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The Next Voyager Record: A Qatsi Perspective

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"We are happy here and you be happy there"
—a diplomat's greeting on the Voyager record

The Voyager record, a compendium of basic facts about humanity and the Earth is now hurtling at 40,000 km/h beyond the solar system, approaching the outer edges of the Sun's solar wind. The record is an ingenious marvel of clever coding and thoughtful selection—swiftly produced just before twin spacecraft were launched to the outer planets in 1977. The record (actually two copies on Voyagers I and II) is thought provoking for its intellectual span, as well as its millennial reach into the future—perhaps to survive the sun and Earth, as it heads out to the stars.

On the twenty-fifth anniversary of the Voyager record, we naturally might ask what we might do differently today. What would the technology and content of the next Voyager record be like? Few people could have imagined that before the 20th century was out that "long-playing" records would appear so primitive. Today we could create a multimedia spectacular digital video disc (DVD), that could hold over 17 gigabytes of images, music, and video[1]. No careful selection would be necessary at all, just send an entire encyclopedia! Beyond this, using "artificial intelligence" computer technology, we could make the record into an interactive learning device. With a touch screen or other selective pointer, our extraterrestrial (ET) being could jump about in hyperlinks, relating images and sounds in more or less detail on demand. Using the instructional computing technology of the 1980s, we could provide a question and answer system: Assuming a common notation (as the Voyager record designers cleverly crafted), ET could ask questions and learn at his (or its) own pace. And with just a bit more speculation, using the "agent" technology of today, a computer system could interact with ET to develop a shared vocabulary and learn how to communicate with ET[2]—like sending a proxy of ourselves into space.

These speculations raise many practical issues, such as how the computer and its program would still run correctly in even 50 years, let alone ten million. But I believe the real issues are not about technology or interactivity, per se, but *content*. This has two aspects, which are profoundly related: The problem of *ambiguity* and the question of how could we better convey *the nature of humanity*. Yes, an interactive system that models and adjusts to ET's comprehension might be more appropriate as a galactic messenger. But the real issue is what do we want to convey about

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[1] As a rough estimate, the record's 154 images (100 black and white images, plus 18 in color requiring three images each, all at television resolution, about 640x480 pixels) would require 23 megabytes (MB); the 87.5 minutes of music, 650 MB (one standard CD); the greetings, 35 MB; and the 12 minutes of sound, 35 MB, totaling 753 MB. A four-layer DVD (4 x 4.7 GB) therefore could contain over 23 times as much data, at a fraction of the record's .5 kg and half its diameter.
[2] Luc Steels, The puzzle of language evolution. *Kognitionswissenschaft*, 8(4), 1999.

ourselves? And do we collectively, as citizens, scientists, and governments have a grip on the emotional, let alone representational challenges, of telling the truth about life on Earth?

In this essay, I am going beyond the practical, technical, and political constraints that determined how the first Voyager record was conceived and produced. The limits of size, time, and bureaucracy essentially dictated that it be a kind of collection—a scientific, encyclopedic, instructive, and in many ways prosaic account. Despite conveying emotion by music, and cultures by images and greetings, the record deliberately omits the *historical truth* of humanity—the story of war, disease, religion, and art. This omission, although eminently practical and in many ways unavoidable, strikes me now as critically important. The omission reveals an essential contradiction in the original objective of communicating with an alien culture, as well as a diplomatically masked truth about ourselves.

The imaginative group that put the Voyager record together were struck again and again, as they tried to catalog representative images and sounds of Earth, that our planet is profoundly complex, with many voices (p. 132[3]). From a scientific, intellectual perspective, Carl Sagan believed that there "must come to be a gradual convergence" (p. 6) among independently evolving intelligent beings, which would make decoding and appreciating the record possible. But after providing an instructional sequence about our biological makeup and solar-galactic setting, the theme of the Voyager record changes from convergence to *diversity*, as it seeks to portray the ethnic range of Earth's technology (e.g., types of buildings), music, dress, and so on. This diversity is aptly summarized, "Earth may be one of many worlds, but it also contains many worlds" (p. 162).

And here is the real starting point of my essay: the Voyager record was deliberately a scientific, *technical presentation*. To portray our anguish, our dilemma, and our failures in coping with diversity—in living with our own alien cultures—we need to turn to a radically different mode of communication, an *artistic presentation*. Here I will build on the ideas of Godfrey Reggio, director of the Qatsi films, which portray us not so much as humans (with DNA and a certain average height), but as *peoples*, with conflicting and contradictory beliefs and lifestyles. Qatsi means "way of life" in the Hopi language; the Qatsi perspective focuses on the cultural nature of humanity. As the producers of the Voyager record realized from the start, the story of Earth is more than a tutorial of obvious mathematical and scientific truths. What ET really wants to know is what we'd want to know: What are your peoples like? How have your cultures developed? How have you related the group and the individual, technology and your emotions, and your planet's government to different values? What ET wants to know is how we have dealt with the struggle of cultural encounters. Are we ready to meet a truly alien being and way of life?

The Qatsi Trilogy

An anthropologist once said that the difficulty of studying life is that the everyday context is unremarkable. Would a fish describing its world mention the water?[4] One role of science is to make us aware of our origins and what affects our health and development. One role of art is to

[3] All citations unless otherwise indicated are from Sagan, C., Drake, F. D., Druyan, A., Ferris, T., Lomberg, J., Sagan, L. S. *Murmurs of Earth*, New York: Random House,1978.
[4] Eleanor Wynn, "Taking practice seriously," in *Design at Work*, J. Greenbaum and M. Kyng (editors), Hillsdale, NJ: Lawrence Erlbaum,1991.

reveal our tacit reality, to make the familiar strange. Godfrey Reggio described this reflective motive in the Qatsi trilogy as "An attempt like at the hour of death to rise above yourself and to see yourself in another context. And this context is (the) technological order."[5] Reggio's Qatsi trilogy consists of three films in which vibrant, awesome images are combined with Philip Glass' pulsing music. The first film, *Koyaanisqatsi* ("life out of balance"), uses time lapse video to show motions of people and traffic, which become abstracted into color patterns, strongly reminiscent of electrons in wires or blood flowing through our veins. Reggio makes the perceptual analogy explicit by visually relating the rectangular layouts of our cities to computer chips. At that moment you see yourself as a bit in a circuit, and the Earth as one great computer. The effect is enthralling. New patterns emerge, we see ourselves in an organic computer hive. Our cars are blood cells or electrons. It all looks the same. As Reggio intends, your next question is, "What does this imply about me?"

Metaphors are not realities, and reductionist maps between biology and machines have been the pitfall of sociology, psychology, and AI throughout their short history. The brain is not a computer, and a city is not a hive. But the images make us wonder. They reveal a majestic, grand harmony of interaction, participation, and accumulation. We can see our individuality within a whole and realize it has a dual character, of being located and particular, while always contributing to a larger effect. Reggio's time lapse reveals that acceleration and density are qualities of life, yet this pattern is "unseen and goes unquestioned…. Life unquestioned is life lived in a religious state."

Ironically, technology provides tools for examining the technological order. Like the fish in water, to see your context, you need to reverse figure and ground: "You're trying to stay in touch with it, which you've helped create…. The main event today is not seen by those who live in it."

[5] All Reggio quotes are from an interview on *Powaqqatsi*, MGM Home Entertainment DVD, 2002.

For Reggio, this main event is "the transiting from old nature or the natural environment as our host of life for human habitation into a technological milieu, into mass technology as the environment of life." By technological order or milieu, Reggio means that technology is not just a tool, but *becomes the context*, the water so to speak, which gives our everyday life form and meaning. The question is "not the effect of technology on... [something]" but rather "everything exists within technology…. We live technology."

The deep irony of the Qatsi trilogy is the beauty of the technological order. Reggio's point is not a kind of environmentalist purism or a romancing of the past, but rather a much more subtle realization: Technology is "bad and good at the same time….Life is a mixture of this and that."

> As with life itself, things are not this or that, black or white, good or evil. Experience suggests life is more complex, not open to simple affirmations or condemnations—this being the myopic role of politics, patriotism, propaganda, and advertisement.

Reggio stresses that his antagonistic portrayal of the northern hemisphere (in *Koyaanisqatsi*) and the southern hemisphere (in *Powaqqatsi*) is "not utopian romancing of (a) past that's gone," but a way to reveal the technological order, and what it has done to the southern way of life. He's not trying "to make a [negative] commentary," but to reveal the "struggle" or "process" of cultural transformation. Nevertheless, the films' subtitles, "Life out of balance" and "Life as war," show that globalization, as a single, homogenous culture is a nightmare: "universal [way of life is] fascistic, boring... [and] would deny the very existence of what this world is: A mysterious unit, held together by the web of diversity…. The shibboleth of this world is 'Divided We Stand.'"

Following this lead, the Voyager record can be reexamined in terms of its stance on diversity and how it uses media to communicate its point of view.

Utopian Culture and Universal Meaning

Voyager was intended to be *representative*, both selective and indicative, plus *understandable* through instructive encoding of meaning. Although even in the late 1970s we could question representativeness, today the limits of the encyclopedic approach are more visible. Cognitive science has made great strides in sorting out the nature of information, knowledge, and meaning[6]. Philosophers, educators, linguists, neuropsychologists, and even some computer scientists, realize today (as they did not in 1977) that knowledge cannot be inventoried. Even in principle, we can't record all that the people of Earth know. Of course, this wasn't the intent of the Voyager record, in focusing on the basics of our biology, geology, and astronomy. But in presenting an introduction to the communities of Earth, the Voyager record steps over the line, the slippery slope, of values, meaning, politics, and history.

The approaches used in the Voyager record were *sequential presentation* (in a pedagogical style very impressively accomplished) and *collection of examples*. For example, an attempt was made to represent as many languages as possible in the greetings. Timothy Ferris summarized this recently: "The message—consisting of 116 images, greetings in 55 languages, 19 sounds of Earth, and 27 musical selections—was intended to capture, and it is hoped, one day communicate the diversity of life and culture on our planet."[7]

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[6] For example, see *Situated Cognition*, New York: Cambridge University Press, 1997.
[7] Timothy Ferris, *The Planetary Report* special issue on Voyager, September/October 2002.

But what is diversity? By juxtaposing pictures of ancient and modern technologies, the Voyager record begins to reveal what the Qatsi trilogy portrays as contradiction and conflict—life out of balance, one way of life consuming another, factions whose way of life is war. For example, in *Powaqqatsi* ("life consuming life") an impressionistic collage of music and image contrasts the angular power of the body with static, rectangular walls and skyscrapers.

Besides content, Reggio's presentation style has a modern form. The music-video genre is conceived as "a triadic relation: viewer, image, and music." The gap between image and music is "a place for us," for "personalized meaning." We must "induce meaning… like taking a journey." Unlike a technical presentation, as used for Voyager's scientific content, an artistic presentation recognizes that some meanings cannot be reduced to descriptions. The combination of *silent* images and pounding, unavoidable music is based on Reggio's view of "direct communication without the metaphor of language":

> Language is in a state of vast humiliation. (It) no longer describes the world in which we live…. These films are meant to provoke. They're meant to offer experience rather than an idea or information or a story about a knowable or fictional subject.

The nature of meaning in Voyager's images is absolute and universal—facts are reduced to essential, common terms, grounded in mathematics. Meaning is conceived as something that can be *encoded* in messages, cleverly sequenced and annotated with a notation for sizes, weights, and distances. Rather than exploiting the gap between sound or image and viewer to provoke thought, to say, "Here's something to think about—we're not sure what it means," artistic drawings and painting are completely omitted because of their inherent ambiguity[8]. Notice the relation between form and content: social-historical meanings are not presented, for they would require ambiguous presentations, and by the technical world view we are by definition not communicating if meanings are ambiguous. In stark contrast, the power of Reggio's trilogy is its very ambiguity, the way in which Glass's music engages us to interpret what we are seeing. Again, these ideas were not foreign to the Voyager record designers, as shown by the central importance of music on the disk—filling 2/3rds of the record. They recognized that emotional meaning is real, too, and representing many cultures, not just those of the West, can be accomplished, in part through a music collection[9]. But this is quite different from using music to provoke particular emotions about particular facts of life.

Here lies the essential link between Voyager's objective and Reggio's method: Might today's south-north, east-west cultural conflicts be grasped by using non-technical, artistic means—to portray what cannot be described in any common words—the encounter of inherently incommensurate systems of meaning? Very much unlike Voyager's images that convey *technical* meanings, the Qatsi trilogy's montages and time lapse abstractions are "like looking at the world for the first time."[10] The music *recontextualizes* the images: it is choral, dramatic, and majestic. The images reveal heretofore unimagined size and quantity: *Powaqqatsi* shows masses

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[8] Each color picture was coded as three images; space limits therefore made it impossible to even approximate a representative collection.
[9] Ferris, *The Planetary Report*.
[10] Philip Glass, interview on *Koyaanisqatsi*, MGM Home Entertainment DVD, 2002.

of people carrying bags and boxes on their heads, thousands of men carrying bags of dirt in an open mine. Repeated, long-held images celebrate the individual face and physical labor of the southern and eastern worlds—not the body beautiful, but a story of endurance, strength, work—which Reggio calls "the culture of virility."

The *technological order* is revealed by flows—an infinity of rail cars, accompanied by Glass's repetitive drat-tat-tatting score. The horns are haunting, ever-pleading, driving forward, incessantly becoming the future, rapping at the door. Everywhere is a irrepressible presence of people—the third world hive. And the clock tick ticks: now, next, on, forward, more, here, onward. The technological order is a collage of styles, of cultural norms: folk dresses interwoven with business suits in crowded Indian, Chinese, African, and South American streets. Messages are kaleidoscopically overlaid and blended in a mélange of electronics, sports, animals, buildings, grain and military jets. The "video dream" is an incessant advertisement, the desired self, the acquisitive spirit, the seductive siren of money, fame, clothing, and status. Everywhere in the "new cities in ancient lands" people move in crowds and traffic in cacophonous numbers amid beating, pulsating, driving, booming horns. We are wrapped, dwarfed, encapsulated by the humongous sizes of earth moving equipment, buildings, and rockets.

This "tableau of iconic images… (provokes) questioning the venerated familiar." The familiar is precisely what the Voyager record presented descriptively, with artifacts exemplifying our technologies. Scientific facts are our venerated, spoken truth. But Reggio reveals the unseen, the unrealized: technology envelopes us, it becomes the world in which we live. For the individual, the scale of machinery, trains, traffic, and cities seems inhuman, it transcends our individual control. Oddly, your first feeling is reverence for "awesome beauty, terrible beauty." You sit in almost religious awe at the reality of life on Earth: "What we're most proud of—our shining beast, our way of life." But the films of the trilogy conclude with static, in-your-face images of hovels, filth, and war. Your emotional experience shifts from awe to disgust, from motion to stagnation, from growth to contamination. Finally in *Naqoyqatsi*—a portrayal of "war as

ordinary daily living" of "sanctioned terror against the force of life itself"—one feels anger. The film's trailer, produced in downtown Manhattan just after the terrorist attacks of September 11, 2001, presents the bleakest possible message: "There is no more nature. There is only technology. Everyday life is war." Technology has provided "a life way of killing"—in video games, drone attack planes, and shoulder-held missiles. The context, what orders our individual lives, has become "civilized violence… (in) globalized moments."

The Struggle of Diversity

So what is diversity now? The easier question, which I have presented by my extended treatment of Reggio's Qatsi trilogy, is how to present the nature of life on Earth. Using computer technology, the trilogy's films reveal patterns of groups (crowds, traffic), continuity of scale (chips and cities), and multiple norms (southern and northern, eastern and western). Whether or not you agree that "we are cyborged" already, you begin to realize the contradictions of everyday life.

Reggio focuses on how the "southern world is being consumed by the norms of progress and development." But not only southern norms are being seduced and homogenized. I believe the challenge of the next Voyager record will be to more fairly show how the northern norms are being consumed, too—through immigrant infusion of the norms of poverty, illiteracy, and religious fanaticism. Life consumes life in all directions, not just from north to south or west to east.

The "impact of progress," the exchange of artifacts and people, has transformed *every culture* into a mélange. I may travel but a few miles from my home in the San Francisco peninsula of California to eat at literally dozens of Cambodian, Singaporean, Thai, Indian, and Chinese restaurants. I will never forget the day "Vietnamese" didn't mean ally or enemy, but a type of food. Thirty percent of the people within 40 km of my home were not born in the United States. My voter ballot arrived this year fully duplicated in Spanish and Chinese. My great-grandparents came from four European countries, so I readily accept this culture of immigration. But the immigrants of the 19th century learned English and assimilated.

Ironically, the greatest fear of conservative Americans today is that immigrants remain in enclaves and do not speak "the language." But Reggio says *homogenization* is his greatest fear. So what is the reality of diversity today? Are cultures consumed, with north dominating south as Reggio says, or are southern (eastern) cultures elbowing their way in, to dominate the northern (western) hosts? Does freedom to be yourself mean freedom to form a community that makes me a stranger in my own land? Perhaps human experience is inherently *Powaqqatsi*, "a way of life, that consumes the life forces of other beings in order to further its own life." Although business icons, such as the ever-present McDonalds are obvious, culture is much more than food and running shoes. Consider for example the origins of jazz or rock music. When cultures mix they do not consume, but transform, for the blending of identities is *conceptual*, not just about things. And the very essence of social identity is a conserving force, making cultures resilient and resistant to change.

The Next Voyager Record

Inevitably, given the low probability of the Voyager spacecraft ever encountering ET in our neighborhood, the record's real purpose is to inspire people and to *prepare* for the first contact with extraterrestrials (Barney Oliver, p. 11). In a deep sense, it's about *humanity's contact with itself*. From the NASA perspective and perhaps most of those who prepared the record, it was like dressing up in your Sunday clothes to meet relatives, a trip to the United Planets of the Milky Way: "We knew enough to envision ourselves citizens of the cosmos" (p. 167). As in all diplomatic encounters, geniality and manners are all important: Show your best, don't cause discomfort. Like the greetings of the record (from Iraq: "May all be well"), say everything with a smile on your face, regardless of how you feel.

One must wonder how ET would interpret the omissions, the hiding of poverty, refuse and disease, the species' talent at killing its own kind? Might these truths be guessed, say from the political boundaries drawn on a map (p. 107)? Or the greetings in 55 languages?! What kind of culture shows you x-rays but no photographs of naked bodies? These omissions are not the naivety of 1950s good-feeling, but rather the result of bureaucratic denial, a homogenization required by the state, a technological order that abstracts human nature into techno squiggles—Reggio's very fear. Ultimately on Voyager all you see is a silhouette of humanity, a cultural outline with no fleshy reality. Like the biblical image of Adam and Eve banished from the Garden, we are ashamed of who we are. This truth is carefully, diplomatically hidden from ET.

I stress again that the producers of Voyager were very much aware of cultural conflict, and deliberately defined the project as "an effort to de-provincialize" (p. 132). The pictures indeed begin to reveal that we are aliens to each other. But because of the limits of the 1970s technology and the demands of bureaucracy, the record couldn't come to grips with what it means to have aliens living on your own planet (and in your own city).

Perhaps it's irrelevant whether cultural convergence is utopian (the conservative Americans' desire) or a nightmare (Reggio's "homogenization")—it simply isn't going to happen. I remember once thinking, in my late 20s on my first trip to Tokyo, that I would learn Japanese and grasp their way of life. Ten years later, wiser and more tired, I realized that not only was this impossible, but I would never fully appreciate this other mentality, this other norm. I chuckled to myself—here I was so keen on making contact with another intelligence, living somewhere by another star, and yet I couldn't understand another people of my own species! What chance do we have of communicating the nature of humanity to ET? And what effort are we making to understand each other?

The very idea of creating the Voyager record for an unseen future being is a remark about our inherent interest as human beings in communicating with other peoples—war may be our shame, but diplomacy is in our blood, too. And, importantly, the record demonstrates a belief that aspects of life on Earth are perhaps unique and worth describing. As Carl Sagan summarized so well, "There are other cultures and there will be future times" (p. 3), and "(we are) longing for contact with other beings in the depths of space" (p. 20) —"we would relish a dialogue" (p. 124). A dialogue about science surely. But are we ready to encounter a truly alien culture if we can't

deal with the immigrants next door? Maybe we prefer the unintended humor of the diplomat I quoted at the start: We are happy here, so you stay away!

The truth is, we are not happy here: the first Voyager record will be a poor time capsule for our descendents, and a rather sterile, clinical view of humanity for ET. Even if wars and disease are only a temporary matter, to expect that all conflicts will disappear is utopian, lacking social and historical validity. The next Voyager record, the second disc in the set, should be about the nature of humanity and its inherent conflicts, as portrayed in art and literature: Man vs. Man, Man vs. Nature, Nature vs. Nature.

A cultural encounter is the very purpose of the Voyager record—an effort to communicate with ET. The Qatsi perspective, although perhaps incomplete in Reggio's telling, in principle reaches for an essential integrity—the historical truth of life struggles on Earth. Confronting and coming to terms with cultural clashes might prepare us for the reality of our first contact with ET. Looking at the Voyager record, I expect ET to say, "They haven't come to terms with themselves, they aren't ready for me." Maybe finding an artistic way to present different perspectives on the north-south and east-west encounters will help us survive long enough to greet ET, and to respond with more than sheer panic when the signal arrives.