

The Generalist and the Disciplines: The Case of Lewis Mumford

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Abstract: This essay explores the methodology and discursive style of pioneering interdisciplinarian Lewis Mumford. Widely acknowledged as one of the most influential scholars of the century, Mumford deployed a richly textured "mixed" discourse, incorporating special guiding metaphors of "the city" and "the organism" to enhance his interpretive range and power. He sought to demonstrate how the disciplines could be brought into cooperation through the mediation of the generalist, and to explore the rigor necessary to this process. In doing so, he achieved an effective interdisciplinary—as opposed to transdisciplinary—approach, embodied in an impressive number of major and minor works. Mumford provides us with a model of successful interdisciplinary effort, and with a sense of the new intellectual community this effort makes possible.

THE WORK of Lewis Mumford provides a classic example of rigorous and effective interdisciplinary thought. A scholar-activist who first came to prominence during the 1920s, Mumford has been called "the last of the great humanists," "one of the most influential thinkers of our time" (Miller, 1995, 5), "the central social theorist of the twentieth century" (Hughes, 1990, 129). Henry Steele Commager, Jr., a noted historian, suggested that Mumford has had "a deeper and more lasting impact on the thinking of his generation than almost any other figure in public life" (1982, 10). Recent efforts to revive the conception of the "public intellectual" and to note the dynamic tradition of independent scholarship frequently highlight Mumford, perhaps the most successful American independent scholar since Emerson.

Not only did Mumford gain an enthusiastic general audience—we need only remember his impact on the youth movement of the 1960s—he also earned the respect of many in the academic world. This recognition was not easily granted, for Mumford distrusted and even despised much that scholarly culture embodies and embraces. He never completed a college degree, taking some delight in this badge of nonconformity; and he argued trenchantly and frequently against the stultifying effects of academic specialization, the fragmentation of the field of knowledge into special and often arbitrary preserves guarded by the various disciplines and professions. He sought instead to be a scholar "without portfolio": a synthesizer, a generalist, an interdisciplinarian.

Lewis Mumford's sustained effort to create an integrative method of research is sometimes obscured behind descriptions of the breadth of his interests. He studied and wrote on a daunting number of topics: art, architecture, city planning, regionalism, economics, technology, religion, ethics, social reform; and in his works a wealth of very specific observations and judgments fleshes out each topic and general conception. He was an omnivorous reader (Hughes, 1990,21) and observer, and he struggled to capture in his prose the concrete and compendious actuality of the areas he sought to explore. But having broad interests and a passion for the concrete can translate into a mere jumping from issue to issue, from field to field, picking and choosing materials like a diner at a smorgasbord. This is why more delimited scholars distrust a polymath. Mumford has on occasion been accused of applying no rigorous method at all, but instead adducing intuitions and insights in an impressionistic fashion, long on movement and dynamism, short on depth (Bender, 1992, 388). But many of Mumford's closest readers find in his work a genuine unity-in-diversity: as Van Wyck Brooks noted, Mumford was "one of the few men to have not *ideas* but *an idea* and he was to spend his life working this out" (Blake, 1991, 188). This is a powerful statement when one begins to grasp the textured, even encyclopedic quality of Mumford's works. Other commentators point to a mystical theme of cosmic wholeness that appeals in Mumford's writings, giving the lie, if authentic, to the accusations of a shallow impressionism (Rochberg-Halton, 1990, 129); still others note dialectical strategies weaving together more and more comprehensive syntheses from contradictory and dispersed elements (Beckwith, 1989; Marx, 1990). Leo Marx argues persuasively that a dialectic of the organic and the mechanical organizes the "broad areas of interest," the vast and varied "terrain" of Mumford's thought (162), while Thomas Bender adds that this dialectical approach grants Mumford's social criticism its marked "power and range" (389). Indeed, Mumford stresses in his autobiography a lifelong fascination with Plato, the father of dialectical philosophy (Mumford, 1982, 142-13; Zuckerman, 1990, 362).

I believe we can demonstrate that Mumford was neither a dilettante nor a merely cumulative polymath, but a serious thinker committed to discovering the connections between things and thus moving ever closer to a knowledge of the whole. This project was inspired in part by the crises that beset his generation, which called to him to engage in a Blakean "mental fight," and in part by two leading metaphors of wholeness which Mumford encountered early in life and which shaped, to a great extent, his style and sensibility. The first of these paradigmatic metaphors came together out of the experience of growing up in turn-of-the-century New York; the second emerged from his discovery of a mentor in biologist-turned-generalist Patrick Geddes.

The City as Metaphor

"I was a child of the city . . ." So begins the first volume of Mumford's autobiography, *Sketches from Life* (1982). Mumford was born in Flushing and grew up in the New York City of the 1890s and early 1900s. "His" city—and he uses the possessive form in a way reminiscent of the feeling for the polis of the ancient Greek—had a profound impact on him, mentally, emotionally, and aesthetically. Mumford calls his "original envelopment by the city" an "important clue" to his life (4-5). His awareness of the city as a place of

adventure and "noble leisure" harkens back to long walks, "rambles," with his maternal grandfather, who, as the retired head-waiter of the famous Delmonico's, had an impressive knowledge not only of the wealthy "400," but of all the quarters and neighborhoods, shops, museums, libraries, and parks that made New York a place of rich aesthetic and social experiences. Later, as a youth, Mumford continued on his own this peripatetic exploration of the vitality and multiplicity of city life, walking "systematically over every neighborhood of my city and its surrounding regions, beholding its life with my own eyes, reading the buildings as if they were so many pages of a book" (18).

The great "text" of the city was shaped and permeated and punctuated by human movement and action, but visually dominated by the built environment, the artificial world of structures and facilities in which human labor had been incarnated. But it contained enclaves of the natural world in its small parks and gardens, and, on a grander scale, along the river and in the great expanse of Central Park. Mumford's poetic descriptions of the delights of crossings by ferry and bridge combine the aesthetics of the natural and the artificial with the special pleasure he took in crossing boundaries, in tying together the East Side/West Side divisions of his world, in achieving an ever deeper sense of the city as his place.

Mumford's city was primarily a place of safety and conviviality, to an extent that current dwellers would find hard to credit; but he also experienced something of the dark side of urban life. Along with the theme of the multivariate, the pluralism of classes and sub-classes, the living mosaic of ethnic groups and styles, the interweaving of significant activities, of business, government, manufacture, education, and art, he was introduced to dirt and poverty and crime:

Thanks to these contacts, I grew up in the real world, aware of its many social stratifications and faults; not least aware of its poverty, its sordor, and the unflinching efforts of so many of the poor to maintain their respectability and decency in the face of odds one might have thought overwhelming (20).

For Mumford the city was more than a place, more than a mere stage or setting for life: it was a home-place, alive in some important sense; and he experienced its life as an extension of his own. This close identification with the city (Hughes 1990, 77) is made to rival and supersede his identification with his own family. This results in some of the more startling declarations in *Sketches from Life*. His "child of the city" phrase takes on new meaning as we discover that Mumford is setting his family and "his" city in opposition: "Not without premeditation did I begin this account of my life by describing its setting in the great city, for New York exerted a greater and more constant influence on me than did my family" (25). In an age without television, when the typical family spent a great deal of time together working, socializing, and entertaining themselves, this assertion takes on special force. But the eclipse of the family in Mumford's story—understandable on one level as the natural revolt of a highly energetic youth against "stodgy" elders—takes on a deeper meaning when we discover that another kind of eclipse lay behind it: the absence of Lewis' father. For Mumford was, in the parlance of the time, an illegitimate child who grew up not only without his father but without any real knowledge of his father or his father's side of the family. He admits only to the

vaguest of questions and intuitions about this state of affairs, and indicates how a largely unconscious "pact of silence" on the matter grew up between himself and his mother. Knowing that the reader will be likely to chalk this up to repression, he insists that he felt little curiosity about it, and that the lack of a father never constrained or biased his development. But the marked Sartrean "presence of the absence," combined with his invocation of two "complementary" mothers (one a doting nanny), makes it hard not to recast his drama as an escape from the suffocating family combined with a quest for the liberating father.

Mumford's grandfather played the role of surrogate father (Hughes, 1990, 75), or perhaps of "godfather"; and his was primarily an educative fatherhood acting as the boy's introduction to the world of Manhattan. With his early death, we sense that the city itself became Mumford's father: he was the "child of the city." At any rate, it clearly became his patrimony:

Since my father's family did not "exist" for me, their wealth aroused no hopes and their indifference promoted no resentments. I made my own way without patronage or favor, indeed without any external advantages except those which my native city offered me. That was a more munificent gift than any family could bestow: New York with its libraries, its museums, its parks; its nearby landscapes, the Palisades and the Westchester hills; not least its multitudinous human richness, with all its choices of lovers and friends. Walt Whitman's Manhatta [sic] was my Manhatta, too: "City of orgies, walks, and joys." That is why my city, not my family, properly set the stage for this narrative. (35)

I do not want to suggest that a Freudian dynamis should replace the explicit "portrait of the artist" we find in *Sketches from Life*. But when the narrative being framed is the story of one's own life, the shifting of perspective from family to city is surely significant: the illegitimate son adopted his city and was adopted by it. The adoption led to or was tied in with a profound identification between the two, with the city playing the role of father and Muse, teaching, inspiring, and legitimizing the young writer and, most of all, sensitizing him to the fullness of urban life, such that he became not only the foremost historian of the city, but the interpreter of the city as a metaphor for human life itself. The city became symbol and microcosm: "the point of maximum concentration for the power and culture of a community Here is where the issues of civilization are focused" (Mumford, 1938, 3). New York became Mumford's "open university," his Athens, his Walden Pond (Hughes, 1990, 15), his touchstone for life and civilization; in a word, his guiding metaphor for the multidimensional yet bounded and unified nature of life.

Scholars have recently become fascinated with the symbolism of space and with space as, indeed, constructed by symbolism: the "landscape of memory" (Schama, 1995), the "reterritorialization of knowledge," the interplay between the textual and the spatial, with the text becoming space in "virtual reality" and "virtual community," and with space and the whole visual realm interpreted as cultural text. The foregrounding of the urban metaphor in Mumford, and its extension to the region and the globe in his mature thought

(Mumford, 1961), provides us with an early example of the theme (though one without disturbing poststructuralist presuppositions). One need not accept the Freudian undertones I have suggested to see Mumford using the city and his profound experience of humanized, even anthropomorphized, urbanity as a key metaphor in understanding human life in general. This usage permeates his works, and not only those devoted to the city per se, and informs those moments in which they become most numinous and evocative.

The city even provided Mumford with a peak experience of the bridging of the inner and outer worlds. After establishing this image and theme in a long section devoted to his crossings and recrossings of the great bridges of New York, Mumford recalls an urban "epiphany" which occurred, most appropriately, at sunset, in the spring, in the middle of the Brooklyn Bridge:

Here was my city, immense, oveipowering, flooded with energy and light; there below lay the river and the harbor, catching the last flakes of gold on their waters, with the black tugs, free from their barges plodding dockward, the ferryboats lumbering from pier to pier, the tramp steamers slowly crawling toward the sea, the Statue of Liberty erectly standing, little curls of steam coming out of boat whistles or towered chimneys, while the rumbling elevated trains and trolley cars just below me on the Bridge moved in a relentless tide to carry tens of thousands homeward. And there was I, breasting the March wind, drinking in the city and the sky, both vast, yet both contained in me, transmitting through me the great mysterious will that had made them and the promise of the new day that was still to come. The world, at that moment, opened before me, challenging me, beckoning me, demanding something of me that it would take more than a lifetime to give, but raising all my energies by its own vivid promise to a higher pitch. In that sudden revelation of power and beauty all the confusions of adolescence dropped from me, and I trod the narrow, resilient boards of the footway with a new confidence that came, not from my isolated self alone, but from the collective energies I had confronted and risen to. I cannot hope to bring back the exaltation of that moment . . . (1982, 130)

I quote this striking account at length, in part as evidence for the role of the city as symbol and microcosm, and in part to see the bridge emerge as an important element in that urban symbolism. Mumford was a lover of bridges, a walker of bridges—an activity which, in contrast to driving or riding, provides a sense of presence and sensuous immediacy—a romantic personality tied to the cosmos through the reality and the symbol of the city. The city becomes here an image of multiplicity in interaction, of interconnectedness, of energies balanced, shaped, drawn together into organic form, of space humanized, made aesthetic, made, finally, mystical. The lone figure in this scene is solitary in fact, and in the intensity of subjective discovery, but he is also in company—in the good company of the lives that combine to create his city. He had a deep, "underlying experience of the human

diversity of New Yorkers," an "understanding and boyhood love of the city" He "was at home everywhere" (20). This was the sensibility that Mumford would bring to bear in addressing the intellectual and sociopolitical problems of the century.

Not only does the city become a metaphor for life and a paradigm for further exploration of life; it also guides Mumford to a conception of intellectual activity, of mental life. In this view, the multiplicity of scholarly disciplines and positions remains distinct, yet can be *bridged*, tied together in intercommunication, balanced as each finds and develops its proper methods and subject matter, and unified in cooperation and in the synoptic view of the whole. We will see shortly how Mumford uses spatial metaphors in relation to the academic disciplines. These disciplines parallel, in important ways, the neighborhoods and urban institutions, all of which can find their proper place and function in the creation of the unified life of the city, and of the human spirit.

Mumford's experience of the city seems to have been imbued from the beginning with a sense of organic form. The second guiding metaphor for Mumford is that of the living organism, which can stand in and of itself as a symbol of unity through diversity, or which can be seen in relation to its environment as image of a larger and more complex organic synthesis. The power of this metaphor is vastly expanded, I believe, by its embodiment in the man and thinker who became Mumford's "Master" (Miller, 1989, 52) and spiritual father, Patrick Geddes.

In *Lewis Mumford: A Life* (1989), Donald Miller explores this crucial relationship. Geddes began as a biologist, his interest sparked by long rambles in the countryside with his father (which eerily parallel the walks young Lewis took with his grandfather [52]). But Geddes' restless, preternaturally active mind propelled him into other fields: sociology, urban planning, anthropology, demography. He became a pioneer in what we would now call environmental studies and "human ecology." This mix of disciplines and interests was tied together and kept under control by an organicism rooted in biology but capable of wide metaphorical extension: "For Geddes, the world of biology included all human phenomena: cities were as much a natural structure as anthills or beaver colonies.... dreams, myths, and esthetic symbols were as real as atoms or Roentgen rays He refused to set psychology apart from biology" (Mumford, 1982, 146-47). Under the aegis of biology, expanded to become a general philosophy of life, Geddes developed a method that was compendious, yet unified. He was capable, in connection with specific planning projects, of absorbing the intimate details of a site and of the interlocking activities it would make possible, and of combining these with a broad vision of the place, the plan, and the hoped-for natural and human outcomes. When his projects were located in urban settings, he would immerse himself, "wandering on foot through a city, letting it 'speak' to him, absorbing as much as he could of its history and habits from its buildings, terrain, and people" (Miller, 1989, 53-54).

Geddes would always look for a vantage point—like the Brooklyn Bridge in Mumford's epiphany—from which he could view a city or scene "synoptically," as a whole. He saw the city holistically, as an organism indissolubly linked with its "total environment," or as "the organic shell of a living community" (Mumford, 1982, 150). Thus Geddes passed to

Mumford a second urban legacy, a patrimony imbued with a romantic sense of the organic leavened with a solid grounding in the natural sciences. What's more, Geddes embodied the "good life," the well-rounded and fully developed life that Mumford sought, in the form of the sought-for father and teacher:

[Geddes's] work and his philosophy have sprung out of the fullness of his life, as Hermes the traveler; as Apollo the thinker; as Ares, the husband and father; as Hercules, the cleanser of the slums of Edinburgh, and now, at the summit of his life, as Jove, the wise parent of spirit-children scattered about the world in New York, Bombay, Calcutta, Indore, Jerusalem, Edinburgh, Montpelier, London, and where not. (Mumford, in Miller, 1989, 46)

This is pretty heady stuff, with not only an invocation of the father-figure but its multiplication; Mumford has found a father of, apparently, mythic proportions. Indeed he returns to this theme on other occasions, calling Geddes "a Jovian father, stern and practically omniscient" (52). Elsewhere Mumford indicates a healthy and natural ambivalence, fearing his new father's "thunderbolts," wishing to avoid being reduced to a mere disciple, and rejecting Geddes' attempt to cast him in the role of son in a more literal and neurotic sense (Hughes, 1990,50). Still, Geddes' impact on Mumford was tremendous, and the deep connection it created broke out in the highly charged metaphors of divine fatherhood.

Mumford had already achieved an intuitive vision of the city and of its natural environment as an interconnected, organic whole, and he knew enough of the city to connect his vision with the concrete actuality of organic form and function. But he remained "unfocused" (Mumford, 1982, 144), and indeed was about to seek focus by choosing a particular discipline and pursuing an academic career. Geddes, in Mumford's words, "saved me from becoming 'just another specialist'" (148) by showing him how to be a generalist, i.e., by providing him with a preliminary method and a sense of purpose. Thus Geddes gave Mumford's intuitive tendencies technical and scientific development, and a tested interdisciplinary approach constructed around the organic, in the authoritative voice of a god-like (but safely remote) father-figure. The result could have been stifling, but was in fact liberating. Geddes had achieved much with his version of holistic thinking; Mumford would go much farther, becoming "America's leading proponent" (and practitioner) "of holistic thinking" (Miller, 1989, 54). The metaphor of organism, the whole philosophy of organicism, was capable of a more radical extension than that of the city: one could move from level to level and from field to field in ever-widening syntheses, much in the fashion of the great romantic philosophers such as Goethe, Schelling, and Hegel; and it suggested a more radical and complete abandonment of the disciplines and their boundaries than did the symbol of the city. Gladys Mayer, a disciple of Geddes, summed him up in a way that would soon apply to Mumford himself: "He is too integral for the specialists to understand, I think. They have to dub him a little mad—or else think that of themselves" (Mumford, 1982, 153).

Madness and Method

Which guiding metaphor would dominate Mumford's conception of life, and of the generalist's relationship to the disciplines? To begin to answer this question, we need to take a close look at what Mumford had to say about his methods and at what methodology emerges implicitly from his works. Though not an epistemologist or a "theorist" in the contemporary postmodern/deconstructionist sense, Mumford does on occasion address questions of knowledge and method, and his remarks are worth some attention.

Mumford clarifies his method in the introductory chapters of one of his most ambitious and successful studies, the two-volume *Myth of the Machine*. There his immediate task is to achieve a critical overview of prehistory. But the conception of the generalist he articulates in that particular context is, according to Leo Marx (1990, 167), the same that he brings to most of his other inquiries:

In the realm of prehistory the generalist has a special office, that of bringing together widely separated fields, prudently fenced in by specialists, into a larger common area, visible only from the air. Only by forfeiting the detail can the overall pattern be seen, though once that pattern is visible new details, unseen even by the most thorough and competent field workers digging through the buried strata, may become visible. The generalist's competence lies not in unearthing new evidence but in putting together authentic fragments that are accidentally, or sometimes arbitrarily, separated, because specialists tend to abide too rigorously by a gentlemen's agreement not to invade each other's territory. Although this makes for safety and social harmony, it ignores the fact that the phenomena studied do not hold to the same principles. Such "No Trespassing" laws, if observed by the generalist, would halt his cross-country excursions, and prevent him from performing his special function—one oddly similar to that of those Polynesian traders and interpreters who have a license to escape tribal taboos and wander freely over a wide area. (Mumford, 1966, 16-17)

Here is the "urban" conception of interdisciplinarity, complete with a dominant spatial/territorial imagery and reference to Geddes' "synoptic view." This is a centrist rather than a radical interdisciplinary project, in that Mumford does not explicitly seek to abolish the disciplines in favor of some kind of unitary science or method. He does not deny the value of the "widely separated fields"—indeed, he seems to insist that they are the locus of detailed knowledge and of the unearthing of new evidence. But the distinctions between specializations do not preclude their subjects being part of a larger pattern that remains invisible to the individual disciplinary worker. The generalist must find a vantage-point from which the larger pattern becomes visible, a pattern the individual fields help form. Yet once the larger pattern appears, it does not leave the disciplines just as we found them, for new elements—"unseen details"—can now be located within particular fields; and the nature of the boundaries between fields also becomes clear: they do not correspond, naturally and

essentially, with the actual articulations of intellectual problems and their solutions; they are preliminary, prudential "gentleman's agreements," enforced by "No Trespassing" signs which can accidentally or arbitrarily divide elements that belong together. Mumford's language is controlled, but a gentle chiding of the specialists is clearly at work: they are too rigorous, too rule-bound, too ritualistic; they need the generalist in order to transcend these limitations. But there is nothing in this crucial passage on the rigor of the generalist, or in Mumford's final metaphor of the taboo-free trader or his use of various scientific and humanistic disciplines in the text, to suggest that an abolition of specialization is the goal.

Indeed, when we attend to the image of the city, especially as Mumford worked it out in *The City in History*, we discover that boundaries are vitally important: getting them right, maintaining them, and insuring the right passage-ways through or over them, is necessary for an organic, a human city. Boundaries and distinctions are necessary for knowledge as well. Here the conception of interdisciplinarity flows naturally from the urban metaphor, and from a less-radical form of the organic metaphor as well: the city's characteristic shapes and structures must be distinguishable, delimited, so that they can function together in a dynamic harmony that creates the wholeness we call the city. An organism works the same way: it is a unity of distinguishable organs and structures with individual functions, working together in a concord of complexities. Even major organs like the heart or the brain must retain their proper size and position, bounded by other organs and tissues, or the organism becomes sick or dies. Thus too with knowledge. The knowing self as specialist works within the proper boundaries of his or her discipline. The knowing self as generalist oversees the various divisions of knowledge, discovers their proper uses, and actively intervenes when they fail to find their proper place or content in relation to each other and to the whole.

The closest parallel I can think of occurs in the work of R.G. Collingwood (1946), an increasingly influential philosopher of history. He notes that we will seek in vain for absolute distinctions in philosophy between subject matters; everything is connected with everything else. But that does not diminish the need for distinctions within the larger whole; indeed, it intensifies it, for the empirical side of knowing can too easily get lost altogether if we focus too exclusively on our verbal characterizations of wholeness. Thus both Collingwood and Mumford are in effect warning the interdisciplinarian—or, more precisely, the transdisciplinarian—of the danger of the facile synthesis, in which a single principle is allowed to cover over and erase multiplicity in a thoroughly reductive and abstract way. One sign of this is a repetitive invocation of the "unifying" term, be it "system" or "synergy" or "discourse" or "divine will." Hegel lamented the way in which his fellow German idealists tended to generate a conceptual "night in which, as we say, all cows are black" (Hegel, 1967, 79)—i.e., a false unification that made particulars disappear by making them invisible, then calling the resulting obscurity synthesis (71-79). The particulars—even the lowliest (in Hegel's view) particulars of sensation and feeling—must be preserved in the move to the general and the comprehensive even as they are transcended and "reframed" by it. And this principle seems to hold good for Mumford. In *The*

Conduct of Life (1951), Mumford devotes a section to what he calls "The Fallacy of Systems" (175-80). This heading is disturbing: isn't Mumford trying to build a comprehensive, systematic understanding of the "whole of things"? The answer remains a yes. But Mumford warns us against building systems using single principles, building *self-enclosed* systems. In this he echoes many of the existential philosophers and pragmatist thinkers who were writing at the time, and who distrusted abstract systems. Mumford calls for an open-ended system able to contain all the single principles that have been used to produce syntheses heretofore. He even refuses to name the philosophical approach he is using (Rochberg-Halton tries to do it for him with the term "biocosmic" [1990, 131, 150]), fearing that even a name will invite abstraction and false closure. Particularity must live on, for facts and principles and for academic disciplines. Indeed, Mumford credits key disciplines with providing twentieth century humanity with the gateway to wholeness rather than fragmentation: "ours is an age of deep psychological exploration and heightened social responsibility. Thanks to advances in biology, sociology, and psychology, we begin to understand the whole man" (1952, 124). This is precisely the pattern we see in his treatment of prehistory: the advances take place in particular disciplines, and Mumford for the sake of specificity and intellectual honesty feels the need to list them or refer to them quite unambiguously. But it is Mumford as generalist who takes up these advances and moves to the conception of wholeness. Mumford is even willing to speak in terms of the "parts" of human nature (34), a surprisingly mechanistic way of speaking, though that impression is modified when he indicates how these must work together and uses strong terms (soul, spirit, mind) for the unity of the self and for the non-rational and even mystical dimension of the self, as for instance in his declaration that the self is a "mirror of infinity and eternity" (159).

These romantic themes could move us in the direction of a distinction-blurring integrative knowledge. But they remain under the control of, or balanced by, the more concrete urban/organic symbolism. Mumford, following the city metaphor, is unwilling to abandon the individual disciplines or call for a radical restructuring of the map of knowledge—radical, at least, in the sense of contemporary proposals for transdisciplinary restructuring such as those proffered by Steven Fuller (1993) and Brian Turner (1990). What's more, Mumford's prose style self-consciously reflects the way in which he attends to and draws from particular fields: it is a mixed discourse. He employs a wealth of images, terms, contexts, and perspectives drawn from various disciplines. Given any substantial section of the mature works, readers find ethical and philosophical terminology, psychological terms, mythic images, and a highly articulated use of spatial and temporal metaphors. This rich mix is available only to the rigorous generalist, who can abandon the jargon of the disciplines, as jargon, but draw upon their typical usages when doing so can truly illuminate an issue. One never gets the sense that Mumford's prose, with its many references and frames of reference, is out of control. On the contrary, it is under such careful control that the author himself speaks of the contrast between his poetic conceptions and "the sober, neatly planned, dutiful routine, so close in its more workmanlike

qualities to that of an engineer, that characterizes such a large part of my workaday existence" (1982, 128).

Mumford's ability to combine the richness of poetic imagination and language with the precision and love of rigor characteristic of the engineer gives us a new sense of what interdisciplinary discourse can do and mean. Within this discourse, his guiding metaphors help confer unity (Wheelwright, 1968, 81-83), and thus aid in the creation of a style that is vivid without becoming (except on rare occasions) overblown. In his own comments on art and architecture Mumford often asserts that decoration and unnecessary elaboration are sentimental and absurd: he praises the aesthetic values of the modern precisely for their clarity of line and economy. In commenting on Frank Lloyd Wright, he declares, "Henry James, in the wonderful story 'The Great Good Place,' dreamed of an architecture 'all beautified by omissions'; and that effort to rid itself of the superfluous, to return to the essential and the inevitable, is one of the truly aesthetic qualities of machine art, one that indicates the maximum determination by human values" (1952, 82-83). Thus the nuanced texture of metaphor and reference in Mumford's prose must be, in his mind, "essential and inevitable," given his conception of the generalist's function as one who bridges and ties together the isolate areas of thought. As a youth Mumford was attracted to both sociology and art. He was unable to choose between them, and instead created a prose style that is a synthesis of the "sociological" language of analysis and denotation and unifying theory, and the artistic language of metaphor, connotation, and unifying form.

Fusion on the level of use of language—the mobilization of mythic and poetic forms of expression—facilitates and embodies synthesis on the level of ideas and insights. For without metaphorical tension and extension, i.e. without reformulations on the semantic level, the typical discourses of well-established disciplines tend to be incommensurable. In a sense, each and every well-crafted metaphor provides a microcosm of interdisciplinary correlation and convergence in general, for metaphor links the apparently separate and unlike by means of a discovered, significant, and arresting likeness. Mumford's key or architectonic metaphors attempt the even more difficult task of bridging the opposition between chronological and topical approaches to explanation, between narrative (story) and analysis, between the light focus of the specialist and the liberating overview of the generalist. His use of symbolic and mythic language became more nuanced, principled, and rigorous as his career proceeded (Zuckerman, 1990), and it thus provides us with an important clue to Mumford's whole approach to the correlation and integration of insights drawn from different disciplines. As one prominent interdisciplinarian noted—and his comment applies admirably to Mumford's work: "There is an element of art in the interdisciplinary process of synthesis or integration which may never prove amenable to systematization, but many disciplines in the humanities contain similar room for creativity in their method without charges of nonrigor, and there is no basis in principle why interdisciplinary study should face that charge" (Newell, 1983). Generalists must hold themselves to high standards in the use of evidence, but they must also discover in themselves that "element of art" and the discourse appropriate to it.

I indicated that, in his brief theoretical statement, Mumford mounts a gentle satire of the specialists by using terms like "taboo" and "No Trespassing." However, we could read this as more pointed, more confrontational—especially in light of the bald and combative assertion that reality doesn't follow the conventional map of the disciplines. Certainly at other points in his body of work Mumford excoriates overspecialization and narrowness of vision in the strongest of terms (Bender, 1992). But at this particular point—and remember Leo Marx strongly asserts that this is in fact typical—he seeks to caution the reader and himself that the generalist cannot do his work without the contributions of the specialist, and that he must accept doctrines of scientific rigor that actually give the disciplines something like a veto power over the interdisciplinarian's use of their materials. The rules of a scientific treatment of evidence apply as strongly to the generalist as to the specialist:

Nevertheless there are certain rules of the game that a generalist must keep, when he tries to fit the scattered pieces of evidence together in a more meaningful mosaic. Even when he seems on the verge of completing an emerging pattern, he must not surreptitiously chip a piece to make it fit, as in a jigsaw puzzle, nor yet must he manufacture any of the pieces in order to fill out the design—although he of course may look in unlikely places for them. He must likewise be ready to scrap any piece of evidence, however he may cherish it, as soon as one of his specialist colleagues discovers that it is suspect, or that it does not fit into the particular environment of the particular time sequence under discussion. When not enough parts exist, the generalist must wait until competent authorities find or fabricate them. But if, on the other hand, his design will not hold all the pieces the specialists present to him, then the pattern itself must be abandoned as faulty; the generalist must begin all over again with a more adequate frame. (1966, 17)

The issue of the generalist's role and of his dependence on specialists appeals as part of a demonstration that "disciplined speculation" and "rational speculation fortified with careful analysis" (14-15) are necessary in studying prehistory. What does Mumford mean by speculation here, and does it play a role in interdisciplinary work in other areas where more evidence is available? Mumford argues that, in an effort to avoid speculative errors, anthropologists and historians studying prehistoric times have fallen into a fetishistic relationship with the physical evidence, in and of itself. The result is an interpretation of human experience "petrified" and reified, constructed around the few physical artifacts, mostly stone tools, that remain. He cites the great epochs of prehistory and the ancient period: the Paleolithic, the Neolithic, the Bronze Age and the Iron Age, as exemplifying this overemphasis on tools and materials. Thus in the name of rigor we accept a materialistic bias in interpreting our prehistory and early history that we would reject as laughable in any better documented area. At the same time, in avoiding the kind of speculative interpretation that would correct this bias we fall into ungrounded speculations of another sort:

... even the specialized scholars who are most ready to decry speculation often succumb to it, chiefly by presenting purely speculative conclusions as if they were well-established facts, without allowing alternative hypotheses. (17)

Mumford, then, hopes to introduce greater rigor into interpretation by insisting on the use of multiple hypotheses when we do not have the positive evidence necessary to rule out alternative explanations. We must be willing, he insists, to leave some questions open. Yet he wants to abandon the effort to banish speculation from prehistory by fostering a type of disciplined speculation employing primary deductions from physical evidence and secondary deductions based on connecting the evidence, by analogy, with practices in related human groups. Analogy takes us a step closer to the world of metaphorical and mythic thought (White, 1992, 1), a tactic that by now comes as no surprise. But Mumford is not, as we shall see, abandoning the kind of historical rigor being conceptualized at the time by such figures as Collingwood.

In the process of developing this argument, Mumford anticipates contemporary concerns about the ideological construction of scientific knowledge (Smith and Marx, 1995, 254-55), concluding that most scientists cannot take seriously evidence that would call into question the preconceptions and normal procedures of science itself. But the scientific tradition of the nineteenth century was rational, utilitarian, often frankly materialist. Thus many contemporary scientists, bound by unexamined positivistic assumptions about the nature of the real, could not take seriously evidence pointing to a broader, multidimensional cosmos. Mumford offers examples: one of the most dramatic is the fact that the cave paintings of Altamira and Lascaux were denounced as frauds by a number of anthropological authorities because their existence did not fit current theories (1966, 8). Under the aegis of Einstein, Heisenberg, and Bohr, contemporary physics and cosmology parted company with positivism, mechanism, and "common-sense" materialism, providing us instead with new conceptions of causation, form, and interaction, and with the chance to review the evidence in many fields, seeing it with less-blinkered eyes. With the rise of psychology and sociology came other categories of probability and necessity that could also be employed in reassessing ourselves and our past.

In pushing for "rational speculation," is Mumford in fact drawing on the generative new movements in science and history, or is he merely creating an elaborate rationale for pressing his own interpretive agenda? Most historians and scientists would accept as a principle Collingwood's version of Occam's Razor: we can assert as knowledge only what the evidence compels us to assert. But rather than banishing speculation, Collingwood celebrates it under the term "historical (or *a priori*) imagination" (1946, 231-49). Imagination is not necessarily false, as the common-sense view would have it: if our direct evidence indicates that Caesar was in Gaul in May and in Rome in July, we must imagine him traveling from Gaul to Rome even if there is no direct physical or documentary evidence indicating the details of, or even the sheer fact of, the journey. It is the historical imagination that enables us to tie together the story of the past, just as an educated imagination provides

us with images of absent places and peoples necessary to our knowledge of the present. Mumford is using the term speculation to do the work that Collingwood assigns to the term imagination. Perhaps speculation is not the best word for what Mumford has in mind; interpretation might do as well, and give rise to fewer irrelevant objections. But we know Mumford is in love with visual tropes, and speculation may have for him some of the sense of closely related words like "spectacle" and "inspection." And Mumford is not alone in his usage: many scholars have lamented the loss of a tradition of speculative thought (Frankfort, 1949, 11-12).

Mumford is seeking, then, a methodology that, like Collingwood's idea of historical method, mobilizes the powers of imagination and imagery but binds them to the rigor of evidence. Mumford's guiding metaphors must find their justification in the experiential realm. Because understanding requires deduction from evidence, the interpretation of evidence, and the development of special areas and types of evidence, the disciplines can serve our synoptic interpretation, our general synthesis, by finding new evidence, new kinds of evidence, or new conceptions with which to reconsider old evidence. But in the process of assessing their insights and comparing them with insights from other disciplines, the interdisciplinary scholar will run squarely into those disciplinary assumptions that blind specialists to important alternative hypotheses and conclusions. Thus while offering the disciplines veto power with respect to matters of fact, Mumford takes from them a significant aspect of their theoretical autonomy, and gives himself and other generalists permission to criticize and reformulate their most basic conceptual tools, strategies, and assumptions. Since these help determine what is accepted by a discipline as "fact," the power of the specialist to cancel out the research of the generalist is further qualified; but it is not rescinded. Mumford seeks a delicate balance between the prerogatives and powers of the specialists vis-a-vis those of the generalist. In doing so he remains within the standard definition of interdisciplinary thought as a method for interrelating the insights generated by particular disciplines.

Mumford also remains within the hermeneutic circle invoked by many philosophers: conceptual categories allow us to use evidence, to make sense of it, and thus to develop interpretations based on it; our concepts are necessary to make sense of the evidence, and the evidence grounds or supports our concepts. But the circle is not closed, particularly if we are considering iconoclastic thinkers like Mumford. Instead it is modified again and again, and becomes a growing spiral of discovery, as a result of uncovering new sources of evidence and speculatively generating new hypotheses and new categories of interpretation. By linking the specificity and focus of the disciplines to the generalist's unique synoptic overview, and these in turn to the use of multiple working hypotheses to ward off a premature closing of the question, Mumford creates a rough-and-ready dialectical process capable over time of generating better, more comprehensive, more coherent interpretations. Truth thus becomes the "daughter of time" in ways Bacon himself could not have imagined. She also becomes the daughter of cooperative interchange between the disciplines as facilitated by the "bridge scientist" (Anbar, 1986),

and by the protean symbology of bridgings and crossings, boundaries and gateways, organisms and cities.

Interdisciplinarity and Dialectics

If Mumford is so enamored of the disciplines, so confident that they contribute, vitally and essentially, to the mosaic of general knowledge, why does he satirize them at all? Was Mumford not our most trenchant critic of the discipline-bound academy? Thomas Bender remarked that Mumford "challenged in word and career" our "highly specialized academic culture" (1992, 388). Leo Marx wrote of his "unconcealed disdain for the bland, compartmentalized, morally disengaged kind of scholarship the academy nurtures and rewards . . ." (1990, 165). Mumford often excoriated the academic division of labor as a twisted reflection of the mechanical and bureaucratic divisions associated with modern industrialism. He attacked those trends, and the technological civilization based on them, in such strong terms that he was often branded a negativist, an "embittered" intellectual, a doomsayer, a technophobe—even an early postmodernist (Smith and Marx, 1994, 253-54). The more the academic world aped the fragmentation and alienation of the assembly line, the more Mumford cast himself in the role of the adversary, the prophet come to condemn. How, then, can we explain his effort to cast himself "against type" in the counter-role of bridge scientist, of genial generalist gathering up the fruits and paying careful attention to the caveats of the disciplinary laborers?

In a way this is a false problem, or at any rate a problem interdisciplinarians are all too familiar with. Their solution, and Mumford's, is pretty much the same. It is not disciplinarity per se they have a quarrel with, but disciplinary chauvinism in its many forms. When an expert seeks to build unbreachable and impermeable walls around his discipline, or claims its results can only be understood, appreciated, and put to use by a full-time, rigidly socialized, properly certified practitioner, or insists it has a monopoly on the truth, he or she is asking for the kind of devastating critical assault Mumford could unleash. When turf battles replace serious intellectual exchanges and debates, the only recourse for the generalist is the challenge "in word and career." But once it becomes clear that boundaries pragmatically and historically defined cannot be transformed into absolutes, the road is clear to the kind of living "city" of the total mind, the kind of academic communitarianism, that Mumford praised and did his best to foster.

But there is another side to this question with even broader implications. The tonalities of Mumford's arguments, their varying degrees of praise and blame, optimism and pessimism, are conuolled by more than the metaphorical/symbolic, empirical and speculative methods we have already noted. They are also controlled by and dictated by Mumford's use of the dialectical method. The ironies and reversals of the dialectic, as applied to complex historical situations and processes, help explain Mumford's ambivalence towards the traditional disciplines, and toward the whole complex of traditions and institutions that surround and, to some extent, define us. The best guide to

this aspect of Mumford's thought is Leo Marx. In his insightful article, "Lewis Mumford: Prophet of Organicism" (1990, 164-80), Marx links Mumford's success as a generalist to a principle of synthesis, a "core idea" (Bender, 1992, 389) running throughout his work. This idea is organicism, as expressed and developed in and through a dialectic of organism and mechanism. These oppositional terms, with their many variations and transformations, organize the "terrain" of Mumford's research, providing it with a dramatic structure and a unity-through-opposition characteristic of the great dialectical synthesists from Plato to Hegel. If Mumford offered only a sterile Manichean opposition of forces, as some commentators have claimed (Williams, 1994, 229), his work would be far less interesting. But ultimately the mechanical is rooted in the organic realm, arises from it and interacts with it, and can be reconciled with it in a possible utopian synthesis. Mumford's unifying concept is a concept of life, a "biocosmic" principle. Thus Marx calls him, appropriately enough, the prophet of organicism.

It is not hard to recognize the familiar guiding metaphor of the organism, now taking on the form of a full-blown philosophical, even metaphysical, conception. But it is important to remember that the drive for unity embodied here, and the satisfying aesthetic form provided by the dialectical "clash of mighty opposites," is matched by an equally strong attraction to and experience of plurality (cf. Williams, 231). Mumford's lifelong interest in Plato was balanced and tempered by an interest in Aristotle (Zuckerman, 1990, 362); his organic symbology was both complemented and countered by the multiplicity inherent in the symbolism of the city. Mumford is willing to move in the direction of unified, systematic knowledge if and only if the unity rises from, reforms, but also preserves the protean flux of individual forms that greets our awakened senses and our most profound aesthetic intuitions. The same effort and insistence is apparent in Mumford's transcendence of, critique of, and preservation of the individual disciplines and academic specializations. They may all serve as parts, pieces, of the larger mosaic of human consciousness and historical self-consciousness that the generalist envisions. But each piece has an integrity of its own that does not disappear, even when it finds its proper place, or rather makes its proper contribution, to the whole. Just as an enclosed and self-satisfied disciplinarity is to be shunned, so must we avoid the self-satisfactions and delusions of an abstract universality.

The boundaries of the disciplines must be permeable, then; and they must be reduced to pragmatic, problem-oriented lines that can be redrawn and redefined as knowledge grows. But they can no more be completely abolished without unleashing chaos than the boundaries of a well-planned city can be destroyed without destabilizing the communal life of the city. Homes must have windows and doors; but to have them they must also have walls. Neither the boundaries of our disciplines nor the walls of our homes are necessarily permanent. But to the degree that we avoid catastrophic and regressive changes, that very impermanence can work on behalf of an organic ordering and reordering process whose end we cannot fully envision. After all, a full working out of the organic metaphor can hardly avoid something like the pattern of evolutionary change. In *The City in History*

(1961), Mumford explains what he means by organic planning, which amounts to an evolutionary model of the successful urban "organism":

In organic planning, one thing leads to another, and what began as the seizure of an accidental advantage may prompt a strong element in design, which an a priori plan could not anticipate, and in all probability would overlook or rule out... Organic planning does not begin with a pre-conceived goal: it moves from need to need, from opportunity to opportunity, in a series of adaptations that themselves become increasingly coherent and purposeful, so that they generate a complex, final design, hardly less unified than a pre-formed geometric pattern. Towns like Sienna illustrate this process to perfection. Though the last stage in such a process is not clearly present at the beginning, as it is in a more rational, non-historic order, this does not mean that rational considerations and deliberate forethought have not governed every feature of the plan, or that a deliberately unified and integrated design may not result. (302)

Once again the city becomes a metaphor for human life. As the "child of the city," Mumford understands the development of a rational plan over time: he understands the vital interplay between the rational and the nonrational in that historic process. But he also unconsciously reveals, through the symbol of the city, what we can hope for in the evolution of knowledge—if we have the energy and imagination to follow his lead. Like the plazas, structures, and neighborhoods of Sienna, the disciplines have appeared in response to genuine human needs and opportunities. Disciplinary expertise must therefore be sympathetically understood and respected before it can be drawn into the "commons" of interdisciplinary synthesis. In the interchange among the disciplines, and between disciplinarians and those professional boundary-crossers, the interdisciplinarians, all have the opportunity to find the proper boundaries of their interests and the best sites for creative exchange. The current halting and intermittent forms of cooperation between generalists and specialists will become "increasingly coherent and purposeful," as they achieve through dialectical tension and resolution a profound and arresting pattern of knowledge. Nor will that pattern be closed or final. The map of knowledge will change and develop. It will become more focused in outline and articulation. It will be as Mumford imagined it: like the map of a great city with its detailed representations of roads and bridges, blocks and buildings. But unlike maps of paper, its frame will be no arbitrary rectangle or square, but the living boundaries of the city of the mind.

Acknowledgments: I am grateful to Professor William H. Newell of the Institute on Integrative Studies for comments and suggestions that strengthened this study at a number of key points.

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