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Cosmograms
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JOHN TRESCH
COSMOGRAM

I first heard the term "cosmogram" at a conference at Columbia University given by David Damrosch, who does religious studies. He used it when talking about the Tabernacle, the temple that Moses built at the end of Exodus, the second book in the Bible. The Tabernacle is a representation of the entire cosmos – of God's powers, his relation to humans, and their place in relation to the rest of nature. At the time I was studying changes in representations of the cosmos that happened in France during the early industrial revolution. I was using the term "cosmograph," but that seemed to limit it to writing. I was looking for a term that could include not only writing, but images, objects, architectural forms, ritual gestures, "actions."
I went back and looked at the text Damrosch had discussed. This passage of Exodus is a detailed how-to manual for how to build the Hebrews' temple. The role it plays in the narrative of the Bible is to reconstitute the connections and covenant between God, humans, and nature, links that were earlier broken through the fall, the flood, the tower of Babel. The Tabernacle is a temple with the architectural plan, materials, and even the colors chosen by God. It's adapted to the religious life of a nomadic people: it's portable. Like a tent, it can be taken down and built again, and it's made with all the technologies that the Hebrews had at that point: metal working, weaving, drawing, dyeing, woodwork, all of which God mentions by name. At its center is an altar, the Ark of the Covenant, and inside that are the tablets of the Law, a census of all the members of all the tribes, and all the prescriptions on ethics and food: classifications of different kinds of action, different types of people, different plants and animals.
In other words, the text of Exodus is a cosmogram that contains the plan for the holy place, itself a cosmogram that will embody the relations between humans, God, and nature. It also has an interesting reflexivity about the work that goes into it and the place of technology. The result of this construction is that on the seventh day, the day when they stop doing all the different kinds of work that built the temple, when the people enter it, when the priests have accomplished

all the necessary rites in the proper order, God comes to the Hebrews: in the form of a cloud he fills the tent. It's a machine for making God appear. What is fundamental is that the link with God is made possible by the mediation of a construction described in an extremely detailed and technical manner, and this construction has a place for all of society and all of nature. What's important, and why this is different than a cosmology, is that we're talking about a text that results in a concrete practice and set of objects, which weave together a complete inventory or map of the world.

It's the materiality of the cosmogram that makes it a particularly useful object. There are lots of critiques of the notions of "cosmos" and "cosmology," and for good reason. There's always a risk of becoming too vague with these words. Kant's *Critique of Pure Reason* spends many pages on cosmological ideas; he explains that there can be no positive science of the cosmos as a whole. When we ask about the start or end of the universe, the immortality or the freedom of the soul, we're in the realm of speculation; there can't be any sure answers here because there's no empirical experience that we can base our judgments on. Of course, the concept of cosmology is central for anthropology and the history of ideas, and connects to the whole question of hermeneutics – the dependence of every part upon the "whole." So criticisms of the notion of cosmology line up with criticisms of the idea of culture and the project of interpretation in general. To try to understand the cosmology of a people in a different place or time puts us in the position of having to go beyond the things we hear and see to try to grasp the perceptions, the categories of understanding of these "others." Even if you try to "go native" and really become part of the society in question, even if you transform yourself by the ritual steps needed to become a full member of this society, there will always be thousands of ways to show that you still haven't made it. It's always difficult to "Dogonize" yourself – a neologism of the late anthropologist Jean Bazin. So in short, figuring out what is going on in the head of your informants, describing their worldview or cosmology

as a kind of post-hoc imaginary reconstruction, is just about impossible.

Which is where the notion of cosmogram comes in. There are always certain central points of reference that enable people to bring themselves into agreement – in a sense like the rites and symbolic objects Durkheim analyzes in *Les formes élémentaires de la vie religieuse*. Annual festivals establish such fixed points of reference for everyone who claims to be a member of a given group. And that's exactly what a cosmogram does: it puts this totality in a concrete form as the basis for new interpretations and action: social relations, relations with other cultures, with natural entities, with animals, plants – but it also establishes the relation between different domains or ontological levels – the mundane world, the world of spirits, God and the ancestors, places where they intersect. It's much more concrete than a cosmology. A cosmology can't be seen; a "worldview" is locked up inside people's heads. It also allows for lighter grip: people can relate to it in different ways, it's not some monolithic mental pattern that determines their thoughts and action. So a cosmogram points to a cosmology as part of ongoing practices, a representation made by holders of a worldview of that worldview.

What I'm interested in doing, along with other people working in history of science and science studies, is to study Western science like anthropologists study a foreign culture, to understand how different kinds of activities fit together into a complete understanding of the universe, and how those understandings change with new discoveries, inventions, political changes, and contact with other traditions. If we want to understand the cosmology of the West, how it really operates, it's also important to differentiate between cosmograms and cosmology, since nowadays there's a specialized scientific discipline called "cosmology" which studies the history of the physical universe. What's interesting here is the connection between astronomy and theology, which at a certain point in our history got split in two. So trying to grasp the "cosmology" of the modern West poses particularly sticky

problems; and we can only really get a view of the whole picture by thinking about how science and technology fit with the other modes we have for making sense of the universe.

Fieldworkers have collected many cosmograms, as religious symbols and objects, from foreign cultures. Anthropology has for a long time been interested in religion, which is not strange, since the rise of anthropology happened at the same time as a decline in religion in the nineteenth century. But "their" religions have often been opposed to "our" science. If we're studying the West, we might want to think about cosmograms besides such clearly religious ones as the Tabernacle. We often say that there has been a great rupture between knowledge of nature and the rest of society that started with the scientific revolution and was complete by the nineteenth century. That science has taken the place of religion. But looking at cosmograms from turning points in our history may suggest a different story.

The *New Atlantis*, a famous text of Francis Bacon, sometimes called the founder of the scientific method and of empirical observation of nature in England at the start of the seventeenth century, is another cosmogram, which actually appropriates and updates aspects of the Tabernacle in Exodus. It's the story of a bunch of good Christian sailors who get lost at sea but land on an unknown island. They're greeted by a representative of "Solomon's House" who is wearing clothes of linen, in red, blue, and violet, just like the colors of the Tabernacle, and he's carried on a bier decorated with crystal and gold with the image of an angel just like Moses's mercy seat. He tells the sailors about all the treasures in his temple, "Solomon's House." There are all kinds of inventions, some of which existed in Bacon's time but most of which would only be realized much later: machines to produce light, flying machines, engines of war, freezers – in short an inventory, Jules Verne style, of all the technologies that a technocratic society would later invent. What we see by the blending of biblical imagery and pious rhetoric is that for Bacon, this patron saint of the scientific revolution, science is not opposed to theology, but is instead

a reform *within* theology. Observing the world empirically is a means of worshipping God through appreciation of his work. Developing technology, new techniques of agriculture, for example, is a way to perform charity, to increase the fruitfulness of the earth so more people can share in God's blessings.

By 1800 or so the view of nature as a big machine, a clockwork that we know across a great divide of objectivity, had become dominant. Newton's *Principia Mathematica*, updated by Laplace's *Mécanique Céleste*, were cosmograms along these lines, written in mathematical language. Here you get the great polarization between the mechanical world-picture and romanticism, which is often seen as a reaction against industrialization and mechanism. The paintings of Caspar David Friedrich are classic examples of cosmograms that fit into this view, establishing a symbolic link between the interior and the exterior, light (as both reality and metaphor) and the act of seeing, but in an individualist way, and removed from society and technology. Take for example the famous painting of the man seen from the back, facing a stormy sea: it's really the emblem of a certain version of the romantic subject, and it invites us to identify with it, to take us to the limits of reason, to plunge us into a dynamic natural world. In other paintings of Friedrich there are crosses, temples, ruins of cemeteries, which place a certain kind of human sensibility into a specific relation with nature, human history, and divinity. But removed from, and in some readings in *denial* of, science and mechanics.

But this polarization isn't actually so clear. In fact in the first half of the nineteenth century we find many projects of reform that we might call "mechanical romanticism," where people see technology and industrial machinery, steam and early electricity, and new machines for scientific observation, like the Daguerreotype, as the means to recreate the human and natural totality, to overcome social, cultural, intellectual divisions, to reunify the world. In the middle of the nineteenth century, Auguste Comte takes as his starting point the rejection of all references to invisible spirits, to metaphysics, to things

we can't see. But for Comte, in the later part of his career, science becomes a tool for building a completely unified global society on the model of the Catholic church. This is the Religion of Humanity. Sociology is not at all the purely theoretical and disinterested study of society; on the contrary it has a calling to transform society, to rebuild, on the explicit model of the Catholic church, a unified world where there is no more God, no more untested faith – like the one which existed in the Middle Ages and which was finally destroyed once and for all with the French Revolution. The difference is that beliefs are no longer established through authority, but by reason and observation.

In 1849, with his *Positive Catechism*, Auguste Comte created the new rites for the positive age of mankind. He created a whole series of cosmograms which aim at a description of a society in its totality, divided into its distinct classes and functions, along the lines of all the different sciences by which we know all natural phenomena, all the different slices of reality, biological, physical, astronomical, the whole history of the human species. But he goes further: it's a sort of new tabernacle that he's building, a new ark of the covenant. Comte takes back, updates, reappropriates Christian imagery, but to new ends, since he wants to restore cosmological unity in a world without transcendence. The positivist calendar – carved into the north wall of the Bibliothèque Sainte-Geneviève – is a formidable cosmogram. Just like during the French Revolution, if you decide to recreate society, you have to start over at zero. The positivist calendar renames all the days of the week. It attributes to each month one essential stage in the development of human society up to the present: polytheism, fetishism, monotheism, feudalism, metaphysics, up to the "normal" state it's all building to, in opposition to the "pathological" state of recent history. For example there's the festival of women, the day when everyone is reminded of the contribution of women to the history of humanity. For Comte, woman represents emotion, the affective side of humanity. So this organization of time, this refocusing of attention,

this social redistribution of credit, also takes part in a psychology and an ethics. It is in fact a part of everyone's nature that is recalled and honored during this festival; the active force of affection is called to reinforce the unity of the cosmos that the system describes and creates. The festivals remind us of the history of society, making visible current social relations. The calendar, like the applied science of sociology, is a technology for curing contemporary society, bringing it back to a "normal" state.

These concerns of Comte may seem strange in light of what we usually think of as positivism – especially in Anglophone countries, where it usually means relying on empirical observation and logic and rejecting anything like values, faith, or emotion in the realm of knowledge. And I think this misunderstanding of positivism goes hand in hand with a deeper misunderstanding of Western society that's still with us. There is a very widespread line of thought that holds, at some level, that since we've mastered the secrets of the atom, the genetic code, and the principles of combining and recombining matter, our knowledge is strong because it has been rigorously separated from any questions of morality, of politics – and so we talk about scientific research as if it was disconnected from political or ethical questions. Despite endless arguments and counter-examples, there's still this idea of a "pure science" which totally transcends all human relationships. But if we don't want to fall into all kinds of contradictions and self-deceptions, we have to recognize that we're always in this fundamental situation of needing to tie it all together into a single world. At the start of industrialization people saw this: the Priest of Humanity, Comte, or the great naturalist and cosmographer Alexander von Humboldt, or the astronomer François Arago, trying to unite their society's knowledge about nature, its ethical orientations, its social order, into a single representation. Like Dogon cosmologists, like Balinese puppeteers, like Jivaro shamans.

We might ask what are the limits of the concept of cosmogram. Beyond these examples, is there a sort of ideal type? And if we were

trying to use the concept in the present, what kinds of representations would be adequate to the weird and complex world we're facing now? Here I can't help but think of Melik Ohanian's work in connection with Aby Warburg and his *Mnemosyne* atlas, the collection of images that suggests the range of polarities and phantasms that inhabit the modern mind, as we adapt ancient traditions to a new moment – like he says at one point, a means of reckoning with and recovering from our culture's schizophrenia. There's inevitably a continuation with projects of the Enlightenment, like the encyclopedia, which d'Alembert calls a *mappemonde*: cosmograms can be inventories of all that exists and has existed; they can retrace the entire history of humanity; like in the novels of Balzac they can describe a natural history of society. But the romantics, with their obsession with the fragment, lead us to ask if there's anything that *couldn't* count as a cosmogram. The fragment sends us back to the totality; any object we might find is the product of an infinity of relations that extend far beyond this instant in space and time.

Often in a cosmogram there's an aim that goes beyond mere description or depiction: it's often a *redescription*, in the conditional or future tense: not the world as it is but the world as it could be. There can be a utopian intention, the goal of projecting new possibilities into a world which seemed fixed. Or to use a recent example, Philip K. Dick's novels map points where the standard ontology slips, where there are cracks in reality, out of which a new, more complete world can emerge. In this sense cosmograms have a relation to time like that of the rites of passage that all societies have: the liminal time in which ordinary relations are suspended, in which there's often a symbolic recreation of the world and of society, at the same time as the formation of a community outside of ordinary social structures. After the ritual sequence, the participants come back to a transformed world, with the structures redefined, the cosmos remade: the space of possibilities is closed up again. Cosmograms often guide this recreation and restabilization of the world. They might proclaim permanent

structures, or they might acknowledge their own fluidity and contingency.

It's also important that any cosmogram tries to resituate an individual's concerns and anxieties within a frame larger than the individual, the social group, the nation, the present. This dimension of reality is always available: we're always part of the wider system, but we're not always aware of it. Cosmograms imply an ecology. Not just in the sense used by ecologists, but rather the sense that Gregory Bateson gives it in his book, *Steps to an Ecology of Mind*. Bateson has an anti-essentialist perspective that assumes the interdependence of all beings, connecting ecology in the biological sense with cybernetics and what we could call the natural history of ideas.

Equally important is to consider cosmograms in comparison with each other. We need to get past the idea that our society does not require such representations – that with modern science we no longer deal in symbols but with things as they are. We attribute to the sciences the ability to disconnect from all social and ethical questions. We may have an understanding of how certain domains of knowledge work: knowledge of the stars, of the properties of certain plants, of God, of magic, etc., but we don't really understand how to make the links between all these different domains explicit. The history of science and science studies have begun to show how the sciences are always anchored in specific social circumstances which only later get forgotten or erased. What these researchers are trying to do, and I'm happy to count myself among them, is to reconstitute all these links, these social situations that make "autonomous knowledge" possible at a given moment.

So the job might be to inventory all the distinct cosmograms in circulation in a given place and time and to figure out how they're used, how they relate to each other, how they contain, replace, or work in tacit agreement – or hostility – with the others. Then it becomes possible to compare this slice of time with earlier or later episodes. Going further, the horizon is always there of what Levi-Strauss called "anthropology"

as opposed to ethnography; the comparison of cosmograms from very different worlds in space and time. At another level up, especially at an international art exhibit, we have to ask: What kind of cosmogram do you get out of all these disparate, sometimes conflicting, local cosmograms? I don't know enough Greek to say whether or not the word "cosmos" has a plural form. But cosmogram can definitely be put in the plural.

Paris, June 28, 2004