

OVERVIEW OF FOUR BOOKS

THE NATURE OF ORDER: AN ESSAY ON THE ART OF BUILDING AND THE NATURE OF THE UNIVERSE BOOKS ONE, TWO, THREE, AND FOUR

Christopher Alexander

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Review by BRIAN HANSON

The famous image of Sir Isaac Newton, whose mechanistic system defined the West's cosmology for over two centuries, has him collecting pebbles on the shores of truth. Imagine if he had happened to toss one of those pebbles into the encroaching sea, and had found that the perfect symmetry of the water's surface was broken but—in the widening ripples—structure was given in return, structure created out of nothing. Had he done so, and had seen fit to meditate on this fact as he had meditated on the fall of an apple, Newton may well have devised a cosmology not unlike that proposed by Christopher Alexander in *The Nature of Order*.

It hardly needs be stated that architecture is not Nature: It is a product of culture; it is artificial. Yet this self-evident truth has never seemed to deter architects, and writers on architecture, from seeking inspiration in Nature; from attempting the "imitation of Nature." It was God's occult creativity that once inspired neo-classical architects; the English critic John Ruskin proposed that the outward forms of Nature should be a yardstick against which to measure buildings;¹ twentieth-century organic architects (a broad church that includes Frank Lloyd Wright, Eric Mendelsohn, Rudolf Steiner, Frei Otto, and Imre Makovecz) looked to Nature in search of alternatives to tyrannical mechanistic exactitude (or, in Makovecz's case, a tyrannical regime);² and in recent years Charles Jencks has, in buildings like London's Swiss Re Tower—nicknamed "The Gherkin"—detected traces (denied by the architect) of the Fibonacci ratios found in such abundance in the natural world.³ "Culture isn't the opposite or contrary of nature," according to Nature writer Richard Mabey. "It's the interface between us and the non-human world, our species' semi-permeable membrane."⁴ The evidence seems to support this view.

Not every version of architecture-as-Nature is equally valid, though. Twentieth-century organicism and Jencks's "Jumping Universe" (a cosmology suggested to him by complexity science) seem content with Nature-as-metaphor,⁵ while neo-Goths and neoclassicists alike thought that what they did reflected absolute truths about the world around them. Unfortunately, the science didn't exist in the eighteenth and nineteenth centuries that could raise their truths above mere (albeit often inspired) intuitions. Ruskin, like Goethe before him, relied on a holistic form of "observational science," but not only was this a science more useful in analysis than prediction; it also lacked a systematic geometry, and its vocabulary tended to be dismissed as too poetic for the modern world. Those seeking explicit order and harmony in the world were, therefore, continually drawn back to the comparatively simple geometries and proportions, the steady rhythms, and the certainties, of Classicism. And it was but a small step from this to the white-cube Modernism of the early and late twentieth century.

Nevertheless, order and Classicism still seem to some people to be the most logical bedfellows. The English critic Jonathan Glancey continually reminds his readers—lest they should have forgotten—that the Third Reich had a weakness for Classicism: a style that, after all, claims only to be "obeying Orders" (the five Orders of the classical canon).⁶ Jencks's spirited defence of "natural" disorder in architecture (illustrated by the works of Peter Eisenman, Frank Gehry, Daniel Libeskind, and friends) is born out of revulsion toward the kind of order promoted by twentieth-century Fascism. Christopher Alexander, part-Jewish, born in 1930s Vienna, has even less reason to defend that kind of order. Yet he has always resisted the facile caricature of order as necessarily something oppressive. We need, he has always maintained, to bring about our own order, for our own specific

situations, and with the tools we have at hand. To do this we need to develop our awareness of the structure of the world around us, and let that awareness both suggest possibilities and impose constraints on how we set about our business. The results of this form-generation from the grassroots, he maintains, can be incomparably richer than what any Five Orders, or Five Year Plans for that matter, can dictate.

Alexander has been writing along these lines for the past thirty years, during which time the science has been coming into being that supplies the geometry and (at least some of) the vocabulary to this project. Ernst Gombrich got it so very wrong when he described order in Nature as something seen “where the laws of physics can operate in isolated systems without mutual disturbance.”⁷ Even the most casual consumer of popular science will now appreciate that it relies on no such chilling exclusivity. The sciences of fractals, chaos, catastrophe, and complexity have, over the quarter century and more since Gombrich lectured on the subject, shown that rich and robust kinds of order can be generated spontaneously out of apparently random systems; that some kinds of order are “emergent” phenomena—a “bottom-up” occurrence—rather than conditions imposed from above; and that it is precisely “mutual disturbance” that enables this to happen. In effect, the science that has come forward in recent decades (as the art critic the late Peter Fuller was prescient in observing) supplies the grounding that Ruskin’s and others’ intuitions lacked.⁸ In so doing, it offers exciting possibilities for the future.

The post-Enlightenment scientific program, for all the material benefits it has given us, also brought about the “conquest of abundance” lamented by Feyerabend and his ilk.⁹ From the late nineteenth century onwards the arts, architecture in particular, followed science into this arid wasteland. Twentieth-century architectural philosophy, inspired by science, conspired with the dismal science of economics to produce an environment stripped of all richness. One of the possibilities that newer scientific thought offers is a means of our restoring this lost abundance to the built environment, without needing to ape the decorative program of the past.

But the promise for architecture and urbanism of what Ray Kurzweil has called “an order that feeds

on chaos” is unlikely to be fulfilled in the polarized climate that Charles Jencks and his favored architects are producing: By using scientific metaphors to sanction a new breed of disorder they have virtually willed into being a new generation of Classicists eager to come forward with a renewed insistence on classical *rules*, and a suspicion of scientific explanations.¹⁰ Alexander is disdainful of both sides of this divide. It is probably inevitable—given that Alexander studied at Cambridge (science first, then architecture) in the same years that Crick and Watson intuited the double-helix of DNA—that his grasp of Nature is *structural*. This structural viewpoint serves to reconcile what, up to the late twentieth century, had been assumed to be contradictory viewpoints about architecture: those of the neoclassicists and the Gothic Revivalists; those of the idealists and the naturalists. What Nature has to offer us are not lessons in form, but lessons in *process*. And what the end result of natural (and right architectural) processes have in common, Alexander calls “life.” This remains a contentious term for some scientists, but by others—like the late David Bohm, for example; or David Deutsch, author of *The Fabric of Reality*—it was already anticipated.¹¹

But beyond this, Alexander’s stance might also serve to reconcile two far older enemies: science and the soul. In *The Nature of Order* he comes clean for the first time about the cosmology that underlies his theories and buildings of the last half-century, justifying the rather lighthearted description he once gave of himself as “a visionary drunk in God.”¹² This cosmology—with echoes of both Buddhism and Deism—will be as much an offence to religious fundamentalists as Alexander’s buildings have been to the architectural variety. In Book Four, in particular—subtitled *The Luminous Ground*—he takes us into territory unexplored in his previous books, but which he contests is now necessary if we are fully to understand their implications. It was when I read this volume that I was prompted to re-imagine the myth of Newton.

Beauty of structure for Alexander is proportional to the extent to which it points back—as does the shape of ripples on the water—to the primeval void from which it emerged. The Void (given a capital letter in *The Nature of Order*) is a recurring presence (yes, a presence, rather than an absence) here. There is a disquisition in one of the books on “the

structure of nothing,” which concludes with the thought that the end of all our making in the world (building being a primary expression of this) is to pay respects to the void from which true structure emerges. One of the “Fifteen Properties” discussed in *The Nature of Order*—found in Nature and, the argument goes, in all good human structures—is called “The Void.” One might be forgiven at first in assuming that, in echoing Zen Buddhism, the author demands of us no more than a heightened meditation on the world. But Alexander is never content merely with meditation; his is a call to *action*, and we are repeatedly called upon to consult our feelings mainly in order that our *works* be worthy. The cosmology here is, in its ideal form, one with no need of priests. We are encouraged, through trial and error, to find our own way to the truth, just as we are urged to construct our own order. But the aim of this marriage between Cambridge science and Californian New Ageism is not to generate a multiplicity of “truths” and of “orders”; but rather, through “mutual disturbance,” to foster an emergent truth, and an emergent order, of the richest kind, and on which many can agree.

One might almost be tempted to read into these volumes the “Four Ages of the Architect.” After all, from the first to the fourth volume we move from youthful idealism (and its inevitable battles with “the system”), through middle-age achievement, up to mature meditations on God and the meaning of things. And, from the first to the third, the volumes get fatter, concluding with something a little more lean, as befits old age. It would be, in this reading, as much an autobiography as a work of theory or an architectural monograph. The only weakness about such a reading is the fact—self-evident to anyone who knows the author; deducible by anyone who has carefully read his books—that Alexander continually lives all Four Ages at once. The disquisitions on God and the nature of the universe in Book Four are not renunciations of an earlier materialism, but a way of shedding necessary light on the materialism of Book One. The battles of Book Two do not belong to long-ago campaigns, but remain meat and drink to him to this day. The achievements of Book Three, impressive though they are (and they ought to give pause to all those who casually dismiss Alexander as a “mere” theorist), are feats upon which he is unwilling to rest his laurels. There is another *scale* of building, not represented here,

that he means to attain. These volumes are, therefore, less the “Four Ages” of Christopher Alexander, than four abiding aspects of his character. And we see all four portrayed here together for the very first time.

The Santa Fe Institute’s (SFI’s) tale is fairly well known, and it is a cautionary one: Set up by a Nobel Laureate in the 1980s to much fanfare, it promised to apply the analytical tools of complexity science to an impressive range of real-world problems in finance, management, the environment—you name it.¹³ In the end it offered some useful analysis, but its tools couldn’t be predictive enough to justify much of the sizeable funding initially thrown at it. Its fate begs the question whether Alexander’s *architectural* complexity science can ever become a wider movement: Is it something that can be learned, that can be used to solve real-world problems, or is it destined to remain unique to this one man? Does it outline a set of principles, or merely account for a personal style? If it is to become a general approach in practice it will need to cross over, certainly—as a good deal of what was done at the SFI failed to do—from being analytical to being prescriptive. Readers of *The Nature of Order* are likely to find their understanding of what is right and wrong about existing environments improving, but still have questions about how to set about making right new environments. Alexander’s *Notes on the Synthesis of Form* and, after it, *A Pattern Language* were, it is true, seized on by those actively wanting to build (often it was self-builders who seized on *Pattern Language*; architects who were inspired by the *Notes*); but both these works have since been deemed partial, and so dismissed in part, by their author.¹⁴ One might ask whether it is precisely those things in them that have proven disappointing to Alexander that made them attractive to builders. If so, will the expanded account of Alexander’s approach in *The Nature of Order* attract builders as he hopes?

I happen to think that aspiring builders *will* be amply rewarded by time spent with these four books. What disappointed Alexander in relation to many of his earlier works of theory was an expectation by users that they would offer some clever “tricks” for the achievement of harmony and balance in the built environment. Such tricks imply that there is a shortcut to beauty; indeed, the whole profession of

architect came into being on a pledge that there was such a thing. Alexander (along with his doppelgänger Stephen Wolfram) would now say that there is no such shortcut.¹⁵ The only way to know what the end result is going to be is to stay with the process right through from beginning to end. The detached intentionality that shapes the architect's particular contribution to the design process is in Alexander's universe distributed across a network engaged in active participation. Only from within the process can you be aware of what little nudge to give things to ensure that the harmony of the whole is either maintained or enhanced. But in order to do even *this*, doesn't one need a sense of the desirable end, and doesn't this conflict with one's role as participant? Well, yes and no: There is no conflict if the desirable end is *structural*, not formal, and if all accept that no one—architect or non-architect—can claim to see more than one or two steps ahead of where things have already arrived.

In this scenario, the most *The Nature of Order* can claim to be is a manual that enables one to evaluate a given situation and to anticipate those few next steps. Of course, this premise raises big questions about how the institutional, financial, and political actors, in what has become the great drama of building, might adjust to cope with so uncompromising an emphasis on the local. It is of little use to a designer hoping to have everything down on paper before the contractor lays a brick; it is only of use to those fully "embedded" in building process. This is why the books refrain from Grand Theorizing; are so discursive and, at times, seemingly obtuse. After a lifetime of teaching, Alexander has concluded that this subject that consumes him cannot be taught as architecture is customarily taught. But then he has always been an unusual teacher: demanding his students reach for the heavens while mixing concrete on a building site. CES, the Center for Environmental Structure, was designed as a practical adjunct to his lectures and studio teaching at Berkeley; and he gradually realized that being apprenticed as a builder to CES would be the best teaching anyone could get from him—an uncompromising stance that led to a protracted breakdown in relations between the school and their one-time "star," to the extent that today it has virtually effaced all memory of him.

Yet *The Nature of Order* throws down a huge challenge to those looking for an alternative to the

approach of the *fashionistas* who dominate architectural culture in the early twenty-first century. The cracks there are beginning to show, as many influential commentators (Jencks not included, significantly enough) are turning against icon buildings (or the "edifice complex," as British critic Deyan Sudjic has termed it) yet are realizing that the development industry, because of its own priorities and the structure of procurement, will go on demanding these dinosaurs for some time to come.¹⁶ Nancy Levinson recently opined, in her blog *Pixel Points*, that the future lay in a recognition of "what makes places pleasant," and a will to do something "ordinary" to ensure they stay that way (in short, Alexander's long-argued-for philosophy). Levinson admits, though, that the "field's sparkling prizes" are unlikely to be showered upon any architect who chooses to work in this way—a sobering fact to which Alexander could certainly testify.¹⁷

And there's the rub: Architects were too successful in the twentieth century in establishing aesthetic principles that came to fit exactly the demands of the corporate bottom line. It will take them some doing now to adopt more humane ones without losing the patronage that is their lifeblood. Alexander has shown—and shows here unequivocally in Book Three—that a better way *is* attainable, if one is content to work for clients who share your idealism and are willing to forego the mega-schemes. But then he also *wants* the mega-schemes—he wants to realize the unbuilt city hall, convention center, opera house, church, museum, and bridge seen in Book Three and elsewhere—to show that the development world is capable of change at the largest scale. This is the unfinished business that keeps Alexander working almost as hard today as he ever has.

The Nature of Order is a unique product, and one that is ambivalent as all the best art is. It is a work of theory by someone who has never really believed in theory. It is a pictorial monograph by someone who thinks that his architecture—indeed, all the best architecture—is incapable of being rendered in photographs. It is written by an architect who wants to advance the cause of an "architecture without architects," by trying to make architects of us all. By doing so (in the same way that *A Pattern Language* informed a generation of self-builders), *The Nature of Order* removes a dead hand from the culture that procures building for our present needs. To do this, it has had to be radical. In the US and the UK,

architects and master planners are already engaged in a kind of tactical retreat: By means of design coding (sometimes referred to as “smart coding”), they hope to create a kind of DNA able to carry through their intentions even when they won’t be making all the crucial decisions. It is autocracy by proxy. Alexander prefers what I have called “stupid coding” that works as DNA really does; not (despite what Intelligent Design adherents might claim) unraveling toward some preordained endpoint, but rather dealing with the material at hand, gently prompting it to unfold in the right direction but not pretending to know everything, and therefore rejecting even a covert autocracy. With stupid coding there *is* guidance going on, but it is the guidance of constant judgment and correction, not the guidance of omniscience. What results from the action of DNA—and what Alexander wants to see being built—are things with life, and with family resemblance, but with no obvious “signature.”

Many long to see such an approach as this applied to the reconstruction of places like New Orleans. We sense what it was that was important about that city, and rightly fear that if we set about reconstruction with that quality as an explicit aim, we will end up with a mere simulacrum, a “museum” of sorts. This is why many progressive voices have been raised against the New Urbanists’ recent Biloxi workshop, and the traditional strategies that they fear will emerge from its influence.¹⁸ But what do the progressives have to offer as an alternative, except designing for a clean slate? Alexander’s prescription represents, I would say, the only acceptable middle way for design professionals and communities faced with such a dilemma: something new that is prompted to unfold just as the old city unfolded; a copy of nothing, but a distinct descendant of the New Orleans we loved. The challenges thrown down by this set of books is *that* important. □

NOTES

1. John Ruskin, *The Stones of Venice*, 3 vols. (1851, 1853; reprint, London: Pallas Athene, 2003).
2. Anthony Tischauser, *Imre Makovecz* (Stuttgart and Budapest: Urachhaus, 2001).
3. Charles Jencks, *The New Paradigm in Architecture: The Language of Post-modernism* (New Haven: Yale University Press, 2002).
4. Richard Mabey, *Nature Cure* (London: Chatto and Windus, 2005), 23.
5. Charles Jencks, *The Architecture of the Jumping Universe: A Polemic—How Complexity Science is Changing Architecture and Culture* (Chichester, West Sussex, UK: Wiley, 1997).
6. Jonathan Glancey, *Twentieth Century Architecture: The Structures That Shaped the Twentieth Century* (London: Carlton Books, 2000), 32.
7. Ernst Gombrich, *The Sense of Order: A Study in the Psychology of Decorative Art* (Oxford: Phaidon, 1979), 5. The lectures published in this book had first been given in Fall 1970.
8. Peter Fuller, *Theoria* (London: Chatto and Windus, 1988).
9. Paul Feyerabend, *Conquest of Abundance: A Tale of Abstraction versus the Richness of Richness*, ed. Bert Terpstra (Chicago: University of Chicago Press, 2001).
10. Ray Kurzweil, “Kurzweil’s Law (aka ‘the law of accelerating returns’),” (www.Edge.org, Jan. 12, 2003).
11. David Bohm, *Wholeness and the Implicate Order* (London: Routledge, 1980); David Deutsch, *The Fabric of Reality: Towards a Theory of Everything* (London: Allen Lane, 1997), 30.
12. Christopher Alexander, introduction to *Patterns of Software*, by Richard Gabriel (Oxford: Oxford University Press, 1998), xi.
13. A story told in M. Mitchell Waldrop, *Complexity: The Emerging Science at the Edge of Order and Chaos* (New York: Simon and Schuster, 1992).
14. Christopher Alexander, *Notes on the Synthesis of Form* (Cambridge MA: Harvard University Press, 1964); et al., *A Pattern Language* (New York: Oxford University Press, 1978).
15. Stephen Wolfram, *A New Kind of Science* (Champaign IL: Wolfram Media, 2002), 715–846.
16. Deyan Sudjic, *The Edifice Complex: How the Rich and Powerful Shape the World* (London: Allen Lane, 2005).
17. Nancy Levinson, “Snooze” (*Pixel Points* weblog, <www.artsjournal.com/pixelpoints> June 16, 2005).
18. See, e.g., Nicolai Ouroussoff, “New Orleans Reborn: Theme Park vs. Cookie Cutter,” *The New York Times*, 18 October 2005; and Christopher Hawthorne, “In the Rush to Rebuild, a House Divided,” *The Los Angeles Times*, 4 December 2005.



REGENERATING ART AND ARCHITECTURE IN NATURE'S LANDSCAPE