

Prologue: Man as His Own Maker

Pandora's Casket

Hannah Arendt and Robert Oppenheimer

Just after the Cuban Missile Crisis, the days in 1962 when the world was on the brink of atomic war, I ran into my teacher Hannah Arendt on the street. The missile crisis had shaken her, like everyone else, but it had also confirmed her deepest conviction. In *The Human Condition*, she had argued a few years previously that the engineer, or any maker of material things, is not master of his own house; politics, standing above the physical labor, has to provide the guidance. She had come to this conviction by the time the Los Alamos project created the first atomic bombs in 1945. Now, during the missile crisis, Americans too young for the Second World War had also felt real fear. It was freezing cold on the New York street, but Arendt was oblivious. She wanted me to draw the right lesson: people who make things usually don't understand what they are doing.

Arendt's fear of self-destructive material invention traces back in Western culture to the Greek myth of Pandora. A goddess of invention, Pandora was "sent to earth by Zeus as punishment for Prometheus's transgression."¹ Hesiod described Pandora in *Works and Days* as the "bitter gift of all the gods" who, when she opened her casket (or in some versions, her jar) of new wonders, "scattered pains and evils among

men."² In the working out of Greek culture, its peoples came increasingly to believe that Pandora stood for an element of their *own* natures; culture founded on man-made things risks continual self-harm.

Something nearly innocent in human beings can produce this risk: men and women are seduced by sheer wonder, excitement, curiosity, and so create the fiction that opening the casket is a neutral act. About the first weapon of mass destruction, Arendt could have cited a diary note made by Robert Oppenheimer, director of the Los Alamos project. Oppenheimer reassured himself by asserting, "When you see something that is technically sweet, you go ahead and do it and you argue about what to do about it only after you have had your technical success. That is the way it was with the atomic bomb."³

The poet John Milton told a similar story about Adam and Eve, as an allegory for the dangers of curiosity, with Eve taking the Oppenheimer role. In Milton's primal Christian scene, the thirst for knowledge, rather than for sex, leads human beings to harm themselves. Pandora's image remains potent in the writings of the modern theologian Reinhold Niebuhr, who observes that it is human nature to believe that anything that seems possible should therefore be tried.

Arendt's generation could put numbers to the fear of self-destruction, numbers so large as to numb the mind. At least seventy million people perished in wars, concentration camps, and gulags in the first fifty years of the twentieth century. In Arendt's view, these numbers represent the compound of scientific blindness and bureaucratic power—bureaucrats minded just to get the job done, embodied for her by the Nazi death-camp organizer Adolf Eichmann, to whom she attached the label "the banality of evil."

Today, peacetime material civilization posts equally numbing figures of self-made self-harm: one million, for instance, represents the number of years Nature took to create the amount of fossil fuel now consumed in a single year. The ecological crisis is Pandoric, man-made; technology may be an unreliable ally in regaining control.⁴ The

mathematician Martin Rees describes a revolution in microelectronics that creates at least the possibility of a robotic world beyond the powers of ordinary human beings then to rule; Rees envisions such exotica as self-replicating microrobots intended to clean smog that might instead devour the biosphere.⁵ A more urgent example is genetic engineering of both crops and animals.

Fear of Pandora creates a rational climate of dread—but dread can be itself paralyzing, indeed malign. Technology itself can seem the enemy rather than simply a risk. Pandora's environmental casket was too easily closed, for instance, in a speech given by Arendt's own teacher, Martin Heidegger, near the end of his life, at Bremen in 1949. On this infamous occasion Heidegger "discounted the uniqueness of the Holocaust in terms of the 'history of man's misdeeds' by comparing 'the manufacture of corpses in the gas chambers and the death camp' to mechanized agriculture." In the historian Peter Kempf's words, "Heidegger thought that both should be regarded as embodiments of the 'same technological frenzy' which, if left unchecked, would lead to a world-wide ecological catastrophe."⁶

If the comparison is obscene, Heidegger speaks to a desire in many of us, that of returning to a way of life or achieving an imaginary future in which we will dwell more simply in nature. As an old man Heidegger wrote in a different context that "the fundamental character of dwelling is this sparing and preserving," against the claims of the modern machine world.⁷ A famous image in these writings of his old age invokes "a hut in the Black Forest" to which the philosopher withdraws, limiting his place in the world to the satisfaction of simple needs.⁸ This is perhaps a desire that could be kindled in anyone facing the big numbers of modern destruction.

In the ancient myth, the horrors in Pandora's casket were not humans' fault; the gods were angry. Pandora-fear in a more secular age is more disorienting: the inventors of atomic weapons coupled curiosity with culpability; the unintended consequences of curiosity are

hard to explain. Making the bomb filled Oppenheimer with guilt, as it did I. I. Rabi, Leo Szilard, and many others who worked at Los Alamos. In his diary, Oppenheimer recalled the Indian god Krishna's words, "I am become Death, the destroyer of worlds."⁹ Experts in fear of their own expertise: what could be done about this terrible paradox?

When Oppenheimer gave the Reith Lectures for the BBC, subsequently published as *Science and the Common Understanding*, in 1953—broadcasts intended to explain the place of science in modern society—he argued that treating technology as an enemy will only render humanity more helpless. Yet, consumed by worry over the nuclear bomb and its thermonuclear child, in this political forum he could offer his listeners no practical suggestions about how to cope with it. Though confused, Oppenheimer was a worldly man. He was entrusted at a relatively young age with the bomb project during the Second World War, he combined a first-class brain with the talent to manage a large group of scientists; his skills were both scientific and corporate. But to these insiders, too, he could provide no satisfying picture of how their work should be used. Here are his parting words to them on November 2, 1945: "It is good to turn over to mankind at large the greatest possible power to control the world and to deal with it according to its lights and its values."¹⁰ The creator's works become the public's problem. As David Cassidy, one of Oppenheimer's biographers, has observed, the Reith Lectures thus proved "a huge disappointment for both the speaker and his listeners."¹¹

If the experts cannot make sense of their work, what of the public? Though I suspect Arendt knew little about physics, she took up Oppenheimer's challenge: let the public indeed deal with it. She had a robust faith that the public could understand the material conditions in which it dwells and that political action could stiffen humankind's will to be master in the house of things, tools, and machines. About the weapons in Pandora's casket, she told me, there should have been pub-

lic discussion about the bomb even while it was being made; whether rightly or wrongly, she believed that the secrecy of the technical process could have been protected even as this discussion occurred. The reasons for this faith appear in her greatest book.

The Human Condition, published in 1958, affirms the value of human beings openly, candidly speaking to each other. Arendt writes, "Speech and action . . . are the modes in which human beings appear to each other, not indeed as physical objects, but *qua* men. This appearance, as distinguished from mere bodily existence, rests on initiative, but it is an initiative from which no human being can refrain and still be human." And she declares, "A life without speech and without action is literally dead to the world."¹² In this public realm, through debate, people ought to decide which technologies should be encouraged and which should be repressed. Though this affirmation of talk may well seem idealistic, Arendt was in her own way an eminently realistic philosopher. She knew that public discussion of human limits can never be the politics of happiness.

Nor did she believe in religious or natural truths that could stabilize life. Rather, like John Locke and Thomas Jefferson, Arendt believed that a polity differs from a landmarked building or "world heritage site": laws should be unstable. This liberal tradition imagines that the rules issuing from deliberation are cast in doubt as conditions change and people ponder further; new, provisional rules then come into being. Arendt's contribution to this tradition turns in part on the insight that the political process exactly parallels the human condition of giving birth and then letting go of the children we have made and raised. Arendt speaks of *natality* in describing the process of birth, formation, and separation in politics.¹³ The fundamental fact of life is that nothing lasts—yet in politics we need something to orient us, to lift us above the confusions of the moment. The pages of *The Human Condition* explore how language might guide us, as it were, to swim against the turbulent waters of time.



As her student almost a half-century ago, I found her philosophy largely inspiring, yet even then it seemed to me not quite adequate to deal with the material things and concrete practices contained in Pandora's casket. The good teacher imparts a satisfying explanation; the great teacher—as Arendt was—unsettles, bequeaths disquiet, invites argument. Arendt's difficulty in dealing with Pandora seemed to me, dimly then and more clearly now, to lie in the distinction she draws between *Animal laborans* and *Homo faber*. (*Man* does not, clearly, mean just men. Throughout this book, when I have to deal with gendered language, I'll try to make clear when *man* refers generically to human beings and when it applies only to males.) These are two images of people at work; they are austere images of the human condition, since the philosopher excludes pleasure, play, and culture.

Animal laborans is, as the name implies, the human being akin to a beast of burden, a drudge condemned to routine. Arendt enriched this image by imagining him or her absorbed in a task that shuts out the world, a state well exemplified by Oppenheimer's feeling that the atomic bomb was a "sweet" problem, or Eichmann's obsession with making the gas chambers efficient. In the act of making it work, nothing else matters; *Animal laborans* takes the work as an end in itself.

By contrast, *Homo faber* is her image of men and women doing another kind of work, making a life in common. Again Arendt enriched an inherited idea. The Latin tag *Homo faber* means simply "man as maker." The phrase crops up in Renaissance writings on philosophy and in the arts; Henri Bergson had, two generations before Arendt, applied it to psychology; she applied it to politics, and in a special way. *Homo faber* is the judge of material labor and practice, not *Animal laborans's* colleague but his superior. Thus, in her view, we human beings live in two dimensions. In one we make things; in this condition we are amoral, absorbed in a task. We also harbor another, higher way

of life in which we stop producing and start discussing and judging together. Whereas *Animal laborans* is fixated in the question "How?" *Homo faber* asks "Why?"

This division seems to me false because it slights the practical man or woman at work. The human animal who is *Animal laborans* is capable of thinking; the discussions the producer holds may be mentally with materials rather than with other people; people working together certainly talk to one another about what they are doing. For Arendt, the mind engages once labor is done. Another, more balanced view is that thinking and feeling are contained within the process of making.

The sharp edge of this perhaps self-evident observation lies in its address to Pandora's box. Leaving the public to "sort out the problem" after the work is done means confronting people with usually irreversible facts on the ground. Engagement must start earlier, requires a fuller, better understanding of the process by which people go about producing things, a more materialistic engagement than that found among thinkers of Arendt's stripe. To cope with Pandora requires a more vigorous cultural materialism.

The word *materialism* should raise a warning flag; it has become debased, stained in recent political history by Marxism and in everyday life by consumer fantasy and greed. "Materialistic" thinking is also obscure because most of us use things like computers or automobiles that we do not make for ourselves and that we do not understand. About "culture" the literary critic Raymond Williams once counted several hundred modern usages.¹⁴ This wild verbal garden divides roughly into two big beds. In one, culture stands for the arts alone, in the other it stands for the religious, political, and social beliefs that bind a people. "Material culture" too often, at least in the social sciences, slights cloth, circuit boards, or baked fish as objects worthy of regard in themselves, instead treating the shaping of such physical things as mirrors of social norms, economic interests, religious convictions—the thing in itself is discounted.

So we need to turn a fresh page. We can do so simply by asking—though the answers are anything but simple—what the process of making concrete things reveals to us about ourselves. Learning from things requires us to care about the qualities of cloth or the right way to poach fish; fine cloth or food cooked well enables us to imagine larger categories of “good.” Friendly to the senses, the cultural materialist wants to map out where pleasure is to be found and how it is organized. Curious about things in themselves, he or she wants to understand how they might generate religious, social, or political values. *Animal laborans* might serve as *Homo faber’s* guide.

In my own old age I’ve returned mentally to that street on the Upper West Side. I want to make the case my juvenile self could not then make to Arendt, that people can learn about themselves through the things they make, that material culture matters. As she aged, my teacher became more hopeful that *Homo faber’s* powers of judgment could save humanity from itself. In my winter, I’ve become more hopeful about the human animal at work. The contents of Pandora’s box can indeed be made less fearsome; we can achieve a more humane material life, if only we better understand the making of things.

The Project

The Craftsman; Warriors and Priests; the Foreigner

This is the first of three books on material culture, all related to the dangers in Pandora’s casket, though each is intended to stand on its own. This book is about craftsmanship, the skill of making things well. The second volume addresses the crafting of rituals that manage aggression and zeal; the third explores the skills required in making and inhabiting sustainable environments. All three books address the issue of *technique*—but technique considered as a cultural issue rather than as a mindless procedure; each book is about a technique for conducting a particular way of life. The large project contains a personal para-

dox that I have tried to put to productive use. I am a philosophically minded writer asking questions about such matters as woodworking, military drills, or solar panels.

“Craftsmanship” may suggest a way of life that waned with the advent of industrial society—but this is misleading. Craftsmanship names an enduring, basic human impulse, the desire to do a job well for its own sake. Craftsmanship cuts a far wider swath than skilled manual labor; it serves the computer programmer, the doctor, and the artist; parenting improves when it is practiced as a skilled craft, as does citizenship. In all these domains, craftsmanship focuses on objective standards, on the thing in itself. Social and economic conditions, however, often stand in the way of the craftsman’s discipline and commitment: schools may fail to provide the tools to do good work, and workplaces may not truly value the aspiration for quality. And though craftsmanship can reward an individual with a sense of pride in work, this reward is not simple. The craftsman often faces conflicting objective standards of excellence; the desire to do something well for its own sake can be impaired by competitive pressure, by frustration, or by obsession.

The Craftsman explores these dimensions of skill, commitment, and judgment in a particular way. It focuses on the intimate connection between hand and head. Every good craftsman conducts a dialogue between concrete practices and thinking; this dialogue evolves into sustaining habits, and these habits establish a rhythm between problem solving and problem finding. The relation between hand and head appears in domains seemingly as different as bricklaying, cooking, designing a playground, or playing the cello—but all these practices can misfire or fail to ripen. There is nothing inevitable about becoming skilled, just as there is nothing mindlessly mechanical about technique itself.

Western civilization has had a deep-rooted trouble in making connections between head and hand, in recognizing and encouraging the impulse of craftsmanship. These difficulties are explored in the first

part of the book. It begins as a story about workshops—the guilds of medieval goldsmiths, the ateliers of musical instrument makers like Antonio Stradivari, modern laboratories—in which masters and apprentices work together but as unequals. The craftsman's struggle with machines is portrayed in the eighteenth-century invention of robots, in the pages of that bible of the Enlightenment, Diderot's *Encyclopaedia*, and in the nineteenth century's growing fear of industrial machines. The craftsman's consciousness of materials appears in the long history of making bricks, a history that stretches from ancient Mesopotamia to our own time, a history that shows the way anonymous workers can leave traces of themselves in inanimate things.

In its second part, the book explores more closely the development of skill. I make two contentious arguments: first, that all skills, even the most abstract, begin as bodily practices; second, that technical understanding develops through the powers of imagination. The first argument focuses on knowledge gained in the hand through touch and movement. The argument about imagination begins by exploring language that attempts to direct and guide bodily skill. This language works best when it shows imaginatively how to do something. The use of imperfect or incomplete tools draws on the imagination in developing the skills to repair and to improvise. The two arguments combine in considering how resistance and ambiguity can be instructive experiences; to work well, every craftsman has to learn from these experiences rather than fight them. A diverse group of case studies illustrates the grounding of skill in physical practice—the hand habits of striking a piano key or using a knife; the written recipes used to guide the neophyte cook; the use of imperfect scientific instruments like the first telescopes or puzzling instruments like the anatomist's scalpel; the machines and plans that can work with resistances of water, ambiguities on land. Developing skill in all these domains is arduous, but it is not mysterious. We can understand those imaginative processes that enable us to become better at doing things.

In its third part, the book addresses more general issues of motivation and talent. The argument here is that motivation matters more than talent, and for a particular reason. The craftsman's desire for quality poses a motivational danger: the obsession with getting things perfectly right may deform the work itself. We are more likely to fail as craftsmen, I argue, due to our inability to organize obsession than because of our lack of ability. The Enlightenment believed that everyone possesses the ability to do good work of some kind, that there is an intelligent craftsman in most of us; that faith still makes sense.

Craftsmanship is certainly, from an ethical point of view, ambiguous. Robert Oppenheimer was a committed craftsman; he pushed his technical skills to the limit to make the best bomb he could. Yet the craftsman's ethos contains countervailing currents, as in the principle of using minimum force in physical effort. The good craftsman, moreover, uses solutions to uncover new territory; problem solving and problem finding are intimately related in his or her mind. For this reason, curiosity can ask, "Why?" and well as, "How?" about any project. The craftsman thus both stands in Pandora's shadow and can step out of it.

The book concludes by considering how the craftsman's way of working can give people an anchor in material reality. History has drawn fault lines dividing practice and theory, technique and expression, craftsman and artist, maker and user; modern society suffers from this historical inheritance. But the past life of craft and craftsmen also suggests ways of using tools, organizing bodily movements, thinking about materials that remain alternative, viable proposals about how to conduct life with skill.



The volumes that follow build on the character of craft set out in this first book. Pandora remains their provocation. Pandora is a goddess of aggressive destruction; the priest and the warrior are her representa-

tives, and in most cultures they entwine. In the second volume of the project I explore what might inflame or tame their combined power.

Religion and war are both organized through rituals, and I investigate ritual as a kind of craft. That is, I'm less interested in the ideologies of nationalism or jihad than in the ritual practices that train and discipline the human body to attack or pray, or the rituals that cause groups of bodies to deploy on the battlefield or within sacred spaces. Again, codes of honor become concrete by choreographing movement and gesture within the physical containers of walls, military camps, and battlefields on one hand, and shrines, burial grounds, monasteries, and retreats on the other. Ritual requires skill; it needs to be done well. The priest-craftsman or warrior-craftsman will share the ethos of other craftsmen when seeking to do the work well for its own sake. The aura surrounding ritual suggests that it is mysterious in origin, veiled in operation. *Warriors and Priests* seeks to see behind this veil, by exploring how the craft of ritual makes faith physical. My aim in this study is to understand how the fatal marriage of religion and aggression might possibly be altered by changing the ritual practices in each. This is a speculative enterprise, to be sure—but it seems more realistic to explore how concrete behavior might change or be regulated than to counsel a change of heart.

The final book in the project returns to more certain terrain, the earth itself. In both natural resources and climate change, we are facing a physical crisis largely of our own human making. The myth of Pandora has become now a secular symbol of self-destruction. To deal with this physical crisis we are obliged to change both the things we make and how we use them. We will need to learn different ways of making buildings and transport and to contrive rituals that accustom us to saving. We will need to become good craftsmen of the environment.

The word *sustainable* is now used to convey this kind of craftsmanship, and it carries a particular baggage. *Sustainable* suggests living more at one with nature, as Martin Heidegger imagined in his old age,

establishing an equilibrium between ourselves and the resources of the earth—an image of balance and reconciliation. In my view, this is an inadequate, insufficient view of environmental craft; to change both productive procedures and rituals of use requires a more radical self-critique. A stronger jolt to changing how we have used resources would come in imagining ourselves to be like immigrants thrust by chance or fate onto a territory not our own, foreigners in a place we cannot command as our own.

The stranger, remarks the sociologist Georg Simmel, learns the art of adaptation more searchingly, if more painfully, than people who feel entitled to belong, at peace with their surrounding. In Simmel's view, the foreigner also holds up a mirror to the society into which he or she enters, since the foreigner cannot take for granted ways of life that seem to natives just natural.¹⁵ So great are the changes required to alter humankind's dealings with the physical world that only this sense of self-displacement and estrangement can drive the actual practices of change and reduce our consuming desires; the dream of dwelling in equilibrium and at peace with the world risks, in my view, leading us to seek escape in an idealized Nature, rather than confronting the self-destructive territory we have actually made. At least this is my starting point in trying to understand the techniques of environmental craft of a different kind, and why I've titled this third volume *The Foreigner*. That craft is now foreign to us.



This is in sum the project on material culture I envision. *The Craftsman*, *Warriors and Priests*, and *The Foreigner* tell together a story about the declaration made by Shakespeare's Coriolanus: "I am my own maker." Materially, humans are skilled makers of a place for themselves in the world. Pandora hovers over this story in objects, in rituals, and in the earth itself. Pandora can never be laid to rest; the Greek goddess represents inextinguishable human powers of mismanagement, self-

inflicted harm, and confusion. But these powers can perhaps be caged if understood materially.

I write within a long-standing tradition, that of American pragmatism, a tradition explained more fully at the end of this volume. Pragmatism has sought to join philosophy to concrete practices in the arts and sciences, to political economy, and to religion; its distinctive character is to search for the philosophic issues embedded in everyday life. The study of craft and technique is simply a logical next chapter in pragmatism's unfolding history.

A Note on History *The Shortness of Time*

In this project my guide to using the record of history is a thought experiment proposed by the biologist John Maynard Smith. He asks us to imagine a two-hour film that clocks, greatly speeded up, evolution from the first vertebrates to the appearance of ourselves: "tool-making man would appear only in the last minute." Then he imagines a second two-hour film, charting the history of tool-making man: "the domestication of animals and plants would be shown only during the last half minute, and the period between the invention of the steam engine and the discovery of atomic energy would be only one second."¹⁶

The point of the thought experiment is to challenge the famous phrase that opens L. P. Hartley's novel *The Go-Between*: "The past is a foreign country." In the fifteen seconds of recorded civilization, there's no reason why Homer, Shakespeare, Goethe, or simply a grandmother's letters should be alien to our understanding. Culture's time in natural history is short. Yet in these same few seconds human beings have contrived enormously different ways to live.

In studying material culture, I've treated the historical record as a catalogue of experiments in making things, performed by experimenters who are not alien to us, whose experiments we can understand.

If in this way culture's time is short, in another way it is long. Because cloth, pots, tools, and machines are solid objects, we can return to them again and again in time; we can linger as we cannot in the flow of a discussion. Nor does material culture follow the rhythms of biological life. Objects do not inevitably decay from within like a human body. The histories of things follow a different course, in which metamorphosis and adaptation play a stronger role across human generations.

I might have conducted this exploration by writing a strict linear narrative, beginning with the Greeks, ending where we are now. Instead, I've preferred to write thematically, going between past and present, to assemble the experimental record. When I've judged that the reader needs detailed context, I've provided it; when not, not.

Material culture provides in sum a picture of what human beings are capable of making. This seemingly limitless view is bounded by self-inflicted harm whether occurring innocently, by intent, or by accident. Retreat into spiritual values is unlikely to furnish much help in coping with Pandora. Nature might be a better guide, if we understand our own labors as part of its being.