

Panel

The Artist As Time Traveler

Magalí Arriola— Moderator

What does it mean to be a prophet nowadays? Perhaps more than being someone with an extraordinary gift for predicting the future, a prophet is the visionary who can cry, “I told you so!” once the catastrophe has occurred. The authority attributed to the individual who has prior knowledge is what leads to the creation of self-fulfilling prophecies that, before announcing an unusual event, operate to control our fear of the future. For an audience predisposed to taking predictions as facts, it seems easy to accept the story’s unfolding, even more so when it makes “dark forces” responsible for what is perceived as an inexorable outcome.

Given this situation, it is also easy to say that mass media, and the compulsive imagery they cultivate, make them into prophets and visionaries of our sensationalist culture. And needless to say, after 9/11, top Pentagon officials went to Hollywood to consult screenwriters and film directors on imaginary terrorist scenarios, as a preventive measure against future terrorist attacks.

Conversely, on July 5, 2004, the American tabloid *Weekly World News*, published Maurizio Cattelan’s piece, *The Ninth Hour*, on the cover (without, of course, crediting the artist). It was used to illustrate a story about a meteorite hitting Pope John Paul II days after he had admonished George W. Bush for the torture of prisoners at Abu Ghraib. According to the article, investigations revealed that the face of the devil had been etched into the stone. However, rumors further circulated that the meteorite originally bore the inscription “Jesus is the Savior”, introducing reasonable doubt as to the first version. More than plagiarizing Cattelan’s work, it could be said that the tabloid was plagiarizing its iconoclastic irony by triggering an absurd situation that is, nevertheless, deeply rooted in collective imagery. But it also suggests that appropriations like these induce acceptance of a supreme power capable of dictating the outcome of earthly events that concern us, regardless of our personal beliefs. So given such scenarios, how does the future of art and its possibilities of acting look?

This panel is titled *The Artist As Time Traveler*, and we are going to hear talks by three artists whose works somehow add to —as pointed out by Shuddha in this event’s introductory text— “the abacus of the long count, willing the future to come into being with every creative act”, but willing, too, to have some involvement in the way we perceive and act on it.

Artist, writer and experimental geographer, Trevor Paglen has devoted himself to tracking the undercover military activities of the American government and its

intelligence agencies. This has allowed him to make visible the invisible, particularly in some places in the American desert, an area that has captured Americans' imagination since the westward expansion during the 19th century, insofar as it is the "space of possibilities" where the past can be forgotten and the future freely reinvented based on technological progress. It is also a space whose specific features make it ideal for hidden agendas and conspiracy theories (just as outer space —also central to Paglen's work— would be once the Cold War started).

Julieta Aranda's work, on the other hand, has focused on exploring the way in which fixed unit measures that govern our daily lives, like time, can be altered. She has sought to transform historical narratives by basing them on a subjective experience, which she perceives as an exercise in individual sovereignty. Her work raises questions like "Can we be the referees of our own time?" whether it be by designing a watch that works by the rhythm of her own body or putting together articles related to the Czar's imprisonment in 1917, atomic testing in the Nevada desert in 1952, and the 1971 moon-landing, all in the same newspaper.

Finally, Sarah Kavage's practice has touched on topics like the relationship between human and natural spaces, as well as environmental problems like climate change, urban planning and the exploitation of nature. She has developed projects that analyze the impact of commerce on Chicago, try to take back streets for pedestrians and speculate on what would happen to Seattle ports if the Antarctic Ocean melted.

Trevor Paglen— "Friends of Space, How Are You All?"

Have You Eaten Yet? Or, Why Talk to Aliens Even If We Can't.

Trevor Paglen revisits the story of the Pioneer Plaque and the Golden Record, launched into space in the 1970s in the event of contact with extra-terrestrials, to consider the ethical responsibilities inherent in imagining the other.

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I.

In late 1971, science reporter Richard Hoagland climbed up the metal ladder at the hangar-like thermal-vacuum test facility at TRW Systems in Redondo Beach, just south of Los Angeles. It was dark. Inside a cavernous chamber, the *Pioneer 10* spacecraft was undergoing a week-long test regimen designed to simulate the vacuum and extreme temperatures of deep space. As he climbed up towards the quartz-glass viewing window, Hoagland could see light emanating from the chamber.

Pioneer 10 was going to do something unprecedented. The spacecraft would mark humanity's first venture towards the outer planets and would deliver the first close-up pictures of Jupiter on a fly-by of the great gas giant. But there was something

else. On its fly-by, *Pioneer* would accumulate so much speed from the slingshot effect of Jupiter's gravity that it would achieve escape velocity from the sun. After studying Jupiter, *Pioneer* would hurtle on towards the infinite blackness of interstellar space.

"The inside of the chamber was painted black," Hoagland remembers, "and there's this gleaming creature inside, like a praying mantis pinned to a velvet surface." The spacecraft's gold and Mylar shielding gleamed in the darkness. "It looked like an imprisoned insect waiting to be born... a huge insect waiting to be set free." Then a revelation: "I'm looking at this thing, and absolutely out of nowhere I realized I was looking at a man-made Earth object that was going to leave the Earth and the solar system, never to return... something that will last longer than the pyramids, the ice ages and even the Earth itself... and I realize, 'Oh my God, this is the first thing we've created that *they* could find.' It's got to carry a message!"¹⁵

Hoagland stepped back down the ladder. His friend and fellow science writer Eric Burgess was next in line, waiting to climb and view the spacecraft. Burgess looked up at Hoagland. "Dick," he said, "it's got to carry a message!" Upon their first encounter with the spacecraft, the two friends had the same thought.

Later that day, at NASA's Jet Propulsion Lab (JPL) in Pasadena, California, Hoagland and Burgess tracked down astronomer Carl Sagan, who had just finished delivering a lecture on Mars. They knew that Sagan was involved in the *Pioneer* program and that the famous astronomer was a well-known proponent of the Search for Extraterrestrial Life (SETI), an exploratory science that seeks evidence of life in the universe.

Hoagland and Burgess guided Sagan towards JPL's small museum, and under a model of the *Surveyor* spacecraft told the astronomer that *Pioneer 10* should carry a message for aliens. "He looks up, and that classic Carl smile spreads across his face," recounts Hoagland. "Oh, what a nice idea!"

II.

Or was it? The idea of creating messages to send on interstellar space probes seems both obvious and completely absurd. On the one hand, we might ask, "Why not?" On the other, saying "yes" to messages on space probes and taking the ensuing questions seriously opens up a mind-boggling series of problems. Trying to communicate with aliens asks us to consider the limits of representation, the status of the "universal" and the West's generally ethnocentric, even anthropocentric, assumptions about other beings and cultures. It asks us to address the problem of multiplicities speaking univocally, and involves the indignities associated with speaking for others. If we try to speak to aliens, every manner of formal and ethical conundrum follows. Irresolvable paradoxes and contradictions emerge; one way or another, trying to communicate with aliens means asking, and answering, impossible questions.

III.

Months passed before Hoagland and Burgess heard anything more about their idea.

But Sagan had taken their idea to heart. Unbeknownst to Hoagland and Burgess, Sagan enlisted the help of astronomer Frank Drake, the first person to actively search for extraterrestrial radio signals and one of the founders of SETI, and the two began developing a plan. Drake proposed an “interstellar postcard” depicting a pair of human figures, a sketch of the solar system and a diagram meant to show the location of Earth in the galaxy. With only a few weeks to complete the project, Sagan’s wife, artist Linda Salzman-Sagan, drew two figures: a man and a woman. Her first instinct was to draw the figures holding hands, but she second-guessed herself—she didn’t want to give the impression that the drawing represented a single two-headed being. To indicate Earth’s location in the Milky Way, Drake decided to use pulsar frequencies. The astronomer knew that pulsars (collapsed stars that produce powerful, rhythmic radio pulses) could be used as galactic timekeepers. Because pulsars decay at reasonably predictable rates, a map showing the location of pulsars and their frequencies could theoretically be used by an extraterrestrial scientist to triangulate the location of Earth, and the moment in time that the spacecraft came from. Or so he reasoned.

The now iconic images on what would be called the *Pioneer* Plaque were etched onto gold-anodized aluminium and placed on-board the spacecraft, facing inward to shield the pictures from the constant barrage of micrometeorites it would encounter in space.

On 1 March 1972, Hoagland was practicing with his band in the basement of his New England home. The phone rang. It was Sagan. “I just want to let you know, we launch tomorrow, and it’s on-board,” said the astronomer. According to Hoagland, the *Pioneer* team had kept the plaque secret from the public and even the higher-ups at NASA.

But the precedent had been set: from now on interstellar space probes would be recognized as not only scientific devices but also as cultural emissaries to the galaxy at large. For the *Pioneer 11*, the next spacecraft launched by NASA, in 1973, a second *Pioneer* Plaque, with the same engraving, was also placed on-board.

Three years later, Sagan would be tapped to develop a far more ambitious message. In December 1976, NASA project manager John Casani approached Sagan about the upcoming *Voyager* missions. Like the *Pioneer* probes, *Voyagers 1* and *2* were designed to visit the outer planets, and like their predecessors in the *Pioneer* program, the *Voyager* spacecrafts would accumulate so much speed flying by Jupiter that they, too, would achieve escape velocity and eventually leave our solar system. Casani asked Sagan to create a message for *Voyager* to carry along.

Sagan's initial thought was to "make a modest extension of the *Pioneer* Plaques, perhaps adding some information from molecular biology—for example, on the structure of our proteins and nucleic acids".¹⁶ But the project quickly grew. In late January 1977, Sagan attended a meeting of the American Astronomical Society and its Division of Planetary Sciences, in Honolulu, where he shared a cottage with Drake. Sagan's friend suggested that instead of making another plaque, they should consider making an LP record. Like the *Pioneer* Plaque, an LP would be an etching on metal, but rather than pictures, the LP could contain waveforms. Sound and music could be encoded as on a conventional record, while low-resolution images could be encoded as a video signal and etched in a similar manner... The two astronomers began sketching ideas on a piece of paper: "Spacecraft at launch with human figures; A, T, C, G, PO4, deoxyribose; DNA; human figures (child, adult man and woman, elderly man and woman); Sydney Opera House (with boats); Taj Mahal (with airplane, elephant?);" and so on.¹⁷ Upon their return, Sagan brought the idea to NASA, which, after several weeks, approved it.¹⁸

With only six weeks to complete what would become known as the Golden Record, Sagan assembled a team to develop its contents.¹⁹ Sagan envisioned an ecumenical approach, saying that "The message in its fundamental sense was to be from all mankind."²⁰ There would be images and music from around the world, salutations in 55 languages, nature sounds and written greetings by US President Jimmy Carter and UN Secretary-General Kurt Waldheim, Sagan explained.

Though Sagan loved the idea of including music on the record, he had a narrow view of what that meant. He had little use for much beyond Western classical music and was especially dismissive of what he called "the mindless outpourings of rock-and-roll stations".²¹ The task of choosing music fell to journalist Timothy Ferris, who took a broader view. Ferris' chief concern was to send music "with enough variety to hint at some of the diversity of Earth's peoples," he explained. Still, he recognized the difficulty of the task before him: "We could meet the first criterion imperfectly at best. In addition to our own cultural biases and the time constraints of the record, we had to contend with the sharp drop in information that imposes itself when one looks beyond one's own culture."²² With the help of Alan Lomax and other ethnomusicologists, Ferris added a Bulgarian shepherdess' song, a Navajo night chant, Senegalese percussion, a Peruvian wedding song and other "ethnic" selections to the works by Bach, Beethoven, Mozart and Stravinsky.²³

Salzman-Sagan was responsible for collecting greetings in 55 languages, from Atjehnese to Zulu, seeking to represent the official languages of as many nations as possible. Some examples: ancient Sumerian ("May all be well"); Arabic ("Greetings to our friends in the stars. We wish to meet you someday"); Punjabi ("Welcome home. It is a pleasure to receive you"); Amoy ("Friends of space, how are you all? Have you

eaten yet? Come visit us if you have time”), and English (“Hello from the children of planet Earth”). By Salzman-Sagan’s accounting, more than 96 percent of the world’s speakers are represented.²⁴

Journalist Ann Druyan had a rather stranger task, namely, to come up with the “sounds of Earth”. Druyan explained that they “wanted to use the microphone as the ear’s camera in further enhancing *Voyager’s* portrait of our planet and ourselves”.²⁵ The selection includes “volcanoes, earthquakes and thunder”, followed by “mud pots” and “wind, rain and surf”. Later in the selection, we find “the first tools” (the sound of flint struck against a rock), followed by the barks of a “tame dog” and the sounds of “herding sheep, a blacksmith shop, sawing, tractor and riveter.” There’s a “kiss” and a “mother and child” and, finally, the sound of a pulsar.²⁶

Artist Jon Lomberg spearheaded the collection of images, working with Wendy Gradison of Cornell University. The duo amassed a stack of books and images: *The History of Toys*, *Birds of North America*, *Plant-Devouring Insects*, *The Age of Steam* and nearly two decades worth of *National Geographic* magazines. As Lomberg later explained, the point was to “give a full picture of Earth and its inhabitants”.²⁷

Despite the record’s grand ambition, the team deliberately veered away from anything controversial: “We reached a consensus that we shouldn’t present war, disease, crime and poverty,” Lomberg recounted. “We felt that we were making something that would survive us and our time —something that might be the only token of Earth the universe would have. We decided the worst in us needn’t be sent across the galaxy.”²⁸ Furthermore, the team wanted to “avoid any political statement” or any images that might “seem threatening or hostile to recipients (“Look how tough we are”), which is why we didn’t send a picture of a nuclear explosion”.²⁹ There are no religious images (“There are so many human religions that if we had shown any, we felt we would have to give equal time to all.”) No images of art (“mostly because we didn’t feel competent to decide what art should be sent... And we thought extraterrestrials would have enough trouble interpreting photographs of reality or simple diagrams without including a photograph of a painting, which in itself is an interpretation of reality”).³⁰

For the most part, the images chosen are fairly predictable, based on the rules the team set out for themselves and their source material. There’s a selection from Edward Steichen’s 1955 MoMA exhibition (a child being born, Bushmen hunters, a Midwestern American family) and numerous images from *National Geographic* (sand dunes, a forest scene, a woman raking fallen leaves, a sequoia, dolphins, a school of fish, Jane Goodall with chimpanzees, a dancer from Bali, Andean girls, a Thai craftsman, a cotton harvest, the Great Wall of China, an Amish construction scene, a house interior, a view of Boston from the Charles River, an airplane, an Antarctic Sno-Cat and a radio telescope). Other photographs come from the United Nations (the UN building in New York City in both day

and night shots, an African construction scene, a hut, fishing boats, a Japanese school-room, a portrait of children with a globe, a man from Guatemala and a nursing mother). Perhaps the strangest images in the collection are photographs that the team shot themselves, when they were unable to find an image that clearly showed what they wanted to explain. The surrealistic image titled “Demonstration of Eating, Licking and Drinking” shows Argentinian astronomer Val Boriakoff biting into a toasted tuna fish sandwich, researcher Wendy Gradison licking an ice cream cone and Lebanese graduate student George Helou pouring a pitcher of water into his mouth. In another one of the pictures produced in-house, an unnamed woman stands in a supermarket eating a grape.

IV.

Even before *Voyager* was launched, the protests and critiques had begun. Objections to the *Pioneer* Plaques and Golden Record were nearly as diverse as the diversity of “mankind” the latter’s authors had tried so hard to encapsulate.

Martin Ryle, a Nobel laureate and Astronomer Royal of England, thought it was exceptionally foolhardy to reveal Earth’s location to a potentially hostile alien battle fleet. In Ryle’s estimation, we had no assurance that an extraterrestrial recipient would be friendly. They were just as likely to attack us or to come to Earth looking for a meal. Ryle went so far as to ask the executive committee of the International Astronomical Union to approve a resolution condemning the development of cosmic maps such as the ones found on *Pioneer* and *Voyager*.³¹

Other opponents were less diplomatic. At a dinner after a Cape Canaveral press conference, a boozy Italian-American NASA official approached Lomberg: “You put three German composers on the Record and not one Italian one?” The official proceeded to give “a gesture of such forceful clarity” that Lomberg claims to have wished they “had a photo of it on the record as an example of how humans communicate non-verbally.”³²

The question of inclusion and exclusion had started with the figures on the *Pioneer* Plaque. Sagan is said to have felt terrible about the fact that the people depicted looked white. He and Salzman-Sagan had envisioned making the figures “pan-racial”, but “Somewhere in the transcription from the original sketch drawing to the final engraving the Afro was transmuted into a very non-African Mediterranean-curly haircut.”³³ A cover story in the alternative weekly *Berkeley Barb* printed an image of the plaque with the caption “Hello. We’re from Orange County.”³⁴

Artist Connie Samaras pointed out that even as the team sought to paint an all-inclusive portrait of humanity, they couldn’t escape Walter Benjamin’s observation “There is no document of civilization which is not at the same time a document of barbarism.”³⁵ Samaras writes:

Predictably erased are any vestiges of that era's social change movements — e.g. civil rights, women's liberation, anti-war, lesbian/gay liberation, nuclear disarmament. The result is a privileging of elite white male American/Eurocentric culture where women's bodies are depicted as reproductive vessels, non-Western communities are timelessly portrayed as outside of technology and where whiteness and heterosexuality are naturalized because, once again, they are not commented upon.³⁶

Similar critiques were made of the music selection. Communications scientist Stephanie Nelson and music composer Larry Polansky pointed out that “A disturbing characteristic of the published description of the record is the tremendous disparity of attribution of composers or performers between Western and non-Western musicians. That is, Western composers and performers (Bach, ‘Blind’ Willie Johnson, Mozart, etc.) are named, while the non-Western musicians tend to be simply acknowledged by ethnic category or country of origin (‘Pygmy Girls; Initiation Song’, ‘Japanese Shakuhachi’, ‘Senegalese Percussion’).”³⁷ But the critique doesn't end there. Nelson and Polansky go on to explain that the very notion of disembodied music, such as that found on an LP record, is exceptionally culturally specific:

In many parts of the world, music and dance are often fused into one category. The conception of music as a sound text capturable by written notation or sonic device is not a “universal” cultural idea, and the marking of music as a subject for scholarly analytic study apart from its performance is even less “universal” ... we contend that it is unlikely that much information is imparted about music's use and cultural meanings via its sonic structure alone.³⁸

This formal critique also extends to the inclusion of images. Just as the notion of disembodied music is a relatively recent, historically specific phenomenon, so is the idea of a picture or a photograph as a representation of something outside itself. The Golden Record team was perfectly aware of this. Physicist Philip Morrison and science-fiction author Robert Heinlein had both alerted Lomborg to the fact that “The concept of ‘picture’ as we understand it is by no means ‘universal’ even on Earth, and that human beings from other cultures that don't use pictures have to be educated to the concept before they see photographs as Westerners do”. Lomborg noted that these formal questions “may be an insoluble problem, especially in the unlikely case that those who find *Voyager* ... have no senses as we understand them.”³⁹

So who is the audience for the Golden Record (besides, of course, those of us here on Earth)? Human imagination of extraterrestrials from both scientific literature

and popular culture generally falls into two categories. The first is what we might call the “alien-stranger”; this is an extraterrestrial that is not human but shares many characteristics with humans (roughly similar senses, language, capacity for abstract and symbolic thought, individuals organized into social units and so forth). The alien-stranger is the alien of *Close Encounters of the Third Kind* (1977), *E.T. the Extra-Terrestrial* (1982) and the panoply of beings in the *Star Trek* franchise that emerged in the mid-1960s.

Lomberg’s “insoluble problem” emerges in relation to a different figure of the alien, a figure we might call the “alien-alien”. This is an alien that is truly and radically non-human, with few, if any, overlaps in communication strategies, thought and sense experience. In literature and film, the figure of the alien-alien appears in stories such as Stanisław Lem’s *Solaris* (1961) and *Fiasco* (1987), and to an extent in Arthur C. Clarke’s *2001: A Space Odyssey* (1968) and *Rendezvous with Rama* (1972). Humans can barely recognize the alien-alien as a life form, let alone meaningfully communicate with it. Stories in which humans encounter the alien-alien usually end in one of two ways: either the humans and alien-alien can’t recognize one another and go their separate ways, confused, or they kill each other, often without even realizing it. To design a message for the figure of the alien-alien is by definition impossible; doing so would mean being able to think radically unhuman thoughts and to imagine beyond the limits of human imagination.

Therefore the audience for the Golden Record can only be the alien-stranger, a species broadly similar to humans. If this is so, then Samaras’ critique of the Golden Record may hold. Perhaps it is true that the LP recapitulates some of the more troubling legacies of humanism, echoing the French *mission civilisatrice*, used to justify European colonial rule in the late 19th and early 20th centuries, or even the more recent US “liberations” of Afghanistan and Iraq. But could it have been otherwise? Is it even theoretically possible to compose a message for extraterrestrials with the stated goals of the Golden Record group, namely “a full picture of Earth and its inhabitants”? Of course not. Any “complete” representation of Earth’s geologic, biological, chemical, scientific and cultural diversity would inevitably result in a map of the type envisioned by Jorge Luis Borges in his short story “Del rigor en la ciencia” (On Exactitude in Science, 1946), a representation at least the size, or even a great deal larger, than that which it seeks to represent.

But the Golden Record is not a documentary. As Sagan biographer Key Davidson put it, the Golden Record reads like “the cosmic equivalent of a Hallmark greeting card—all sweetness and light, but with no deep, dark truths.”⁴⁰ Instead of documenting the long histories of poverty, inequality, war, injustice and terror that most of the world’s peoples have been subjected to most of the time, the *Voyager*

team opted to “put our best face to the cosmos... Why not a hopeful rather than a despairing view of humanity and its possible future?”⁴¹ The record’s vision of a harmonious, multicultural planet is one of a world that Sagan and company imagined humanity should aspire towards.

By the end of 1979, *Voyagers 1* and *2* had reached Jupiter, shot a collection of iconic photographs and used the gravitational slingshot effect to achieve escape velocity. They were set to leave the solar system and wander space for untold eons. NASA wasn’t planning any more programs resembling *Pioneer’s* and *Voyager’s* mission profiles. There would be no more interstellar spacecraft for the foreseeable future. And there would be no more messages, no grand representations for aliens, no heated arguments about the merits of Italian versus German classical music, nor photographs intended to explain licking, eating and drinking, nor tepid conversations about whether to tell E.T. about the bomb.

It’s understandable. The *Pioneer* Plaque and Golden Record were impossible objects. Formally, they could not guarantee their own intelligibility vis-à-vis aliens who might not have a sense of vision or know what images or music are. Even if they were interpretable, their ambitions to represent humanity, even its “best face”, could only fail. This double failure leads us to an inevitable conclusion. Sending messages to extraterrestrials on-board space probes is absurd. Let any future space probes remain devoid of grand pronouncements and adornments.

But I am not convinced.

V.

A concern: if we stop crafting messages for “others” to find in a distant future, do we symbolically turn our backs on the future itself?

When I started thinking about the Golden Record, I hazarded a phone call to Seth Shostak, senior astronomer at the SETI Institute in Mountain View, California. Shostak has been an advocate of broadcasting all the information from the World Wide Web into space. “If you were getting a message from some other society, would you rather get the Hallmark card or the Library of Congress?” he asked an interviewer in 2009.⁴² It puzzled me. I asked why he thought that such a gesture had any potential meaning whatsoever. For him, the point was to send a lot of information. A plethora of information ensures that there will be plenty of redundancies in that information. Redundancies make any code far more “crackable” by alien codebreakers. What of the objection that such a gesture presumes aliens to have a roughly similar sensory apparatus to our own? What if they don’t have eyes? Again, Shostak was undeterred, explaining that any organism that develops in the vicinity of a star is probably going to have eyes; after all, vision evolved very early among Earth’s animals, and complex

image-forming eyes have evolved independently at least 20 times. What's more, said Shostak, humans have been able to decipher all sorts of "alien" languages, from Cretan Linear B to Egyptian hieroglyphics and German Enigma machines. Why wouldn't "they" be able to decode our languages and signals?

In a 1984 paper, "Why Intelligent Aliens Will Be Intelligible", artificial intelligence guru Marvin Minsky opines that communicating with aliens is perfectly reasonable. His argument has to do with the fact that spaceflight is only possible when a society develops means through which individuals are able to communicate, cooperate and learn from one another. Collective endeavors, such as building spacecraft or radio-transmitters, require a society to break hard problems into smaller ones and to have a language with which to communicate about objects. They need notions of causality, a way to develop and preserve institutional memory and the ability to allocate resources efficiently. They must be able to plan and to be self-aware. All of these factors would entail a notion of language similar in its broadest strokes to human language, thus suggesting that there would be enough overlap between a human and an alien civilization so that some sort of meaningful communication could take place.⁴³

I'm not inclined to entirely agree with Shostak and Minsky's seemingly easy assumption that extraterrestrials are likely to fall into the alien-stranger category. In a recent essay, "Talking Mathematics to Aliens? (Get Real!... Or Have Fun with Anthropomorphism 101)", cognitive scientist Rafael Núñez argues against the notion of "universal" communication, taking aim at mathematics in particular as a supposedly universal medium: "Because no actual forms of extra-terrestrial aliens ... have ever been documented empirically, such beings are, scientifically, nonentities." They are the product of our imagination. "If we want to believe that talking mathematics to aliens makes sense, we must humbly accept that we are anthropomorphising, big time."⁴⁴

If we take Núñez's notion seriously—that is, that the figure of the alien is a product of our imagination—, then whatever relationship we develop towards that alien is a proxy for our own relationship to ourselves. Because the figure of the alien is also someone we imagine or expect to encounter at a time that has not yet come, it is interwoven with our expectations and imaginations of the future itself. If this is the case, then the decision about whether or not to include grand messages or gifts on space probes carries the symbolic significance of our own relationship to the possibility of a future.

Critiques of the Golden Record are based on either representational or formal grounds: either charging that the content is unrepresentative of humanity or that the media they are encoded upon are themselves ethno- or anthropocentric. But neither of these critiques addresses the ethics of the gesture itself, the question of whether we should or should not include messages for an alien future on our space probes.

The task of crafting a message for a future alien-stranger involves developing a notion of the form and content of a greeting. We must ask ourselves what we would like to say and how we would like to represent ourselves. This was the (impossible) task of the Golden Record team, to which they gave their best effort.

In the face of the impossible task, it seems soothing to throw up our hands and instead imagine that any recipient would be an alien-alien, a figure unable to recognize any message we may have crafted for them, let alone derive any meaning from it. Some might say that if we imagine a future alien-alien as our message's ultimate recipient, then it is irrelevant whether or not we compose messages for them. Invoking the alien-alien seems to deliver us from the thorny problems of representation and form posed by an address to the alien-stranger, but it only does so by placing us in a frightening position, from an ethical perspective.

The belief in the alien-alien harbours a great deal of violence. The alien-alien is a figure to whom we can have no responsibility. Utterly foreign, the alien-alien figure is someone devoid of any semblance of human emotion, curiosity, fear, knowledge and dignity. It is a figure to whom we cannot have any ethical relationship, and there are plenty of alien-alien here on Earth. Consider the chicken. We raise chickens in factory farms; grow them for the sole purpose of eating their flesh, and do so in such a way that they have unimaginably horrible, painful and short lives. The justification, if there can be any, is that chickens are alien-alien; they are so different from us that we are permitted to treat them with what we would consider the height of ultra-violence if humans were the subject.

What's more, the belief in an alien-alien is just as much a figment of human imagination as the figure of the alien-stranger. Anyone who works and lives around animals will attest to the personalities of the chickens, pigs, dogs and sheep in their care. Anyone who owns a cat or a horse can describe at length the rich emotional and affective communications they have with these animals. "Elephants cooperate to solve problems. Chimpanzees teach youngsters to make tools. Even octopuses seem to be able to plan,"⁴⁵ writes science journalist Katherine Harmon, explaining the recent "Cambridge Declaration of Consciousness", wherein an international group of neuroscientists "unequivocally" declared that "all mammals and birds, and many other creatures, including octopuses" have consciousness not entirely unlike our own.⁴⁶ And of course, there remain all too many examples of humans treating one another with the same sorts of violent indifference brought against the alien-alien.

VI.

It may seem silly to spend so much time thinking about hypothetical beings like aliens, alien-strangers and alien-alien. For the record, I do not believe that extraterrestrials

will ever find the gold-plated LP attached to the *Voyager* spacecraft, and I have a very hard time believing that space-faring civilizations exist at all, but that is irrelevant to the point I am making. I do believe in marking those objects, such as interstellar spacecraft, that are destined for an unimaginable and uncertain future. Not necessarily because we actually believe that our spacecraft may one distant day be intercepted by aliens, but because there is much to learn by acting as if that were the case. I believe in continually asking the questions that designing for extraterrestrials implies, because thinking about aliens is a way to think about ourselves and our relationship to the future. The impossible questions of representation and form are fruitful to consider. I do not think that the Golden LP holds anything more than provisional, deeply flawed solutions. I do not think that there are any solutions. There cannot be. But that does not mean that these insoluble questions are ones that we should ignore. Symbolically, much is at stake.

Underlying the question of how to consider aliens is a deeply ethical question, namely what relationship do we want to have to the cosmos, to the stranger and to the future? Should our disposition be pregnant with the nihilism of silent indifference, or should we endeavor to develop an ethical relationship to those symbolic figures and, by extension, ourselves?

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Julieta Aranda—

Today is January 10, 2012. When I think about the future, the expiration date of my current passport, December 21, 2012, is one of the first things that comes to mind. That date—according to some interpretations of the Maya calendar—marks the end of the world.

This could be a complete coincidence, of course, but it may also be evidence of an earthly synchronicity between the expiration of the document that allows me to travel the world and the expiration of the history of that world. Having a passport that is “valid until the end of the world” gives me a sense of bureaucratic relentlessness. It also makes me question how we measure time, and ultimately, what are we actually measuring? How can you measure the immeasurable with bureaucratic tools? Maybe the intention is not really to measure time but to manage it, pin it down in fixed units, exploit it, regulate its use and subject it to fixed valuation processes in terms of production systems.

In the narrative of this symposium, my passport expires the day the world we know ends. Of course I’m wondering what kind of passport I want to have after this one expires, but I am even more curious to know in what kind of time and in what kind of world would I want to use it?

Time has been actively manipulated since the industrial revolution, when the work-day and the idea of “man-hours” were instituted. This created a completely utilitarian

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conception of time. A tool that allows us to calculate the economic value of our activities—from where notions such as a “waste of time”, used to describe tasks that are not considered “productive”— and time, also, as an aid in determining the distance between one event and another. This measurement can be abstract—as abstract as the interval between this moment and the next time I fall in love—, or it can also be a punctual and specific measurement, used, for example, to navigate the space between a hair appointment and a film at 8 pm.

Whether due to superstition, scientific evidence or an apocalyptic yearning, a series of events is currently pointing to the end of the world. Within that narrative, time is running out, even if it's symbolically. This is not the first time this has happened; there have been similar narratives throughout history, apocalyptic purges. Time begins and ends relatively frequently.

For example, reviewing the chronology of creation according to Genesis, in the Judeo-Christian tradition, you may recall that time begins twice. On the first day, light is separated from darkness, and time is created as a derivative of that separation; day and night are created. The time of that first day of creation is a time without measurements, a time of absolute stillness, as described in the paradox of Zeno's arrow.

The other time is heliocentric and has a logical handle that lets us use it as a measuring tool, but does not appear until the fourth day of creation, when two great lights are created in the sky (the sun and moon). Their function is to mark days, years, and seasons. And we must think that this creation is the work of a single god. You can easily imagine that an infinite number of gods can, therefore, establish multiple temporalities with countless beginnings and endings.

In the narrative that dominates currently, we are conditioned to interpret time as a linear passage, conveniently administered through clocks and calendars. This temporality depends on an order of consequences in which we remember and idealize the past while articulating and proposing utopias for the future. In this order, the present becomes an infinitely deferred time, the invisible instant, suffocated between memory and speculation.

I am interested in the ides of a subjective time where the present can cease to be an infinitely deferred space and become an infinitely active space, which does not depend on a contractually fixed relationship between “what we had” and “what is to come”. This subjective and flexible time, where utopias can be updated, requires subjective and flexible units of measurement, removed from the managerial tendencies in our lives and closer to the idea of “taking our own time”.

Interpreting time subjectively is somehow a form of sovereignty, a way of owning yourself. Just as length used to be a subjective system, with units such as the “king's foot”, which changed with the sovereign's shoe size, a unique temporality

could be constructed, based on the experience of time rather than on its administration. In this system, everyone possesses their own time and organizes the world according to their own parameters.

“Revolutionary time”, a short-term initiative after the French Revolution, was an attempt to restructure time. Also called “decimal time”, it proposed adapting time measurement to the metric system, with ten-hour days, each hour consisting of 100 minutes and every minute of 100 seconds. Too far from the agricultural measurement system, based on 12 cycles, which is what has always been used to measure the passage of time, revolutionary time only lasted for two years, from 1793 to 1795. Despite its short duration, the existence of revolutionary time remains in the collective imagery as more than just a failed attempt.

In the book *On the Concept of History*, Walter Benjamin mentions revolutionary time saying:

The consciousness of exploding the continuum of history is peculiar to the revolutionary classes in the moment of their action. The Great Revolution introduced a new calendar. The day on which the calendar started functioned as a historical time-lapse camera. And it is fundamentally the same day, which always returns, in the shape of holidays and memorials. The calendar does not therefore count time like clocks. They are monuments of a historical awareness, of which there has not seemed to be the slightest trace for a hundred years. Yet in the July Revolution an incident took place, which did justice to this consciousness. During the evening of the first skirmishes, it turned out that the clock-towers were shot at independently and simultaneously in several places in Paris.

Personally, revolutionary time seems like a totally radical proposition. It is the time of subject production when the territory where governed subjects are canceled is defined not only in terms of space, but sovereignty over time is also claimed, through the 10-hour day.

Interestingly, this measure of time today —ten hours— has become a symbol of alienation in the production chain. The working day of 10 hours and its ominous weight gives the 10-hour clock, which appears in the film *Metropolis* by Fritz Lang, a completely different meaning from the one proposed by the French Revolution. Today’s meaning has nothing to do with freedom and everything to do with oppression. Perhaps the re-signification of this symbol of temporal autonomy means that once again it is necessary to end history and start writing again, reclaiming our time.

Thinking about these breaks in temporal narrative brings me to the series of changes that have been made in the IDL (International Date Line), the imaginary line

that bisects Earth and separates two consecutive calendar days. Despite its official name, there is no law, treaty, or agreement that determines the exact position of the IDL. It is commonly identified on maps crossing the South Pacific at 180° longitude on the zero meridian and extending to Greenwich, England.

For a long time, the archipelago of Kiribati, a country consisting of 33 small islands, was crossed by the IDL, so half the country lived in one calendar day and the other half in another. In 1995, the archipelago decided to alter the IDL, creating a deviation of 2000 kilometers along it, so that its territory would not be temporally divided. The timeline has an interesting structure. It's like a Möbius strip, and due to the paradox of circumnavigation (well described in Jules Verne's *Around the World in 80 Days*), the IDL skips today, and marks the division between yesterday and tomorrow. Looking from one side, the opposite side is yesterday; the other side is tomorrow, and the present is not a defined space, just that line of tension in between, the possibility of acting between the past and the future. It is also interesting that, since the exact position of the IDL is not legislated, it varies slightly from atlas to atlas. If you superimpose the various representations of the border between yesterday and tomorrow, the outcome is a confused and slightly shaky division, which somehow seems like an appropriate representation of the space occupied by the present.

The setting of the IDL has literally given Kiribati the power to move time. This has been a focus of my work for several years, because I think it is a very good example of the power of a politicized subjectivity to reshape collective imagery. Kiribati, one of the world's poorest countries, had the power to determine its substantive experience of time and globally affect the description of the latter. This means that although Kiribati does not even appear on many maps, because its position in the middle of the Pacific Ocean makes it "fall off the map", it regularly manifests itself in the form of a change in the imaginary line we use to separate one day from the next. As with revolutionary time, this act of reconfiguring time took place in the political arena, but its echoes strongly transcend a simple bureaucratic gesture.

After several years of work inspired by the Kiribati adjustment, I decided to go and see the place. After a long and complicated journey, I arrived at the capital, Tarawa Island, armed with all kinds of statistical information provided by the Internet and libraries but with very little idea of what I would actually find. I knew that Kiribati was a very poor country, with no tourism infrastructure and a subsistence economy; that both England and the United States conducted nuclear testing there between 1957 and 1962, and that Japan and the United States fought a battle there in 1943. But all these facts gleaned from books said nothing about what I would actually find.

And what I found on Tarawa couldn't really have been described adequately. The island is full of ruins of the Second World War that no one has bothered to clean

up. They do not belong to anyone, because the political circumstances that led to the battle no longer matter. The war never made sense to the inhabitants of the island anyway; it was nothing more than a backdrop. It is a parallel and paralyzed narrative, stranded in the history of an island of fishermen. It gave me the feeling of a past that has not been recorded by historians because it hasn't been digested and can't be digested in the circumstances in which it exists. Debris of a past that is completely removed from the events that give it a rationale and that therefore remain immediate in terms of experience.

Walking along the Tarawa beach among the remains of tanks and concrete bunkers, I found about 400 feet of 16mm film in a nest of hermit crabs. I haven't been able to figure out how it got there; for all I know, it may have been there since 1943. I cannot tell if the tape was exposed or not because seaweed, salt, and oxidation corroded the emulsion. The image left on the film is another way of recording the passage of time, another doomsday narrative. And to wrap up my presentation, I would like to show a couple of minutes of this film.

Sarah Kavage— Abstract

Artist and urban planner Sarah Kavage will be speaking about Industrial Harvest, an artistic gesture about the world of commodities trading and its influence on Chicago's history, the farming community and the global food supply. To connect the abstract financial world of commodities trading to real people and real food, Kavage purchased a single futures contract on the Chicago Board of Trade for 1000 bushels of wheat—the original commodity—and then took possession of 1000 bushels of actual commodity wheat. She had the wheat milled into about 20 tons of flour, and spent the summer of 2010 giving it all away to nourish people around the Chicago region.

Hello! I'd like to thank Shuddha and the PAC for inviting me to be a part of this. It's an honor to be here with all of you today.

I'm talking today about my experience with futures markets, through an intervention called Industrial Harvest. With this project, I wanted to address this complex system of commodities speculation and think about its impacts on real people and real food.

The project used an intervention into the Chicago Board of Trade as a way to learn about the futures market and the agricultural commodity system. The Chicago Board of Trade is the institution that started modern agricultural commodity speculation and is still the largest and most influential commodity exchange in the world. The perception that most people have of the Chicago Board of Trade is of a bunch of traders screaming and yelling and waving their arms, but what most people perceive as an absurd subculture casts a long shadow over our food system.

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A commodity is generally a raw material that can be bought and sold in standardized grades and units: for example, wheat—which was what this project focused on— corn, gold, oil. In theory, one commodity unit is exactly the same as the other. Commodities get their value from their fungibility, their abstract nature—their ability to move through the marketplace, anonymously, from one owner to the next. And at yet another level of abstraction, you don't even trade real wheat or any other real commodity on the Board of Trade; you trade futures contracts.

Futures contracts are agreements to buy or sell a certain quantity of a commodity at a certain price, deliverable at some date in the future. With futures contracts, you're basically betting on whether the price of the real commodity is going to go up or down—you don't ever need to touch the real stuff. But the paradox is that the price of the futures contract is the standard that sets the price for real commodities. So the price of real wheat all over the world is set by prices for wheat futures contracts on the Chicago Board of Trade.

On May 11, 2010, I bought a futures contract for 1000 bushels of soft red Winter wheat no. 2. The price at the time was about \$5 a bushel, \$5,000 US dollars for the whole contract. Although I could have closed out this contract with a delivery of real wheat, what typically happens is that the contract is closed out in cash. If you have an interest in the price of real wheat, for example if you're a farmer or a baker or a miller, you use the futures market like insurance, to lock in a price for your crop or your raw materials. If you're a speculator, you're going to take any transaction that you think can make you money. So my perspective on the future is a rather cynical one, because speculators don't care what happens in the future, as long as they can make money off of it!

One month later, I traveled to Chicago to continue my education in the futures market. At the time, I was actually losing money; the Euro debt crisis had disrupted the normal rhythm of the market. And the other troubling thing about the futures market these days is that there is no normal market any more. I'm not just saying that because I lost money! The futures market was a capitalist response to a need for predictability in the food system. Even the speculators had a valuable role in this system, because they brought liquidity to the marketplace; they made sure that every transaction had a buyer and a seller.

But it no longer works like that. This system has been compromised. You can see the consequences of that in 2008, when the price of grains—and especially wheat—spiked to record highs. The story of why this happened basically parallels what happened with the mortgage crisis in the US: Wall Street got interested in commodities and used its political muscle to loosen some key regulations. Commodities markets have now become highly financialized, focused on complex derivatives and are now

unpredictable and overly technical; you need to be a Wall Street professional to use them. So the people for whom they were intended—farmers, millers and food processors—don't use them much any more.

The 2008 bubble in the price of wheat drove up the price of other grains, and also of many other foods. These Wall Street firms are buying huge volumes of futures contracts—we're talking about hundreds of thousands more futures contracts in the system. So the sheer volume of Wall Street trading overshadows the typical supply and demand factors that have influenced the price of grain in the past, such as the weather or how big the harvest was this year. These large volumes of contracts exacerbate any change in the price, causing the food price bubbles in 2008 and again in 2010 and 2011.

There were protests around the world in response to the 2008 "food bubble"—the first of which was right here in Mexico City, protesting the cost of maize. In Mexico, the price of maize is now more than triple what it was ten years ago and this is in large part due to Wall Street's entrance into the commodities market. Shortly after that food bubble hit, the number of hungry people in the world went up to over 1 billion for the first time in history. In places like Asia and Africa, price spikes can much more easily lead to starvation, because people rely more on raw, unprocessed commodities and already spend most of their income on food.

In late June, I closed out my futures contract—at a loss—and arranged the purchase of 1000 bushels of *real* soft red Winter wheat. Just to give you an idea of scale, a bushel is an archaic unit of measurement still used in modern commodities trading that, corresponds to a specific size of basket. 1000 bushels is 30 tons of wheat, enough to fill a semi truck to overflowing.

My wheat came from a grain elevator that holds two million bushels of grain from the many different farms in that area. This grain elevator is as far back as I can trace the origin of my wheat. In the US, it's trendy right now to obsess over where your food comes from, but I was interested in the opposite. The wheat had to be anonymous; a completely generic lot of wheat is the defining feature of a commodity.

Since we're time traveling here, I want to look back to the beginnings of civilization for a minute, because wheat was one of the original commodities. The cultivation of grains was the foundation of civilization. With grains, it was possible to store food for long periods of time and actually amass a surplus. Grain was the first wealth. You can stockpile it just as you would money in a bank. You can use it as a means of control over other people, because those who control the food supply control the people. With a food surplus, you can do things like build permanent settlements, commission laborers to build palaces and temples, and specialized professions can develop because now it is no longer necessary for everyone to spend all of their time finding food.

And so wheat carries two metaphors with it, side by side, through history. One is of nourishment and abundance. This symbology is still with us today – just look at the logos of two major organizations working with issues of food and hunger – the UN FAO (Food & Agriculture Organization) and Feeding America. The motto of the FAO –*fiat panis*– means “let there be bread.”