GRAND REALIZATIONS © Dan Bruiger October, 2019

The development of ideas about the world we live in has been punctuated by a series of what I call *grand realizations*. These are changes of perspective that transcend current notions and perceptions by situating them in a larger, more adequate context. A grand realization opens the eyes to a broader view, liberated from former assumptions, which then seem limited and naïve. It *negates* a prevalent view in favor of one that is more objective and ultimately more empowering.

In the realm of scientific ideas, such realizations are known as paradigm shifts or revolutions. Famous examples are the Copernican and Darwinian Revolutions, which each proclaimed a new worldview by negating a previous one. Yet the history of human cognition is marked as well by grand realizations far more generally, in other domains than the physical and biological sciences. For example: in psychology, social and political practices, religion, technology, and ecology. All cases are characterized by a self-transcendence that rejects specific limiting beliefs. However, all cases are also a matter of relative consensus. And some are more sweeping than others in their implications, or of greater social importance. Even outside the scientific community, very few people today would contest the Copernican theory; but some do contest Darwin's theory. Many people may not agree with some of the "realizations" I propose, or about their relative importance. If they are indeed revolutions, some are incomplete, perhaps failed. Given human foibles and the precarious nature of social progress, some may abort or be reversed.

We must understand from the outset that objectivity is an ideal, and not the natural goal of our cognition. But this understanding is itself a grand overarching realization! The natural goal of perception is survival, not truth. If it were not so we could not be here as embodied biological creatures. We are not built to see things as they are, but in such a way that allows our existence. We see through the lens of our nature and our needs. A certain parochial bias is thus the condition of our being. Indeed, the concept of how the world "really" is, apart from our limited perception, is impossibly paradoxical. As Kant observed, we have no access to the world-in-itself, but only to our own thoughts and perceptions. Or, rather, these *are* our access to the external world. The ideal of objectivity is thus a matter of refining our thoughts and perceptions, our beliefs and theories. Grand realizations are *fundamental* refinements.

We moderns can grasp the biological function of perception, which puts our view of reality in the context of our lives as organisms, rather than the context of truth. This was a hard-won realization, scarcely to be taken for granted. Since the natural focus of mind—in the service of survival—lies outward toward the world external to the organism, on which the latter crucially depends, we are thus made to naively perceive the world as *real*, as it is given by the senses, and to trust our perceptions and ideas as the literal truth. This natural circumstance entraps us in particular ways of seeing, which seem natural, obvious, and true to those so entrapped. Knowing this does not alter our basic wiring, but rather adds other wiring that can partially compensate. That is the nature of conscious refinements: they are add-ons to an architecture that remains relatively fixed and unconscious. There is an ongoing tension between the wiring we have naturally inherited and our learned accretions, which are culture-specific and in flux. This makes it difficult to speak of advancements on a species level or as irreversible. Humanity is hardly homogenous, neither through time nor around the world. Modernity itself is a modern idea, unequally and selectively embraced by the world's populations.

The first grand realization, both in time and in importance, is the idea of subjectivity itself. That is: the realization that the world is not just as it seems, and that the appearance of objects—including other people—crucially involves our creative participation as perceiving subjects. This rebuttal of natural realism is a corollary of self-consciousness. Human society would be impossible without it. And many of the problems of human society derive from the inability to transcend natural realism.

Again, the tendency is to trust our perceptions and beliefs, which is often problematic when we come up against the contradictory perceptions and beliefs of others. Paradoxically, our self-conscious subjectivity is the key to any feasible objectivity.

We credit the early Greeks with the exposition in writing of this realization in the West. In the East, it is the Vedas and Buddhist writings. Later reformulated by Kant, Plato's metaphor of the Cave expounds the problem of cognition: we do not perceive reality directly, nor as it is, but only as though a shadow cast by real things on the wall of a cavern in which we are as prisoners from birth. A more contemporary version of this metaphor is that our conscious experience in the hermetically sealed cave of the skull is a biological strategy to represent the world outside, produced by the brain as a sort of virtual reality show.

Objectivity is desirable, of course, yet the natural tendency is to mistake our actual perception for objective reality. In order to maintain this illusion, we tend to eschew all reference to subjectivity, protesting that our perceptions and conceptions are objectively true. While the goal of the ideal of objectivity is to transcend the merely subjective, this can only be accomplished by claiming responsibility for the subjective basis for one's perceptions, thoughts, and beliefs. Paradoxically, we must own our subjectivity in order to become more objective. The presumption of objectivity is that there can be a "view from nowhere." But, both literally and figuratively, all views are perspectives from somewhere and are the views of someone. Natural realism trades on *not* claiming this responsibility, indeed disowning it. Thus, the challenge is often to transcend an apparently objective and obvious point of view. Claiming subjectivity represents an advance (toward objectivity), which is only possible by negating an already presumed objectivity!

Disowning subjectivity in the name of objectivity has been essentially the strategy of science as an approach to nature. In order to better explore the external world in ways useful to human purposes, these purposes remain unspoken. The interceding effect of the observer (including the instruments of observation) is minimized, so that the signal to noise ratio is maximized. The observer's subjectivity is suppressed in order to better focus on the object of investigation. Science is about generalities in the world, not about anecdotal accounts or the idiosyncrasies of individual scientists. Protocols must be standardized; observers must be interchangeable. The observer is to stand outside the system observed, a fly on the wall.

This works as well as it works until it doesn't work. The two great scientific revolutions of the early twentieth century—relativity and quantum theory—are grand realizations concerning the mediating role of light (or energy, as a medium of perception and communication). This implicates the observer in the process of observation, whose scale and state of motion cannot be ignored when considering the very fast and the very small. When the size and mass of observed objects was comparable to the observer's, the effects of the finite grain and tiny energy of light upon them could be neglected. The extreme speed of light was irrelevant to our perceptions and measurements until we confronted things moving at comparable speeds to that of light. Effectively, these were realizations that our view and knowledge of the world depends on our dimensions as physical organisms and our state of motion in relation to other things.

Science has an analyzing and a synthesizing aspect. It is also intrinsically idealizing. The dominance of mathematics (which is pure idealization) means that physical phenomena are idealized in such a way that they can be treated effectively with math. That is, as idealized systems. The analytic aspect of science leads to an analysis in terms of idealized parts, interrelated as the parts of a machine (the paradigm of the idealized system). The functioning of the whole is to be understood as reducible to the functioning of these parts. Thus, mechanism and reductionism are essentially side-effects of idealization. The real natural system is treated as a deductive system (i.e., as a mathematical idealization). Now, an important property of deductive systems is that they are deterministic. Thus, real systems are often treated as deterministic, when in fact it is the equations used to describe them that are deterministic—a distinction that is often overlooked.

Like all mathematical concepts and all idealization, a deductive system is a product of human definition. Real systems, however, are not. They are just what they are, and our way to address their inherent nature is to redefine them in our own (usually idealized mathematical) terms. I call this process *deductionism*, which implies an unavoidable gap between nature itself and our ideas about it—between real and ideal. Scientific theories treat deductive systems rather than natural realities. *Holism*, in contrast, can be understood as a grand realization concerning the limits of deductionism, reductionism, mechanism, determinism, and mathematical treatment in general. This implies that the observer must be included in the description of the (whole) system. It also suggests that nature at large might be more self-organizing than currently thought, since current thinking continues to follow an outdated mechanist metaphor. (Machines—so far—do not self-organize.) Whatever it is, the universe is not a machine or product of definition.

The advance of scientific thought has involved the dethronement of Man from any special or central place in the scheme of things. Like much of Renaissance thought, the heliocentric theory was actually a rediscovery of earlier Greek ideas, lost in the dominant biblical worldview. Galileo confirmed it with observations implying that the earth was but another celestial orb, like the sun, moon, and other planets. Newton furthered this rebuttal of geocentrism with the notion of *universal* laws of motion and gravitation—as below, so above. The spectroscope confirmed that the universe was made of similar stuff as found on earth. Observations with large telescopes established that our solar system—far from being in any way special—orbits the suburbs of a typical galaxy among billions of other galaxies, each of which contains millions of other solar systems with possibly life-bearing planets. Current speculation has it that what we call our universe could be but one among an infinite number of other universes. Such knowledge amounts to a progressively vaster perspective, in which we appear ever less special.[1] On the other hand, it is *we*—human beings—who have made these discoveries and created this knowledge. It is in *our* consciousness that the universe appears. Indeed, it seems that our very existence implies that at least *this* universe must be such as to permit it.[2] The deep significance of this notion is that it fully acknowledges our existence in the world as purely physical beings.

Darwinism was the grand realization of the nineteenth century. Growing geological evidence concerning the age of the earth contradicted the Biblical account and cast doubt on the divine Creation. The apparent ordering of nature is a natural process and not the design of a personal intelligence outside nature. The theory of natural selection negated the notion that human beings are categorically separate from other living things. Man was but another animal, if highly endowed. Humanity was dethroned within the biological world, in which it had been supposedly ordained to reign over the other creatures. Even now, this realization does not sit easily with those committed to traditional religious beliefs. The ecological movement is a logical development of the realization that we are an integral part of the natural world. We are special only in the sense that we are aware of our place within the whole and our responsibility for our effects upon it, and perhaps in a position to take charge of our fate.

Freud had an influence on the pre-eminence of wakeful consciousness similar to Darwin's influence on the pre-eminence of Man in nature. Just as Darwin challenged the repudiation of our animal nature, so Freud challenged the presumed identity of the self with the contents of consciousness—an identification that disowned the "unseemly" aspects of behavior that seemed to arise willy-nilly from some nether region. Just as Man does not stand apart from nature (or the head apart from the body), so the conscious self does not stand apart from a larger psychic life. The left hand (or left brain) is not excused from responsibility simply for not knowing what the right hand/brain is doing. On the contrary, Freud's expanded view implies responsibility for the non-conscious aspects of selfhood.

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[1] Often referred to as the "principle of mediocrity."

[2] A notion often referred to as the "anthropic principle."

Human dethronement proceeded through a series of negations of schemes that take for granted human centrality and importance. But even the notion of "human" has expanded in such a way as to debunk the specialness of the specific given group, which defined humanness as membership within it. In some ethnic languages, the word for one's own tribe simply means *the* people—perhaps reflecting an ancient time before much contact with other groups, but also underlining the assumed self-importance of that group. Humanness was relative. Often enough members of other groups were (and are even today) not considered fully human. Slavery was widely practiced until the mid-19th century, and considered a natural booty of war. The axial religions happened to arise during increased contact between emerging civilizations, perhaps functioning to facilitate coexistence. They implied and taught a more inclusive definition of humanness.[3] Science eventually provided a biological definition of the species. "Human" rights are now almost universally embraced in law.

Within the category of the human, sexual differentiation has meant social differentiation into moieties, long unequal under patriarchy. The dominance by males of women and children (at one time considered chattel), has given way, at least in the modern West, to a formal recognition of their legal status and rights along with those of other minorities. Feminism is thus another grand realization, which negates the "natural" presumption of male superiority and right. The feminist movement contests the domination of society by men. As a grand realization, however, the program is far from complete, often suffering reversals. Patriarchy continues to maintain itself, primarily through its continuing domination of social values. In effect, women are obliged to adopt masculine values and participate in masculine games in order to attain "parity."

Our primate heritage is responsible not only for the above mentioned in-grouping, but also for the persistent dominance of some members over others apart from gender. While our conception of the world and humanity's place within it has broadened, humanity is hardly an homogenous aggregate. "Globalization" (i.e., the dominance of modern international capitalism) has imposed a certain world-wide uniformity in financial and cultural institutions, and even on the structure and appearance of modern cities. While this tends to homogenize practices around the world, it has hardly equalized wealth. Quite the contrary, globalization has imposed a universal machine designed to drive further inequality. Its success is measured by the exponential concentration of wealth in ever fewer hands over the past few decades, so that a very small elite now controls the majority of human assets. This flies directly in the face of the grand political realization that grew over the past several centuries as the ideal of *liberté, égalité, fraternité.* Literal revolutions were sparked by this humanist ideal, which—it can be said—has failed, or been reversed by ingrained (perhaps essentially masculine) cupidity and will to dominance. Around the world, the nominal democracies of modern states are actually oligarchies. These have effectively used modern technology, media, and financial practices to enhance and entrench their power. The challenges posed to them by social movements have only honed their ability to adapt and use opposition to their advantage. Even the nominally communist regimes have been dominated by inequality, not to mention far less subtle means to maintain power.

One could say that communism—or socialism or communalism—promised a grand realization to negate the dominance of the many by the few. If so, these are failed experiments, doomed perhaps by the pernicious ability of rotten apples to spoil the barrel. Historically, democratic movements have been associated with individualism and private property rather than with communal values. Sometimes they were led by the propertied. They often represented an initial struggle within the upper classes of a society (e.g., a rebellion of nobility against the king). Democratic rights (such as the vote) were only gradually expanded to include the non-propertied classes and women. Yet, the failure of communism is linked to the failure of real democracy. For both have succumbed to greed and the quest for power. Controlling elites tout democracy as freedom of the individual, when they mean freedom to help themselves at the expense of others.

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[3] The lesson of the Good Samaritan, for example.

Renaissance humanism was itself a kind of grand realization. It contested the authority of the Church to rule over life and mind. In religious terms, this was expressed directly in the Reformation. As a return to the attractions of this world, it was expressed in a resurgence of creativity that rejected the austere aesthetics and dogma of the medieval Church, sparked by a rediscovery of pre-Christian art and philosophy. In part, on both fronts this rebellion was motivated by the corruption of the Church itself and the flagrant greed and worldliness of its leaders. It was a realization of the hypocrisy of those in power. Humanism emphasizes universal human empowerment and self-definition as opposed to divine power and prescription; self-determination as opposed to the authority of kings and popes; and the values of this life as opposed to the next. Humanists are thus even today accused of godlessness by the religious, even though humanism can be distinguished from atheism. After all, most of the Renaissance humanists and scientists were at least nominal believers.

I consider atheism to be a grand revelation of its own—the rejection of a naïve and literally childish illusion. It is understandable that human beings would project their family structure writ large as a metaphysical reality, often in the form of paternal gods (with at least auxiliary maternal figures) who protect and provide for us, govern us more or less strictly us as parents do, and to whom appeal can be made for help through ritual and prayer. Atheism is a branch of humanism insofar as it negates that child-parent role by insisting on adult empowerment and self-responsibility. More broadly, it also negates the notion of the spiritual as a form of non-material existence. It may include the realization that religion has been cynically used by both religious and political leaders to control the thoughts and behavior of adherents or to exploit them economically. On an obvious level, atheism rejects superstition: the wishful thought of invisible good helpmates and the paranoid thought of invisible evil forces. More subtly, it rejects the authority of fixed dogmas, such as found in sacred texts, in favor of reliance on one's own perception and common sense.

A related realization is that the self does not exist as any sort of real entity—for example, as an eternal non-material soul. The self is a brain function, part of the virtual reality that will cease when the body dies.

Perhaps the most difficult grand realization is that meaning does not reside in the external world at all. Meaning is not about things but about our relationships to them. Nothing has *inherent* meaning, but only the meanings we mortals give it. This negates the comfortable assumption that the source of meaning lies naturally outside oneself, imposed by "reality." That assumption derives from our biological conditioning as organisms highly dependent on the external world and appropriately tuned to it. Meaning is a biologically-based construction of the mind, whose propositions we subscribe to, if not consciously. Yet, precisely because it is not determined by any external spiritual or material reality, meaning is potentially a matter of free choice. On the other hand, because freedom of choice and its attendant responsibility is actually supremely intimidating, humanity as a whole may never agree that religion is a delusion, that there is no life after death, or that existentialism is an advance toward the truth.

To conclude, our ideas about reality have progressed as a sequence of grand realizations, of ever-broadening scope. In terms of our understanding of the physical world, this has meant exploring ever larger and smaller realms through the aid of technology, and realms of ever greater complexity. In other words: gradually moving beyond the limits of our natural senses and scale, from highly anthropocentric and parochial views to ever vaster, more inclusive and objective ones. In terms of understanding ourselves and our place in nature, it has implied—on the one hand—a shrinking human significance. On the other hand, we see ever more clearly our essential co-participation in the appearance we call reality and the responsibility this entails.