steps in this hierarchy, and became interested in something I call the *Valuecosm*, the explosion of structured public and private maps, data sets, and statistical models of human preferences and values. We can think of the valuecosm as an element of the Semantic Web, that eloquent vision of **Tim Berners-Lee**, but focused most specifically on human values and preferences in a broad variety of contexts, and graph theory, Bayesian, and other models comparing those values quantitatively and qualitatively to others in the values space.

In concert with cybertwins as our interface to the digital world, the emerging valuecosm will help us grow avatars that act and transact progressively better for us every day, will lead us to dramatically better discovery of potential positive-sum social interactions, to better and more distributed social network media and education, to great new subcultural diversity, and ultimately, to new ways to hold powerful actors accountable to democratic values.

In this way, as our cybertwins begin to approach human level sophistication later this century, we will use our them to look after our values and advise us on our votes, purchases, and collaborative behaviors ever more powerfully, and thereby usher in *a new level of global accountability of corporations, institutions, governments, and other large actors to human rights and democratic values*. This will be the first generation of an era of total systems quantification, of both abstract and concrete issues of human value, to use futurist **Alvis Brigris's** excellent phrase, and perhaps the first advanced version of the digital democracy vision. See **The Valuecosm**, 2004 for more of these longer-term arguments, if interested.

Once we have reasonably good values maps on the web, and a reasonably advanced cybertwins, able to scour the web for us while we are asleep, to act as our message and media screener and butler while we are awake, etc., imagine the positive implications for:

- Subculture diversity and representation (great new experimentation in victimless variety)
- Global communication and collaboration (no language barrier)
- Global digital divide (nearly disappears)
- Accountability of powerful actors (automated lobby twins for every group with votes and values maps)

As I've argued with my tongue-in-cheek Fourth Law of Technology, we must also expect, and try in advance to minimize, all kinds of **first-generation problems** with these technologies. Consider for example some of the first-gen downsides and concerns cybertwins and the valuecosm might bring to:

- Data security and privacy
- Crime and fraud
- Predictive marketing and consumer behavior programming
- Public relations manipulation
- Echo chambers/cocoons that polarize and lose touch with external realities
- Parenting (how early can kids have cybertwins?)

Getting past the dehumanizing effects of these disruptive technologies that are inevitable in their first generation, moving on to the neutral effects of the second and finally the positive effects of the third generation and beyond, will be major challenges for designers, early adopters, critics, investors, entrepreneurs, politicians, and the other key players in our multifaceted society.

Using Pareto's Law, I would predict that 20% of us will end up using cybertwins and the valuecosm for personal empowerment, to take us to amazing new levels of innovation, and to just-as-amazing new levels of collective ethics and sustainability. 20% will use these tools to be measurably better and more self-empowered than our parents were, on all the measures that matter to us.

The other 80% of us may choose to use these tools for new levels of fantasy, entertainment, distraction, and domestications. I don't think we have to worry so much about that, as long as we keep our citizens away from the worst of the new addictions and dependencies. As long as they don't cause structural violence, as the eminent futurist **Johan Galtung** defined this brilliant meme.

In other words, as long as the 20% of folks who get the 80% of the work done in any society (Pareto's "Vital Few") are significantly empowered by these platforms, everyone else can take a long-deserved rest from millennia of toil, brutality, and hardship, for as long as they damned-well want in fact. No matter how you feel about it, if you think about the meaning and likelihood of accelerating technological change, you may conclude as I have that the leisure society that emerged in the 20th century, so well articulated by futurist **Herman Kahn** in the 1960's, will continue its inexorable advance to new heights of comfort and domestication in the 21st century. We are talking here about biological humans, of course. What happens with technologically-augmented humans may be another story entirely, but that's a story for another generation, not ours.

<http://www.accelerationwatch.com/lui.html#cybertwin>