

CHAPTER 33

PRODUCTION AND CULTURE TOGETHER: OR, SPACE HISTORY AND THE PROBLEM OF PERIODIZATION IN THE POSTWAR ERA

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In 1956, philosopher Hannah Arendt delivered at the University of Chicago a series of lectures entitled “Vita Activa.” She reworked these reflections, yielding the classic *The Human Condition*, published in 1958.¹ In these works, Arendt’s organizing question centered on whether the Western experience in the previous two centuries might confound rather than aid in working through the challenges of a “modern world . . . born with the first atomic explosion.”² She argued that historically ingrained modes of economic and cultural life had created “a theoretical glorification of labor” and “a factual transformation of the whole of society into a laboring society.”³ As labor ascended as a social organizing principle, ends rather than means guided value judgments, the practical overshadowed the theoretical, and (enlisting a pairing from classical philosophy) action (*vita activa*) trumped contemplation (*vita contemplativa*) as a principle of self- and community-attainment.

In “laboring society,” Arendt claimed, the very intellectual resources we needed to judge, weigh, and direct our technical creations had withered. Events such as the “first atomic explosion” signaled that thought and “know-how” had “parted company for good,” and that we risked becoming “helpless slaves, not so much of our machines as [that] know-how, thoughtless creatures at the mercy of every gadget that is technically possible.”⁴ In this concern, she drew on more than a century of social and political critique of the fusion of science, technology, industrialization, and capitalism—the influences of Marx and Weber are prominent, and Heidegger and Mumford loom just offstage. To this quartet of historical vectors, she conjoined

1. Hannah Arendt, *The Human Condition* (Chicago: University of Chicago Press, 1998).

2. *Ibid.*, p. 6.

3. *Ibid.*, p. 5.

4. *Ibid.*, p. 4.

stepped-up postwar levels of advertising and mass consumption to reinforce her claims about the scope and entrenchment of a “laboring society.”⁵ Collectively, these deep cultural transformations held “great political significance”—not only in terms of the decision making of nation-state elites but also as a rupture among citizens, increasingly disinclined and unable to assess, weigh, and manage their circumstances. Her narrative, thus, fit into a well-developed genre of alienation in modernity; of new modes of social being conditioning human consciousness in ways that threatened the quintessentially human; and of technological supplanting humanistic values.⁶

As historians interested in spaceflight, what might catch our eye about Arendt’s analysis and this literature of sociological and philosophic critique? One fact I have withheld. In that short interval between her Chicago lectures and their revision as *The Human Condition*, Sputnik occurred, and in her prologue to the book it becomes the dominant symbol of this condition of alienation. Sputnik, viewed through the Arendtian lens, was neither *sui generis* nor an exclamatory act in the superpower-centered geopolitical drama of the cold war. It was, rather, a manifestation and symbol of deeper structures of economic and cultural order, an analysis deriving broadly from Marxian sociology (in distinction from Marxian politics).⁷

This blend of theory and historiography provides the vantage for this essay. Marx’s sociology often is seen with a hard, deterministic slant (“[T]he hand mill gives you society with the feudal lord; the steam mill society with the industrial capitalist”), but is used here less rigidly and as a methodological injunction: In assessing the “social” in spaceflight, look for the relations between modes of production (often with emphasis on the economic) and the cultural.⁸ This mantra

5. Although Arendt does not cite either Theodor Adorno or Marshall McLuhan, one suspects she probably was familiar with their claims on the enhanced integration of mass production and mass consumption in Western societies. Adorno’s well-known essay, “The Culture Industry,” was published in 1947 and McLuhan also had begun a long run of media and advertising critiques. See Theodor W. Adorno, *The Culture Industry: Selected Essays on Mass Culture* (New York: Routledge, 2001) and Marshall McLuhan, *The Mechanical Bride: Folklore of Industrial Man* (New York: Vanguard Press, 1951).

6. This critique took a sharper turn in the 1960s. See, as an important example, Herbert Marcuse, *One-dimensional Man: Studies in the Ideology of Advanced Industrial Society* (Boston: Beacon Press, 1964). For a useful assessment of this genre and its meaning for the 1960s and beyond, see Marianne DeKoven, *Utopia Limited: The Sixties and the Emergence of the Postmodern* (Durham, NC: Duke University Press, 2004).

7. For an assessment of Marx from a contemporary stance, especially as regards the distinction between sociology and politics in Marx’s thought, see Göran Therborn, “After Dialectics: Radical Social Theory in a Post-Communist World,” *New Left Review* 43 (2007): pp. 63–114. See also Anthony Giddens, *Capitalism and Modern Social Theory: An Analysis of the Writings of Marx, Durkheim and Max Weber* (Cambridge, U.K.: Cambridge University Press, 1999).

8. Marx’s notion of culture, of course, was not that of the post-World War II academy in the West. For a classic, brief etymological essay on “culture,” see Raymond Williams, *Keywords: A Vocabulary of Culture and Society* (New York: Oxford University Press, 1976). On Marx’s notion of culture and its relation to the broader genealogy of the concept, see Michael Denning, *Culture in the Age of Three Worlds* (London: Verso, 2004).

is intended only as a point of orientation. As analytical terms, “production” and “culture” run at the edges, embracing different elements, with different meanings, in different contexts. They only get life and clarity through historical specificity. For the historian, an Arendt-type or Marxian sociological analysis carries a burden: Details of difference and situatedness yield to the bright line-making of theory. Despite such semantic and methodological liabilities, I will use this high-level talk to highlight what I regard as a central historiographic problem in the field: the place of culture in our understanding of the development of spaceflight, a problem bound to its theoretical sibling, production. I will approach this claim not through the space history literature but through the broad, postwar intellectual reorientation of the humanities, in which the concepts of production and culture became key sites of theoretical engagement. The underlying question for space history is whether this theorizing and its implications, only loosely grounded in the empirical, provides a means for looking afresh at the field.⁹

In distilling the postwar theoretical landscape I will necessarily (dangerously) set the “Google map” to a wide view, emphasizing selected features. Soon after Arendt’s *The Human Condition*, notions of production and culture took on new connotations. Production as a form of power, control, and as a technique for replicating and perpetuating particular forms of social life (through capitalist configurations of economic ownership, technology, and labor) came to include also (via the influence of Foucault’s writings) the power attached to scientific disciplines, professions, and the academy, especially when seen historically as coincident with the formation and consolidation of nation-states.¹⁰ In concert, culture as an analytic construct enjoyed luxuriant growth, in narrow application (subcultures of every stripe, corporate culture, institutional culture, and the like—think of how unquestionably natural it now seems to speak of “NASA culture”), and in the expansion of its ambit, carried along by the ever-widening reach of commodities and consumer values. Both trends helped to erase the older distinctions of high and low culture and to establish culture as a pervasive conditioner of human affairs. Culture, thus, with protean alacrity, adhered to production in the small (say, within a community, an institution) and in the transnational-spanning large. It served, at once, as energetic contributor to capitalism and as a potential source of resistance. The dominant thread in the mix, at

9. This essay may be read as a companion to Martin Collins, “Community and Explanation in Space History (?),” in *Critical Issues in the History of Spaceflight*, Stephen J. Dick and Roger Launius, eds. (Washington, DC: NASA, 2006): pp. 603–613.

10. The works generally cited as most influential in the United States are Michel Foucault, *The Birth of the Clinic: An Archaeology of Medical Perception* (New York: Pantheon Books, 1973), and Michel Foucault, *Discipline and Punish: The Birth of the Prison* (New York: Pantheon Books, 1977). For a useful instance of Foucault-style analysis regarding states and production, see James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven, CT: Yale University Press, 1998).

least as regards theory, focused on big capital, commodities, and consumption.¹¹ Culture, in this sense, not only was bound to a particular era of capitalist production, but also participated in an important epistemological shift: In a world of circulating commodities, representations and meanings readily detach from the circumstances of their creation (a basic tenet of poststructuralism, deconstructionism, and postmodernism), become malleable, locally or individually defined. In Western and global capitalism, culture, then, is expressive of production and constitutes a phenomenon that envelops and conditions it. Or, simply, culture becomes self-referential.¹²

This theoretical neighborhood informed a range of cultural and social fields that emerged in the 1960s and has dominated academic critique since, in part,

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11. The point here is to emphasize the emergence of culture as a widely used conceptual category. Different definitions of the cultural coexisted under this umbrella. Two of the most influential came from Raymond Williams (culture as a creative intersection between tradition and new experience) and Clifford Geertz (culture as a semiotic system). Particularly relevant here, Williams's work served as an exemplar in connecting culture and modes of production; see Raymond Williams, *Culture and Society, 1780–1950* (New York: Columbia University Press, 1983) [originally published 1958]. For Geertz, see Clifford Geertz, *The Interpretation of Cultures: Selected Essays* (New York: Basic Books, 1973). Not discussed here is the relation between the “social” and the “cultural” in the academy in this time period; see Victoria Bonnell and Lynn Hunt, eds., *Beyond the Cultural Turn: New Directions in the Study of Society and Culture* (Berkeley, CA: University of California Press, 1999). For a broad review of notions of culture, see Peter Burke, *Varieties of Cultural History* (Ithaca, NY: Cornell University Press, 1997). For the important argument on the historically specific character of the postwar use of culture, see Denning, *Culture in the Age of Three Worlds*; making a similar case is Geoff Eley, *A Crooked Line: From Cultural History to the History of Society* (Ann Arbor, MI: University of Michigan Press, 2005). For a view that emphasizes the connection between protest politics and the rise of culture, see Terry Eagleton, *The Idea of Culture* (Oxford, U.K.: Blackwell, 2000). On cold war culture, see Stephen J. Whitfield, *The Culture of the Cold War* (Baltimore, MD: Johns Hopkins University Press, 1996); and Peter J. Kuznick and James Gilbert, eds., *Rethinking Cold War Culture* (Washington, DC: Smithsonian Institution Press, 2001). On consumption, see Richard Wightman Fox and T. J. Jackson Lears, *The Culture of Consumption: Critical Essays in American History, 1880–1980* (New York: Pantheon Books, 1983); Sande Cohen and R. L. Rutsky, eds., *Consumption in an Age of Information* (Oxford: Berg, 2005); David B. Clarke, *The Consumer Society and the Postmodern City* (London: Routledge, 2003); John N. Duvall, ed., *Productive Postmodernism: Consuming Histories and Cultural Studies* (Albany, NY: State University of New York Press, 2002); and Jean Baudrillard, *The Consumer Society: Myths and Structures* (London: Sage Publications, 1998). On the important question of the international reach of American culture and its effects, see Rob Kroes, *If You've Seen One, You've Seen the Mall: Europeans and American Mass Culture* (Urbana, IL: University of Illinois Press, 1996), and Rob Kroes, ed., *High Brow Meets Low Brow: American Culture as an Intellectual Concern* (Amsterdam: Free University Press, 1988).
12. It is important to distinguish two threads of this claim. One is a general epistemological claim on the foundations of knowledge: the view that we have no privileged a priori or empirical means to assess the validity of propositions about the world. The other is historically grounded: that an emergent postwar commercial and communications culture created a new relation between signs and the real and the cultural status and use of such signs. This work built on Marx's early arguments on the commodity as “fetish.” This view is most thoroughly developed in Jean Baudrillard, *For a Critique of the Political Economy of the Sign* (St. Louis, MO: Telos Press, 1981).

because it offered a first-order cut at defining and investigating basic questions.¹³ It pushed to the fore questions of causation: How and why modes of production change and, in turn, are related to and interact with reshaped social or cultural orders. In highlighting causation, it made questions of periodization, of alertness to patterns of change, an explicit, necessary project.

Consider the colloquialism that provided the organizing idea for this conference (and as an assumption only is occasionally engaged by the papers)—that spaceflight “impacts” society and by implication that such effect is historically descriptive and serves as an important basis for conceptualizing research. The first part of this claim is trivially true in a limited way but obscures a more cogent historical question: How do we theorize the relation between spaceflight and the social? Or, more aptly and fundamentally, to build on the interpretive sketch advanced here, how do we theorize spaceflight in and as part of a causally informed history?

In space history, “impact” seems a natural category because of the privileged role ascribed to state-centered action in cold war historical accounts. The invigoration of government-directed power and action postwar (especially in the United States) gives credence to a rough causal formula of “the state acts, society receives.” Or, to venture a touch more complexity, each may affect the other, but each stands as a relatively distinct sphere of activity. Few, if any, historians would subscribe overtly to this cartoonish causal sketch, yet the field has been noticeably slow to articulate more robust frames of analysis. In this conference, authors joined social and cultural with politically centered narratives but leaned away from considering underlying causal issues or broader frames of theoretical interpretation. In terms of engagement

13. This thumbnail is not meant to supplant or diminish other key analytic concepts such as class, gender, or race, or the related pairing of identity and difference. Culture and production may complement or serve as tools for understanding how these other categories may be constituted. Too, the emphasis on culture highlights the way in which, over this time period, anthropology (in particular) and sociology have been the crucial intellectual sites for working through the implications of theoretical claims generated in philosophy, literary criticism, and intellectual history. A focal point, relevant to this essay, for examining this process is the material culture literature, which largely originated in the 1960s. See especially the work of Daniel Miller, founding editor of the journal *Material Culture*; books include Daniel Miller, *Capitalism: An Ethnographic Approach* (Oxford: Berg, 1997); Daniel Miller, ed., *Material Cultures: Why Some Things Matter* (Chicago: University of Chicago Press, 1998); Daniel Miller, ed., *Materiality* (Durham, NC: Duke University Press, 2005). In this vein, see also Arjun Appadurai, ed., *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge, U.K.: Cambridge University Press, 1986); Bill Brown, ed., *Things* (Chicago: University of Chicago Press, 2004); Nicholas Thomas, *Entangled Objects: Exchange, Material Culture, and Colonialism in the Pacific* (Cambridge, MA: Harvard University Press, 1991); and Fred R. Myers, ed., *The Empire of Things: Regimes of Value and Material Culture* (Santa Fe, NM: School of American Research Press, 2001). On theory in relation to material culture, see especially Pierre Bourdieu, *The Logic of Practice* (Stanford, CA: Stanford University Press, 1990), and Jean Baudrillard, *Selected Writings* (Stanford, CA: Stanford University Press, 2001).

with other historical subfields, this represents a measure of progress but leaves unaddressed the deeper challenges of using available theoretical tools to clarify the field's explanatory aims—of placing spaceflight *in* history.¹⁴

And that brings us back to Arendt, the tradition of Marxian sociological critique of which her work is part, and the analysis presented here.¹⁵ This analytic frame has deep relevance to post–World War II historiography, including and especially for spaceflight. It cautions us to de-center the importance given to state political action and actors in trying to understand historical change; that is, it suggests that the crucial unit of analysis is not the state in isolation, or even the “contract state” or “military-industrial-university complex” (as widely used constructs attentive to government–market interdependencies).¹⁶ Rather, it directs our attention to the largest configurations of production—of the state in conjunction with capitalism writ large (to include the academy as it constitutes disciplines and professions).¹⁷ Arendt's fleeting attention to Sputnik was to make this theoretical point and to situate the event historically—to ask how the first satellite and the emerging effort of spaceflight fit into a *particular* configuration of production (state and capital) and culture. That question should be as paramount for space history as it was for Arendt.

In the 1960s and after, a torrent of literature concerned with production and culture yielded theoretically infused, historically specific, profound claims regarding the postwar years: that the basis of production *and* the basis of culture had been transformed, reconfiguring each and, to use Arendt's labeling, the human condition.¹⁸ Business, markets, and nation-state prerogatives and power changed; postcolonial and new forms of global politics and geographies emerged; and, above all (especially

14. For a related example of this type of exercise, reflecting a different historiographic moment, see Eric Hobsbawm, “From Social History to the History of Society,” *Daedalus* 100 (1971): pp. 20–45. For a review of the space history literature that samples a range of current methodologies but is relatively silent on the issue of relating the field to broader theoretical accounts, see Roger D. Launius, “Interpreting the Moon Landings: Project Apollo and the Historians,” *History and Technology* 22 (2006): pp. 225–255.

15. I loosely confederate under the banner of Marxian sociology a broad range of authors and perspectives, including those that fall on a spectrum of sympathy or antipathy to Marxian *politics* (consider, say, the work of Frederic Jameson and Daniel Bell). The circumstance that this essay points to is the deep sway of Marxian modes of explanation in the historical and cultural studies fields and the still-powerful utility of a structural analysis in probing issues of causation. Even the poststructuralist and postmodern literatures that see history as composed of texts and representations loosened from any notion of a substantial historical reality don't quite succeed in diminishing history to mere narrative.

16. On the notion of the United States as a contract state, see H. L. Nieburg, *In the Name of Science* (Chicago: Quadrangle Books, 1966).

17. For a useful instance of engagement with issues of causation and periodization relevant to this essay, see Ann Douglas, “Periodizing the American Century: Modernism, Postmodernism, and Postcolonialism in the Cold War Context,” *Modernism/Modernity* 5 (1998): pp. 71–98. Douglas is skeptical of the various “isms” of critique but relies fundamentally on the notion of Marxian sociology sketched here.

18. The clearest exposition of these claims is David Harvey, *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change* (Oxford, U.K.: Blackwell Publishers, 1989).

given the topic of this conference), that culture (as embodied in commodities, transnational business practices, and ever more ubiquitous communications and media technologies) was not merely a glossy coat of paint on capitalism's formidable machine but integral to it and constituted a potent, complementary reality. The insights relating to causation and periodization in this swath of research and theory have remained at the margins of space history, despite the obvious: The changes mapped and claimed are coeval *and* intimately bound to the development of spaceflight—in its many dimensions as technology, site of knowledge creation, state activity, business undertaking, military venture, global utility, and national and international cultural trope extraordinaire. Can space history be history without more fundamentally assessing and testing itself against this theoretical frame, seemingly, at first pass, deeply relevant to the field's research challenges (allowing for many the points of disputation on methodology, cause, and consequence contained in this unwieldy set of literatures)? Not just to import methods into the field, but to wrestle with problems of cause and change alongside other humanistic disciplines? The state-centered narratives that seemed passably suitable in the early years of the field now seem increasingly inadequate for reinterpreting the early cold war and, especially, to organize the history of recent decades. The rest of this essay will look briefly at the two nodes of this analysis—production and culture—and their implications for situating spaceflight in this broader landscape of the postwar historical experience.

After World War II, the United States, in a series of steps in collaboration with business and the academy, created, to use Daniel Yergin's coinage, a national security state.¹⁹ Assessments of its relation to modes of production and shifts in the cultural landscape surfaced in short order.²⁰ But broad views that an assertive policy of massive government spending on research, development, discipline-centered knowledge, and technology was providing an opportunity to refashion the very basis of capitalism took longer to arise.²¹ Emblematic in this regard was the work of the politically liberal economist John Kenneth Galbraith and the conservative

19. On the national security state, see Daniel Yergin, *Shattered Peace: The Origins of the Cold War and the National Security State* (Boston: Houghton Mifflin, 1977). My analytic focus here is the United States. The goal is not a comprehensive historiographic review and argument; rather, it is only to suggest underlying research problems for the field. It should be noted, though, that the literature on the transformation of capitalism in the 1960s and 1970s is U.S.-centric, given the United States' dominant economic position.

20. Critiques and targeted assessments were prevalent throughout the late 1940s and 1950s. See, as but one example, C. Wright Mills, *The Power Elite* (New York: Oxford University Press, 1959).

21. In my reading, most of the early literature envisions the military-industrial-academic complex as an adjunct to the broader economic system of capitalism. The focus tends to be on distortion rather than on a reconstitution of economic structures. The distortion view is the organizing idea of the classic study by RAND economist Charles Hitch. See Charles Johnston Hitch, *The Economics of Defense in the Nuclear Age* (Cambridge, MA: Harvard University Press, 1960).

sociologist Daniel Bell. By 1960, both had examined capitalism's condition sans consideration of the cold war elephant in the room. Galbraith's 1958 *The Affluent Society* explored the cultural changes accompanying widespread consumerism (a theme already much in the air, as indicated by Arendt's exposition); Bell's 1960 *The End of Ideology: On the Exhaustion of Political Ideas in the Fifties* claimed that the long-standing tussle between capital and labor had petered out.²² A triangulation of accommodation among labor, business, and the state, he argued, dampened the conflicting ideological positions of Marxian and capital-oriented politics. In short, both authors saw the defining issues of the 1950s in conceptual terms consistent with the political economy of the early twentieth century. But each, as a consequence of these researches, immediately began a reappraisal of the postwar landscape.

By the late 1960s, Galbraith and Bell made their central research concern the question of whether capitalism and the state, through cold war scientific and technological activism, had revamped existing modes of production. Galbraith's 1967 *The New Industrial State* and, especially, Bell's 1973 *The Coming of Post-Industrial Society: A Venture in Social Forecasting* began to make the case that (among other factors) the federal research and development engine had facilitated a fundamental change in business practice, elevating the role of knowledge, and thereby knowledge professions, serving to recast the basic relationship between labor and capital.²³ This reconfiguration had many other elements, including a policy shift that loosened government controls over markets and corporations (nationally and internationally), the burgeoning possibilities of information technologies, and the enhanced role

22. New additions with updated introductions by the authors help in approaching these texts; see John Kenneth Galbraith, *The Affluent Society* (Boston: Houghton Mifflin, 1984) and Daniel Bell, *The End of Ideology: On the Exhaustion of Political Ideas in the Fifties: With "The Resumption of History in the New Century"* (Cambridge, MA: Harvard University Press, 2000).

23. John Kenneth Galbraith, *The New Industrial State* (Boston: Houghton Mifflin, 1967); Daniel Bell, *The Coming of Post-industrial Society: A Venture in Social Forecasting* (New York: Basic Books, 1999).

of consumption in economic and cultural life.²⁴ A range of authors came to see this complex of changes as the seedbed of globalism (conceived as the relative enhancement of the power of markets in relation to states across the transnational landscape) and postmodernism (conceived as a new cultural condition associated with this mode of production).²⁵ This spare delineation of this significant shift, played out over two-plus decades, is intended only for a limited point: that spaceflight—in its civil, military, commercial dimensions—developed and participated in fundamental changes in state-market regimes. Thus, if explanation (whether of “impact,” of causes, or patterns of change) is a goal, then such explanation needs to encompass, as a first-order concern, how nation-state-centered accounts relate to the different frames of analysis suggested by globalism and postmodernism.²⁶ But these points bring us back to the other, crucial question of this review: What is the relation between modes of production and culture in the age of spaceflight?

24. The best delineation of the shift from “organized” to “disorganized” capitalism (and, in the Marxian tradition, correlating this change to distinctive cultural orders) is Scott Lash, *The End of Organized Capitalism* (Cambridge, U.K.: Polity, 1987); also see Nick Heffernan, *Capital, Class and Technology in Contemporary American Culture: Projecting Post-Fordism* (London; Sterling, VA: Pluto Press, 2000). For a dense, contemporaneous account, less attuned to the enhanced status of knowledge seen by Galbraith and Bell, see Ernest Mandel, *Late Capitalism* (London: NLB, 1975) [first published as *Der Spätkapitalismus*, Suhrkamp Verlag, 1972]. For an overview of changes from the 1960s in corporate structure and strategy as firms moved from primarily national to broadly transnational modes of operation, see Naomi R. Lamoreaux, Daniel M. G. Raff, and Peter Temin, “Beyond Markets and Hierarchies: Towards a New Synthesis of American Business History,” *American Historical Review*, 108 (April 2003): pp. 404–433. On the rise of private market ideology and accompanying policy reorientation in this period, see Daniel Yergin and Joseph Stanislaw, *The Commanding Heights: The Battle between Government and the Marketplace That Is Remaking the Modern World* (New York: Simon & Schuster: 1998). On changes in modes of production from the perspective of history of science and technology, see Paul Forman, “The Primacy of Science in Modernity, of Technology in Postmodernity, and of Ideology in the History of Technology,” *History and Technology* 23 (2007): pp. 1–152; and Philip Mirowski, *The Effortless Economy of Science?* (Durham, NC: Duke University Press, 2004).

25. See, as a range of examples, Arjun Appadurai, ed., *Globalization* (Durham, NC: Duke University Press, 2001); Francis Fukuyama, *The End of History and the Last Man* (New York: Perennial, 2002); Anthony Giddens, *The Consequences of Modernity* (Stanford, CA: Stanford University Press, 1990); Harvey, *The Condition of Postmodernity*; Fredric Jameson, *Postmodernism, Or, the Cultural Logic of Late Capitalism* (Durham, NC: Duke University Press, 1991); Jonathan Xavier Inda and Renato Rosaldo, eds., *The Anthropology of Globalization: A Reader* (Malden, MA: Blackwell Publishers, 2002); and Frank Webster, *Theories of the Information Society* (London: Routledge, 2002). Several case studies in space history engage these changes. See Martin Collins, “One World One Telephone: Iridium, One Look at the Making of a Global Age,” *History and Technology* 21 (2005): pp. 301–324; Lisa Parks, *Cultures in Orbit: Satellites and the Televisual* (Durham, NC: Duke University Press, 2005); and Peter Redfield, “The Half Life of Empire in Outer Space,” *Social Studies of Science* 32 (2002): pp. 791–825. More broadly, in the historical profession these changes have given new life to the transnational (in contrast to the long-standing preference for the “national”) as a key unit of analysis. See Thomas Bender, ed., *Rethinking American History in a Global Age* (Berkeley, CA: University of California Press, 2002).

26. Much of the globalism literature makes the case for the diminishment of nation-state power in face of the market. A cogent analysis of the relation among markets, states, and ideology is Therborn, “After Dialectics.”

This question vexes space history—all the more for lack of explicit *theoretical* attention.²⁷ For it is in the very period in which spaceflight develops that culture becomes an historically specific, key concept—as an analytical instrument within the academy and as a descriptor of the broad phenomenological effect of commerce, commodities, and communications on our day-to-day perceptions and constitution of the world.²⁸ In this latter regard, it embodies deep claims, ontological and psychological: that time, distance, what counts as global or local, and how identities are constituted (ours and those of distant others) all are conceptualized and experienced in new ways. Such propositions became commonplace in the globalism and postmodernism literatures.²⁹ Philosopher Langdon Winner, as one example, captured this melding of productive regimes, technology, global-local perceptions, and individual identity and their close association with the construct of culture:

The map of the world shows no country called Technopolis, yet in many ways we are already its citizens. If one observes how thoroughly our lives are shaped by interconnected systems of modern technology, how strongly we feel their influence, respect their authority and participate in their workings, one begins to understand that, like it or not, we have become members of a new order in history. To an ever-increasing extent, this order of things transcends national boundaries to create roles and relationships grounded in vast, complex instrumentalities of industrial production, electronic communications, transportation, agribusiness, medicine, and warfare. Observing the structures and processes of these vast systems, one begins to comprehend a distinctively modern form of power, the foundations of technopolitan culture.³⁰

27. Of course, the cultural has long been on space history's radar. In Howard McCurdy's oft-cited work, the claim is advanced that popular culture helped political elites accept the idea of spaceflight. Missing is theoretical understanding of why that might have been so. See Howard McCurdy, *Space and the American Imagination* (Washington, DC: Smithsonian Institution Press, 1997). Closer to the mark methodologically is Michael L. Smith, "Selling the Moon: The U.S. Manned Space Program and the Triumph of Commodity Scientism," in *The Culture of Consumption: Critical Essays in American History, 1880–1980*, Richard Wightman Fox and T. J. Jackson Lears, eds. (New York: Pantheon, 1982).

28. Again, Denning, *Culture in the Age of Three Worlds*, is the best historical account of this change. The touchstone theoretically is Jameson, *Postmodernism*. See also Zygmunt Bauman, *The Individualized Society* (Cambridge, U.K.: Polity, 2001).

29. A useful assessment and critique of these claims is Anna Tsing, "The Global Situation," in *The Anthropology of Globalization*, ed. Jonathan Xavier Inda and Renato Rosaldo (New York, Blackwell Publishers, 2001), pp. 453–485.

30. Langdon Winner, *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (Chicago: The University of Chicago Press, 1986), p. ix. Winner presented this notion as a preamble to his study and not as the focus of his research. A kindred outlook, richer in sociological claims, is Ulrich Beck, *Risk Society: Towards a New Modernity* (London: Sage Publications, 1992).

In its emphasis on the constitutive role of technology, one easily can read into this description the multiple ways in which the various aspects of spaceflight intersect and participate in this reinvention of the human experience on a global scale. Less evident in Winner's characterization are the myriad sites of contestation to these changes, the ways in which the local and global get interpreted, defined, and formed by individuals, communities, and nations.³¹ Culture, in this argument, is as pervasive as capital and the technological systems with which it is one—not resolutely dominant, but “there” as an element joined, adapted, or countered by many local cultures.³² It becomes a form of political power and a framework of meanings that may reinforce modernist, nation-state-centered notions of progress, or, or alternatively, in postmodern fashion refer back on itself.³³

The linkage between culture and capitalism has been strongest in the postmodernist critique, reflecting the seminal influence of Frederic Jameson's 1984 essay, “Postmodernism, Or, the Cultural Logic of Late Capitalism.”³⁴ Writing in 1991, Jameson gave the condition described by Winner a different inflection, shifting emphasis from technological systems vast in extent to commodities as key in understanding the status of culture and its relation to changes in the human experience:

Postmodernism is what you have when the modernization process is complete and nature is gone for good. It is a more fully human world than the older one, but one in which “culture” has become a veritable “second nature.” Indeed, what happened to culture may well be of the more important clues for tracking the postmodern: an immense dilation of its sphere (the sphere of commodities), an immense and historically original acculturation of the real “[C]ulture” has become a product in

31. The anthropological and postcolonial literatures have covered this issue in depth. See, as examples, Arjun Appadurai, *Modernity at Large: Cultural Dimensions of Globalization* (Minneapolis, MN: University of Minnesota Press, 1996); Edward W. Said, *Culture and Imperialism* (New York: Vintage Books, 1994); James Clifford, *Routes: Travel and Translation in the Late Twentieth Century* (Cambridge, MA: Harvard University Press, 1997); Frederick Cooper, *Colonialism in Question: Theory, Knowledge, History* (Berkeley, CA: University of California Press, 2005); *The Anthropology of Globalization: A Reader* (Malden, MA: Blackwell Publishers, 2002); and Bryan S. Turner, *Orientalism, Postmodernism, and Globalism* (London: Routledge, 1994).

32. Valuable in sorting through these issues from a sociological perspective is Ulrich Beck, *Power in the Global Age: A New Global Political Economy* (Cambridge, U.K.: Polity, 2005); and Ulrich Beck, *The Cosmopolitan Vision* (Cambridge, U.K.: Polity, 2006).

33. The modernist ideals of progress, especially as adopted by less-developed countries, are a crucial part of geopolitics in this dynamic. They are a resource in defining these nation-states contra to the West. See, for example, Gyan Prakash, *Another Reason: Science and the Imagination of Modern India* (Princeton, NJ: Princeton University Press, 1999).

34. Jameson's 1984 essay provided the title for his 1991 compilation of essays and was republished therein: Frederic Jameson, *Postmodernism, Or, the Cultural Logic of Late Capitalism* (Durham, NC: Duke University Press, 1991). On Jameson's singular standing in postmodern and critical thought after 1980, see Perry Anderson, *The Origins of Postmodernity* (London: Verso, 1998).

its own right; the market has become a substitute for itself and fully as much a commodity as any of the items it includes within itself.³⁵

The “dilation” of the congruent spheres of commodities and culture implied not only that more stuff circulated ever more widely through capitalism’s arteries, but also that ever more realms of life—ideas, images, emotions, spirituality, politics—had become commoditized, packaged, and divorced from the circumstances of their creation, infused with the values of the market, including culture itself.

Jameson’s analysis, Marxist and pointedly historical, was not wholly original. In 1961, the more politically and theoretically measured Daniel Boorstin emphasized, too, culture’s historically new and ascendant status, especially as connected to the use of images.

In . . . nineteenth-century America the most extreme modernism held that man was made by his environment. In twentieth-century America, without abandoning the belief that we are made by our environment, we also believe our environment be made almost wholly by us. This is the appealing contradiction at the heart of our passion for pseudo events: for made news, synthetic heroes, prefabricated tourist attractions, homogenized forms of art and literature (there are no “originals,” but only the shadows we make of other shadows). We believe we can fill our experience with new-fangled content. Everything we see and hear and do persuades us that this power is ours.³⁶

The primary distinction between the historical-empirical Boorstin and critically inclined Jameson was a profound shift in attitude. Boorstin lamented this undermining of the real; Jameson accepted it as a constitutional feature of capitalism in the latter half of the twentieth century.³⁷

What might we make of these claims binding together epistemology, commodities, and culture conceived as a “second nature”? First is to reemphasize that these are claims about periodization—the making of an era which included spaceflight. As a start, they might encourage us to overlay this analytic on space history’s chronology and look for reorientations that include state-centered politics

35. Jameson, *Postmodernism*, pp. ix–x.

36. Daniel J. Boorstin, *The Image: A Guide to Pseudo-events in America* (New York: Atheneum, 1971), pp. 182–183. Boorstin’s analysis was roughly contemporaneous with Marshall McLuhan’s first articulations of the notions of the global village and the medium as message in the late 1950s, early 1960s.

37. To Daniel Bell, writing in 1976, Boorstin’s concern loomed large. The abandonment of the real meant abandoning the Protestant ideals of restraint and soberness (borrowing from Max Weber’s classic argument), and thus hollowing out a key pillar of capitalism. Jameson’s account, on this point, seems to have weathered best. See Daniel Bell, *The Cultural Contradictions of Capitalism* (New York: Basic Books, 1996 [a 20th anniversary edition]).

and happenings in production and culture broadly conceived. A reconceptualization in this vein of the 1960s, for example, might offer interpretations that correlate culture and politics within an integrated frame, rather than as partially overlapping but separate orders of experience. This integration already can be found in several examples of literary criticism that have plumbed space- and business-themed literature. These works employ the same conceptual structure presented here (not surprising) and stand as examples of the explanatory possibilities of this type of analysis.³⁸ And they raise a deeper point: that in an era of culture, literary tools and modes of analysis may be a necessary complement to history in understanding the human condition. In modernism, the view prevailed that artists stood as critics positioned athwart the culture of their time. In postmodernism and an era of culture as “second nature,” the implied claim is that all historical actors are so suffused with the cultural that no one stands beyond it—we all, in different ways, are users, interpreters, and refashioners in the tide of symbols.

This deep, prosaic sense of culture in the postwar period is the essence of Jameson’s observation. This view marries well with my own research on multinational business and the development of a global satellite telephony system by the Fortune 500 company, Motorola—a subject distant from literary theory but richly indicative of these claims about the status of culture. Culture as preoccupation, conceptual category, and tangible reality suffused Motorola and its development of this satellite project in the later 1980s and 1990s. Such an outlook came to seem essential in running a business with tens of sites around the globe, managing a complex organization, creating new modes of engineering project management, and operating in a media and symbolic environment over which the corporation only had partial control. This culture fixation led the firm to create Motorola University in 1989, with the charge to research and manage the many intersections of culture and corporate practice that now seemed central to the firm’s success. Within the university sat the Center for Technology and Culture, led by an anthropologist who established a range of links to academic anthropology. As the work of these units became integrated into the Motorola business enterprise, they reinforced the view that a necessary relationship existed among culture, the corporation, and an ability to act across the world stage.³⁹ Motorola University was one notable instance

38. See William D. Atwill, *Fire and Power: The American Space Program as Postmodern Narrative* (Athens, GA: University of Georgia Press, 1994); Thomas Peyser, *Utopia & Cosmopolis: Globalization in the Era of American Literary Realism* (Durham, NC: Duke University Press, 1998); Joseph Tabbi, *Postmodern Sublime: Technology and American Writing from Mailer to Cyberpunk* (Ithaca, NY: Cornell University Press, 1995); and Graham Thompson, *The Business of America: The Cultural Production of a Post-war Nation* (London: Pluto Press, 2004).

39. For a comic, often polemical, and sometimes accurate account of the relation between academic cultural studies and business uses of culture, see Thomas Frank, *One Market Under God: Extreme Capitalism, Market Populism, and the End of Democracy* (New York: Doubleday, 2000), chapter 8.

of a larger trend: over a decade, from the mid 1980s to mid 1990s, more than a thousand corporate universities were created in the United States—all of which were a response, in one fashion or another, to the perceived culture problem and its relation to competition in transnational markets.⁴⁰

This example suggests the ways in which culture—and the pursuit of space history—may be intimately bound to configurations of production and politics.⁴¹ More broadly, it suggests the possibilities for space history when we widen the frame of analysis. In emphasizing theory, the argument in this essay is not a call to reductionism, to suggest that richness of historical experience get shoehorned into an empirically contestable structure of critique. Nor is it to minimize the limitations of this theoretical literature. It, by and large, reflects its origination in the Western academy and life experience. Rather, this essay presents a gentle imperative: Be attentive to the possibilities of thought in the humanities that has seen production and culture as a historical problem of the first rank. The notions limned here, as propositions and analytic constructs, provide a basis for reassessing space history's domain of problems and questions, such as the meaning and status of spaceflight since World War II; its political possibilities; its place in rhetoric and thought in the period; its relation to capital, culture, and commodities; and the combinations of the real, the symbolic, and the imaginary that have gained cultural preference.

In making a profound *historical* claim that a new configuration of epistemology, production, and culture marks the very period coincident with the development of spaceflight, this body of thought poses a deep challenge to space history. To understand the functioning of symbols and images surfaces as a crucial problem. In what ways, for example, do spaceflight and space fiction—in what balance, with what blurring of genres, of the real and the semiotic—speak to the preoccupations of particular regimes of production and cultural experience? What satisfies and why? What period themes—whether utopia, Earthly escape, the human body, identity, difference—find resonance in the narratives of spaceflight?⁴² These are substantial questions that deserve theoretical articulation. Otherwise, our understanding of

40. For an overview of this trend from a policy perspective, see Stuart Cunningham et al., “The Business of Borderless Education,” a report commissioned by the Department of Education, Youth, and Training, Canberra, Commonwealth of Australia, 2000.

41. This perspective is partially realized in Constance Penley, *NASA/Trek: Popular Science and Sex in America* (London:Verso, 1997).

42. Jameson, the doyen of the capitalist-articulated postmodern, has made science fiction a major theme of his research, reflecting a judgment that the genre is deeply expressive of the period. See Frederic Jameson, *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions* (London:Verso, 2005). For an overview of culture-inflected literature in space historiography, see Asif Siddiqi, “American Space History: Legacies, Questions, and Opportunities for Future Research,” in *Critical Issues in the History of Spaceflight*, Stephen J. Dick and Roger Launius, eds. (Washington, DC: NASA, 2006), pp. 433–480. But, again, the question of how culture might relate to broader problems of explanation in the postwar period are not explicitly addressed.

spaceflight (whether as a state or market undertaking) may remain disconnected from analyses and insights that view production more comprehensively. Without an invigorated conceptual toolbox, the intersection of the cultural and spaceflight may seem primarily as kitsch (Star Trek *Enterprise*/Space Shuttle *Enterprise*) or as haphazard and of elusive meaning—rather than as a critical site for investigating the postwar experience.

This analysis offers one path toward a more considered balance between theory and the empirical, toward thinking about spaceflight in history, as a telling angle on our understanding of the late twentieth and early twenty-first centuries.

