

SECURITY

The Coming Coeval Age

by J.N. Nielsen

Of the many scenarios we can entertain for the future of civilization, the most expansive is that which projects human civilization onto the cosmos at large, with humanity building new settlements for itself in far flung outposts of the solar system, then other stars, and even other galaxies. A macro-civilizational expansion in which civilization itself will be iterated on other worlds in other planetary systems with no prior human history would constitute a pristine re-founding of civilization with each new settlement established, whether on another world, or some artificial construction in space. What happens to a civilization when it distributes itself on a cosmological scale? How must its institutions adapt to cosmological expansion?

A civilization that expands into the cosmos will be subject to the same natural forces that shape the universe itself, and the greater the expansion, the greater the extent of the resulting cosmological civilization, the larger the forces that come into play

in shaping that cosmological civilization. Space, time, gravity, and thermodynamics will become as important as population, tradition, law, and education, and, at truly cosmological scales, these natural forces will become *more* important than human factors. As a cosmological civilization converges on totality, coinciding with the universe at large, civilization will become indistinguishable from the universe at large, with the civilization transformed in the image of nature, and the universe transformed in the image of intelligence. Each will approximate the other, meeting somewhere in the middle between mind and nature. Such a grandiose vision, however, is contingent upon human beings (or some peer species) first taking the initiative and expanding beyond Earth, and this initial phase of expansion will be, of necessity, a human undertaking defined by human possibilities and limitations.³⁸

Both the spatiotemporal and institutional structure that a spacefaring civilization takes will be a function of its technological attainment, the

³⁸ In the case of a peer species, other and non-human possibilities and limitations will be the determining factors of spacefaring expansion, but the principle is the same in each case.

possibilities of which cannot be known before the technologies themselves come into being.³⁹ The particular technique of transportation—velocity of travel, rate of expansion, resources required, and ability to communicate, *inter alia*—will all bear upon the structure of a civilization that interacts with itself and with other civilizations through technological means. And we must take into account both the scope of a spacefaring civilization and its developmental arc, i.e., the synchronic and diachronic dimensions of expansion in space. Even within our own solar system, without travel to other stars, a robust spacefaring civilization could be built on other planets, moons, asteroids, and in settlements constructed in space, but, if travel to other stars becomes possible, then prospects are even more expansive. Developmental arcs could

³⁹ Karl Popper made an argument for historical indeterminism based on the impossibility of predicting future scientific knowledge (part of his *Postscript: After Twenty Years*, in the volume titled *The Open Universe: An Argument for Indeterminism*, and summarized in the Preface to *The Poverty of Historicism*). If technological development is predicated upon the prior development of scientific knowledge which is the theoretical basis of a technology, then Popper's argument for historical indeterminism is equally applicable to technology, including spacefaring technologies.

range from very rapid, if technologies like the Alcubierre drive prove to be practicable, to very slow, if we must wait to make our journey to other planetary systems only when they pass near our solar system in the natural course of stars circulating within the disc of the Milky Way galaxy.⁴⁰

If interstellar civilizations are the result of outward migration *not* from Earth, but from space settlements from *earlier* outward migration from Earth, the distinct technological milieux of distinct settlements will be translated to the civilizations that descend from them, as indeed will their cultural

⁴⁰ For this delayed developmental arc of spacefaring civilization cf. “[Stagnant Supercivilizations and Interstellar Travel](#).” Note that a distinction can be made between *delayed* spacefaring expansion and *slow* spacefaring expansion. If a civilization waits until a planetary system comes close enough to Earth to journey there with near-future technology, that is delayed expansion; if a civilization launches a generational starship at its first technological opportunity (also, presumably, near-future technology), that is slow expansion. On the different temporal structures of expansion cf. “[The Large Scale Structure of Spacefaring Civilization](#)” (included in *100 Year Starship 2012 Symposium Conference Proceedings*)

and legal institutions.⁴¹ As these traditions each co-evolve with a distinct suite of technologies, the organic relationship between tradition and technology will be strengthened, with the result being that civilizational structures associated with a given technological solution to transportation on cosmological scales will be specific to each individual civilization. This was true even for agricultural civilizations on a geographically regional scale. Particular staple cultivars and particular domesticated livestock entailed particular agricultural and pastoral technologies, and the social institutions that grew from the management of these technologies co-evolved with the technologies and were handed down to subsequent societies, with these institutions often remaining in place even after other cultivars and livestock become available.

There are, then, many possible structures of civilization on a cosmological scale that reflect both the possibilities of technology to overcome natural barriers (like distance) and the human ingenuity invested in framing novel social institutions to

⁴¹ Cf. my paper “[The Develes Engynnes: Technological Textures of Life on Earth and in Space](#)” *Journal of Space Philosophy*, Fall, 2023.

facilitate these technologies, and perhaps also novel social institutions supervening upon these technologies. Each technological possibility for the structure of a civilization on a cosmological scale represents both the institutions that could bring these structures into being, and the institutions that would grow organically from these structures. Thus the future for civilization may be represented by pathways branching out from the present, and it is possible that distinct societies exploiting distinct technologies may come to embody distinct social structures that diverge at least in part because of the technological selection pressure exerted on social institutions.

With relativistic spacecraft, settlement initiatives could be undertaken to planetary systems at distances great or small, as shipboard times would approach insignificance as the spacecraft approaches the velocity of light. But the distance covered in light years would be equivalent to the number of years elapsed on Earth, so that a settlement at any significant distance would effectively be cut off from the spatiotemporal milieu of its terrestrial origin, but it would not necessarily be cut off from historical peers. Given slower spacecraft, together with some form of artificial

hibernation or suspended animation, the radius of effective settlement would be more limited, and time elapsed during the journey would be considerable, but the resulting spacefaring civilization would exhibit a similar spatiotemporal structure.

Each settlement, and potentially each civilization that could grow from a settlement, would constitute a temporal enclave that preserves the characteristics of the period of history from which the initial settlement initiative derived. It has been a characteristic of immigrant communities to preserve the ways of their homeland in a form that changes less than in the experience of those who never leave their homeland, and so archaic customs and forms of language, among other traditions, live on in ethnic enclaves.⁴² This is an artifact of synchronically distributed civilizations. In civilization on a cosmological scale, civilizations will be distributed both synchronically and diachronically. We can call the latter a structure of

⁴² Cf., e.g., Jan, J. S. (2019). Ethnic Language Retention and East Asian Endogamy in the United States. *Marriage & Family Review*, 55(1), 59-77. There is a significant literature on language retention and the preservation of cultural tradition in ethnic enclaves.

distributed temporality, in which communities are established not only across a spatial distance, but also across a temporal distance, due both to the scale of time needed to reach them⁴³ and the relativistic effects of crossing interstellar distances rapidly.

Because the scale of time represented by relativistic cosmology is so disproportionately great in comparison to human time, and even to the entirety of human history, human temporal enclaves can be constructed throughout the universe, with the limitation being that one can only travel forward in cosmological time. But because of the disproportion between human time and cosmological time, the cosmological time sequence need not exhaustively correspond to the human time sequence.

⁴³ Slow interstellar expansion scenarios could be coupled with artificially induced torpor or hibernation, allowing individuals to experience multiple spatiotemporal milieux. In rapid interstellar expansion scenarios, time dilation effectively forbids returning to the same spatiotemporal milieu, but one could skip ahead in cosmological time to other spatiotemporal milieux, which may have their origin in periods of time earlier, coeval with, or later than the milieu from which one departs. Traveling forward in cosmological time does not necessarily entail traveling forward in human historical time.

If two settlement initiatives, S_1 and S_2 , launch from Earth at time t_0 , with $S_1 \sim 100$ light years from Earth and $S_2 \sim 1,000$ light years from Earth, settlers at S_1 will arrive ~ 100 years Earth time (plus travel time) after t_0 —call this t_1 —and settlers at S_2 will arrive $\sim 1,000$ years Earth time (plus travel time) after t_0 —call this t_2 —but both t_1 and t_2 will represent the same spatiotemporal milieu as t_0 . Each settlement will be like a time capsule of Earth at the time of departure, though subject to independent development once established. Thus a settler at t_1 can travel outward to t_2 and find another settlement derived from his same historical period. Say that about time t_1 , a hundred years after t_0 , another settlement initiative S_3 departs Earth, arriving at a planetary system ~ 500 light years' distance from Earth, at a time that can be called t_3 , which is Earth at t_1 plus travel time to S_3 at t_3 . Someone from S_1 can travel ~ 100 years into the future of Earth at the time of their departure (t_0) by traveling outward to S_3 at t_3 (allowing compensation for travel time, which remains unknown since the technology for transportation remains an unknown), and then, if they like, they can return to their familiar temporal milieu by traveling further outward to S_2 at t_2 .

It is easy to see how, with a spacefaring expansion involving a few million persons, the resulting timeline of civilization could become very tangled over just a few hundred years. If an expanding spacefaring civilization can endure for thousands of years, establishing new outward settlements throughout its history, the already incalculable complexity of history is raised to a higher power of complexity. A mere million persons involved in spacefaring expansion could populate a hundred settlements of ten thousand persons each, and the possible permutations of pathways between a hundred settlements over hundreds or thousands of years are limited only by the number of stops on a given interstellar itinerary.

A civilization spread out across spatial distances that constitute a barrier to rapid interaction, therefore entailing some degree of isolation, are not new in human history. The Greek *polis* (πόλις) was a microcosm of the Greek world, connected to other cities not only through ties of communication and commerce, but also through ties of descent. A mother city, grown great in both population and wealth, would establish a colony, a daughter city, that would be closely linked by connections of history and blood. Other cities were rivals,

sometimes competitors, sometimes outright enemies in war, but no less Greek for that—we might even say *Greek, all-too-Greek*, for that. Isonomia⁴⁴ was realized (insofar as it *was* realized) only within a *polis*, not an empire, and, to a lesser extent, through a network of mother/daughter cities maintaining cultural ties. Larger political structures did not fare well among the Greeks. The *de facto* Athenian empire that was the Delian League was a *casus belli* for the Peloponnesian War. Until Philip of Macedon there was no *de jure* Greek empire, and after the meteoric career of his son Alexander the Great, his Greek empire rapidly disintegrated and eventually the Greeks were subject to the expanding reach of Rome.

We know that ancient Greek societies prided themselves on their isonomia, as in the praise of isonomia in the Constitutional Debate in

⁴⁴ It is now commonplace to translate “isonomia” as “equality of rights,” but that is a contemporary projection of our concern for rights into a past. “Equality under the law” is closer to the meaning, but that did not mean the same law for everyone. No Greek even considered the possibility of judging an aristocrat by the same standards as a slave.

Herodotus⁴⁵, which seemed radical in comparison to the royal absolutism of Persia, but the isonomia of the *polis* had no quarrel with distinct laws for distinct social orders. On the contrary, Greek law emphatically affirmed its customary social orders.⁴⁶ It is a bizarre anachronism to project equal rights into classical antiquity, which knew nothing of human rights and would have found the concept as we know it today incomprehensible. Isonomia was about correcting the abuse, corruption, and perversion of the traditional unwritten law of the *polis* by tyrants (τύραννος), who were, by

⁴⁵ *The Histories*, 3.80-3.82. Isonomia can be understood as a special case of the rule of law, or eunomia generally, which came to be the standard of political legitimacy among the Greeks. Cf. Canevaro, M. (2017). The Rule of Law as the Measure of Political Legitimacy in the Greek City States. *Hague Journal on the Rule of Law* 9, 211–236. <https://doi.org/10.1007/s40803-017-0054-1>

⁴⁶ “Greek philosophers came to conceive of the general security in broader terms and to think of the end of the legal order as preservation of the social *status quo*... They thought of law as a device to keep each man in his appointed groove in society and thus prevent friction with his fellows.” Roscoe Pound, *An Introduction to the Philosophy of Law* (New Haven: Yale University Press, 1959), p. 34.

definition, ruling outside legal legitimacy.⁴⁷ This historical transition from unwritten tradition to written law is a unique period in the development of any society, and will be for every society that makes the transition from custom to institution.

We still have something to learn from this ancient world, profoundly different though it is from the world we know today. The Greek colonies around the Mediterranean constitute sometime like a microcosm of what may come to be with the human settlements of a spacefaring civilization. The traditions that will appear organically in far flung human settlements, suited to the unique conditions of a non-terrestrial environment, will eventually be formalized in written law, as was the unwritten

⁴⁷ "...oppression, injustice, the arbitrary interpretation and distortion of traditional law and time-honoured custom by aristocratic judges—Hesiod's 'gift-devouring kings', handing down 'crooked judgments'—were, it is said, a major cause of social discontent among broad strata of the societies of these early cities. Blatant manipulation of ancient unwritten norms and procedures gave rise, it is claimed, to the demand for 'the law' to be fixed and made universally accessible through 'codification' and publication." Hölkeskamp, K.-J. (1993). Written law in archaic Greece. *Proceedings of the Cambridge Philological Society*, 38, 87–117.
doi:10.1017/S0068673500001632

custom and tradition of the *polis*. Again and again the drama of transition from unwritten tradition to written law will be played out, but in the future this transition will be played out against the backdrop of an increasingly irrelevant legal tradition held over from Earth, or from the first generation of space settlements in close proximity to Earth.

The change in the spatiotemporal structure of civilization, driven by the technology of spacefaring expansion, will change the human experience of time and history fundamentally. The institutional structure of civilization, including its legal institutions, will be forced to adapt to this changed spatiotemporal structure. The predictable sequences of historical development, in which one stage follows another in familiar periodizations, and even the slow rhythm of the rise and fall of civilizations, belongs to the infancy of humanity as a civilized species—an artifact of our earliest history as a species. Once brought to maturity, the distinctive historical stages that antedate the mature realization of human society cease to be an inevitable birthright and become a choice and an opportunity.

Because we have no civilization other than the civilizations of Earth as the basis of our knowledge

of civilization—we have not yet had occasion to observe another planet on which civilization has run its entire course from cradle to grave, as a basis of comparison for terrestrial civilizations⁴⁸—we do not know where we stand in the overall scheme of civilizational development.⁴⁹ If the future will be

⁴⁸ If we were to detect another civilization, say, by way of SETI, our research program into the history of this civilization would have to extend over a period of time commensurate with the full history of civilization to adequately capture its developmental arc. Its pre-transmission history would be known to us only through that history of itself that it chose to transmit, which is not likely to be representative.

⁴⁹ A temporally distributed civilization of the Coeval Age described herein could study a civilization throughout its entire developmental arc from cradle to grave. Suppose, as a thought experiment, an intelligent species capable of constructing a civilization were located. By means of relativistic travel, researchers could return to this world at regularly scheduled intervals—perhaps every 100 years or every 1,000 years, presumably leaving data-gathering survey equipment to monitor developments during their absence—until the civilization had run its course. If the monitored civilization goes extinct, its entire historical record is known. If it flourishes and joins the comity of spacefaring civilizations, it can join the research project that once formerly monitored its development and thereby come into a complete record of its own development as a civilization. Such a research project would carry researchers tens of thousands of years into the future, so that the community of researchers

like the past (which is the basic condition of inductive reasoning), then we ought to look forward to a sequence of historical periods, distinct from all that came before and different from each other. However, as the fine print on an investment prospectus always tells us that past performance is no guarantee of future returns, so too the past performance of civilization is no guarantee of the future course of events. On the contrary, we can expect the unprecedented to occur.

When all ages are effectively co-present for a temporally distributed civilization, this will constitute a revolutionary change in the human relationship to time and history. During the European Middle Ages, an entire civilization came into being that was defined by its transitional character between antiquity and modernity. Medieval civilization is so called because it appeared between (*medi-*) two ages (*-eval*). In the coming Coeval Age, the strata of sequential civilizations, once arranged in an orderly diachronic sequence, like the layers of geological strata that define deep time on Earth, will be stretched out

would have to agree on a future rendezvous to compare notes. This process could be iterated throughout the Stelliferous Era, as long as there are civilizations to study.

across space, distributed both synchronically and diachronically. The promulgation of a uniform code of law under conditions of a temporally distributed civilization will present unprecedented challenges to future civilization, which may involve as yet unexplored meanings of isonomia, including isonomia through time, or diachronic isonomia, in contradistinction to the synchronic isonomia exemplified in Greek colonization of the Mediterranean.

The coming Coeval Age will be an age of unprecedented historical complexity. The simple linear history of our civilization to date is, in fact, among the simplest of histories possible for a civilization; the only simpler history would be one in which only a single civilization existed on Earth, without the rhythm of the rise and fall of civilizations, and the transmission of traditions between them in space and time, that we have known. In such a civilization of ideal simplicity, enjoying a unity and uniformity of institutions, and without unpredictable shocks from any exogenous civilizations, the problem to which isonomia was the Greek solution, may never have arose, or, if it did, it would have appeared but once, and, being solved, as soon forgotten. In a history of greater

complexity, the problem appears time and again, and each time it must be solved anew. But if the problem is continuously iterated, it becomes a tradition, as does its solution. Thus the possibility of a diachronic isonomia, supervening upon the synchronic isonomia that was the ancient Greek ideal, appears with the advent of civilizations of the Coeval Age. And not merely diachronic isonomia, but isonomia within branching, crossing, multiplying, and complexifying history.

There are other technologies (other, that is, than spacefaring technologies) that are gradually bringing coevalism into being through other mechanisms. As our recording technologies converge upon perfect fidelity, and our computing technology converges upon simulations indistinguishable from life, we face a time to come when nothing will be truly past, truly inaccessible. The first few thousand years of human history, fascinating though they are, are a mere prelude to a future that stretches into undifferentiated sameness, in which each distinctive part of history can serve as a model for a given spatiotemporal milieu, re-created in the image of the past, whether for education, edification, the human need for variety,

or mere amusement.⁵⁰ Coevalism, then, could be realized in a limited way on a future civilization confined to Earth, but the full range of possibilities of distributed time would only be found in the civilization most widely distributed in space and time.

As the Greeks transformed the ideal of a transition from unwritten to written law into a tradition and a norm of isonomia, we may someday be able to extrapolate isonomia over scales of space *and* scales of time. The unprecedented historical complexity of temporally distributed civilizations will call forth an unprecedented intellectual effort driving greater depth and complexity in our legal and political traditions, and we will need all the depth and complexity we can manage if we are to survive as a civilization and as a species. As our distant ancestors made the transition from being hunter-gatherers to farming and living in cities, and

⁵⁰ A fictional realization of this is to be found in the M. Night Shyamalan film *The Village* (2005), in which disaffected refugees from modernity establish a seemingly timeless nineteenth century agricultural village. These “refugees” are *historical* refugees, fleeing the present. Other fictional intimations are *Westworld* (1973) and *Futureworld* (1976), in which different eras are made available as vacation destinations, and the *Star Trek* episode “All Our Yesterdays” (1969).

later our recent ancestors made the transition from agricultural civilization to industrialized civilization, future generations will make the transition to a new experience of time and history. This transition will be as unprecedented as living in a city or working in a factory or an office was for previous generations. Such transitions are spiritually dislocating, often debilitating, frequently violent, and no society is guaranteed to successfully negotiate the change. We will need to wring every last drop of rationality out of our traditions if our posterity is to be among the successful coeval societies.

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