

## THE SHAPE OF A FUTURE CIVILIZATION

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All fixed, fast-frozen relations, with their train of ancient and venerable prejudices and opinions, are swept away. . . . All that is solid melts into air.

*The Manifesto of the Communist Party, 1848*

To navigate through the chaos that will follow the breakdown of an overgrown, overstretched industrial civilization, we need a clear idea of where we want to arrive. And we must pick this destination not solely according to our desires, but rather with a ruthless regard to what might actually be possible once fossil fuels and other low-entropy resources approach exhaustion. For it is the energy subsidy afforded by these resources that has allowed our civilization to reach its current luxurious shape—one that has enabled more and more people to enjoy unprecedented political rights, social freedoms, and economic benefits but that has also put us on an unsustainable trajectory toward ecological ruin. Let me begin by tracing the path by which we reached our current impasse.

Born on the plains of Africa, we humans walked to the ends of the Earth as the original invasive species. No sooner arrived than we fell on the existing fauna, driving much of it to extinction. Although we learned to live and even flourish on what remained, the privations of a hand-to-mouth existence eventually impelled us to invent agriculture. This crude but powerful technology, which turns incoming solar energy into crops, allowed us to feed many more people and to erect civilizations. These civilizations then made it possible to devise even more powerful

technologies for the domination and exploitation of nature. Thus, although civilizations have risen and fallen over the millennia, the human capacity to dominate and exploit steadily grew until, finally, we learned how to utilize fossil fuels, a storehouse of concentrated sunlight from the past. This radical boost in available energy allowed an equally radical transformation of human society from agrarian to industrial, from living on limited solar income to consuming solar capital for current needs. This cannot continue. Fossil fuels are finite, and burning them in large amounts creates devastating pollution. In addition, the remaining solar capital is declining in quantity or quality, causing a rapid rise in extraction costs. As in an ancient tragedy, our very greatness conspires against us. We may command more power than ever before, but the basis that power is dwindling, presaging a steep decline in available energy and with it an end to the industrial age as we know it.

If we now try to imagine the shape of a future civilization, one that has learned to live on a more limited energy budget consisting of multiple streams of solar energy gathered by both simple and sophisticated technological means, then history provides instructive examples in the form of the various pre-industrial societies, societies that were primarily reliant on direct solar energy. From these examples I will try to abstract some common features that suggest the probable outlines of our political, social, and economic future.<sup>1</sup>

All known pre-industrial societies were hierarchies with class systems, usually involving inherited privilege: one person or a relatively few people at the top, a small group of soldiers and councilors serving them just beneath, a somewhat larger group serving that class below them, and so on down to a large bottom layer of serfs and peasants (amplified on occasion by a subclass of untouchables and pariahs). Thus these societies had the shape of a pyramid, with the great mass of the people at the bottom, a narrow elite at the top, and thin strata of clerks,

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<sup>1</sup> For more detail, see Patricia Crone, *Pre-Industrial Societies: Anatomy of the Pre-Modern World*, London, UK: Oneworld, 2015 (2003)

clerics, artisans, and merchants between them in the middle, with the exact composition and shape of the pyramid varying with time and culture.

In general, such societies were quite rigid, even frozen, with little or no social mobility. The few exceptions—the peasant boy who rose to be Pope Sylvester II—only served to prove the rule. People were expected to know their place, defer to their elders and betters, and cleave to ancient custom. Gender roles were fixed: with few exceptions, women were confined to the household, while men dominated the public realm.

Although religious tolerance was common in large empires, conformity with a civic religion as well as participation in shared rites and rituals was usually demanded. In smaller communities, a strict conformity was the norm, and in almost all cases a shared religion was the glue that made pre-industrial societies cohere.

Along the same lines, such societies valued consensus rather than a plurality of views, and their ethos was unrelentingly communal, not individual. To put it another way, dissent was not welcome, and individuals generally found it advisable to blend in rather than stand out. As the Japanese proverb warned, “The nail that sticks up gets hammered down.”

Morality too was strict. What was moral or immoral depended on the culture—for example, homosexuality could be suppressed, tolerated, or celebrated—but the rules, written or unwritten, were implacable, and the penalty for transgression was likely to be both swift and harsh. This severity was only partially mitigated by hypocrisy. Behind a facade of probity people sinned in secret, and members of the upper classes often took a *laissez-faire* approach to morality: “Do as you like provided it doesn’t frighten the horses or upset the children.”

There were, of course, significant differences in the degree of conformity, rigidity, and severity. Bali’s traditional caste system was far more relaxed than that of India, and the gap between Bali and Tokugawa Japan, where a peasant could lose his head for daring to look at a passing samurai, was significant. However, compared to contemporary societies where anything

goes and the word *transgressive* is used as a term of praise, all these older societies institutionalized conformity. An individual Balinese might have an equal voice in village affairs, but he had in the end to bend his will to that of the *banjar* or become an outcast.

As might be expected, pre-industrial societies were intensely rural and local, and the great majority lived highly circumscribed lives. This had to do partly with the fact that they were agrarian, and therefore firmly rooted in the soil, and partly with the difficulty and expense of transportation. As a result people were strongly attached to their little country (in the old sense). Rustic values and traditions prevailed, and few traveled far from where they were born. In consequence all but a few critical goods were produced and consumed close to home.

By contrast “the carriage trade” enjoyed luxuries brought from afar, and the life of urban elites was thoroughly cosmopolitan: Londoners listened to Handel and Haydn. Indeed, critics often compare modern times unfavorably with olden times, noting that the cultural level was higher in these aristocratic societies than it tends to be today. As evidence, they cite giants like Shakespeare, Rembrandt, and Beethoven, as well as the architectural splendors that draw hordes of tourists today.

The novels of Jane Austen provide rich insight into the quotidian life of one such society: the essential nature of connections, the emphasis upon reputation, the critical importance of manners and social skills, the awareness of class distinctions at every turn, the masculine ideals of duty and honor, the limited opportunities available to women on the one hand combined with the prospect of social mobility through marrying up on the other, and much more. Austen demonstrates that, however harshly we might judge such a society, a good and humane life was possible under such conditions—provided that one was born in relatively good circumstances,

meaning in a society that was not too closed and in a family that had a modicum of property and connections.<sup>2</sup>

For those without such good fortune, life was far less comfortable. An extreme concentration of power and wealth at the top of the pyramid implied an equally extreme burden of impotence and poverty at the bottom. Thus all pre-industrial societies exhibited a strong tendency toward marked inequality of status and wealth, with destitution, peonage, serfdom, and even chattel slavery being regrettably common.

Political tyranny was also an ever-present menace. Despite the existence of formal mechanisms to check and balance untrammled power, authority could be wielded in ways that were harsh or arbitrary, and common folk often had little recourse against depredation from above.<sup>3</sup> In the end, the core truth of such societies was that the top of the pyramid lived by exploiting and oppressing the bottom.

Some might believe that we will retain the technological capacity to recreate a non-agrarian society, but this is unlikely. Post-industrial societies will be decidedly agrarian, albeit with many technological appurtenances and modern conveniences, because the essential nature of solar energy is that it is dispersed. Hence it will generally be more practical and economical to decentralize production—especially agricultural production—rather than try to mimic the centralized industrial mode of production with more limited post-industrial means. Although artificial intelligence, nanotechnology, robotics, and the like might enable a relatively

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<sup>2</sup> For a more masculine perspective on Austen's society, see Patrick O'Brian's acclaimed Aubrey-Maturin series. Although primarily about naval warfare in the Napoleonic age, the novels also chronicle the terrestrial (mis)adventures of the characters to such effect that they constitute a brilliant portrait of English society prior to the Industrial Revolution.

<sup>3</sup> Alessandro Manzoni's famous historical novel *The Betrothed* chronicles a predatory noble's sustained assault on the virtue of a peasant girl. Manzoni's vivid description of the plague that afflicted Milan also shows how quickly the veneer of civilization can vanish, leaving behind anarchy and cruelty.

sophisticated economy based on direct solar energy, the post-industrial economy, like the society and the polity, will probably resemble its pre-industrial predecessors in its basic shape.

I do not offer this brief sketch of the most important elements of pre-industrial societies as a prediction. A future civilization will probably fall somewhere in the middle between those who tout a technological paradise—or hell, depending on your point of view—and those who anticipate a return to the Stone Age. *Although much depends critically on the transition, we need not revert completely to pre-industrial conditions. We already have technological capacities in agriculture that can lessen farm toil while still producing a surplus sufficient to sustain societies well above the subsistence level. And also possibilities in communication and transportation that can serve to mitigate Marx’s idiocy of rural life and permit some degree of liberty and equality as well as some measure of “enlightenment” to persist.*<sup>4</sup> Nevertheless, when it can no longer live by expending solar capital and is once again obliged to subsist almost entirely on solar income, the direction toward which a post-industrial civilization will necessarily tend is clear. It will be composed of societies that resemble in important respects those that preceded our age of abnormal abundance and inordinate freedom. If the Industrial Revolution swept away “all fixed, fast-frozen relations, with their train of ancient and venerable prejudices and opinions,” then the demise of that revolution portends their return.

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<sup>4</sup> I imagine such a utopian future, which I call “Bali with electronics,” in William Ophuls, *Plato’s Revenge: Politics in the Age of Ecology*, Cambridge, MA: The MIT Press, 2011, Chapter 7.