

Teaching *The Nature of Order*

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Abstract

This paper describes the teaching of Alexander's magnum opus *The Nature of Order* as the main theoretical course of the Building Beauty Program. The course is taught online as a reading seminar for registered students, and a webinar open for all. It introduces the main insights of the four books that make up this work, discusses the format of teaching and how it evolved over the course of the program, and the impact it has on the students. Alexander's main contribution was in formulating a theory that describes the phenomenon of life, in artefacts as well as in the natural world, in terms of geometrical configurations, and in connecting it to human feeling and sense of self. Furthermore, Alexander describes a unified process underlying both the human processes of building and making, as well as natural phenomena. All of this within a scientific framework which includes and extends modern science and opens the gate to a technology that connects us to the natural world and to ourselves. The course is taught as a reading seminar, interspersed with lectures on central ideas, as well as guest lectures, to allow students to encounter the work on their own terms, rather than imposing it as a doctrine. Our impact surveys show that studying *The Nature of Order* is indeed transformative and helps students in understanding and learning to work within the complex order of the world.

Keywords: architectural education; architectural theory; complexity science; building process; built environment.

Introduction

Christopher Alexander's magnum opus, *The Nature of Order* (Alexander, 2002-2005) changed and shaped my life as a professional and academic. This essay describes the book, its teaching over the years, and the impact it has on our students. The essay starts with a short summary of the four books, and their place in the development of Alexander's thought. It then describes the seminar on these books, which is the main theoretical basis for Building Beauty – a post-graduate program in architecture started in Sorrento in the fall of 2017 which is also currently taught online. The course has evolved over the years, and it is now partly a free webinar that allows people from all over the world to get a glimpse at Alexander's theory. *The Nature of Order* is supposed to transform the way we look at the world. Our post-course survey shows that, substantially, it has had this impact on our students and participants. The essay concludes with a short reflection on some of the ways the books still fall short of describing living processes, and on the importance of its vision of life, wholeness and beauty, as a scientific and spiritual basis for resolving the multiple ecological and civilizational crises faced by humanity.

What is the Nature of Order?

With *The Timeless Way of Building* (1979) and *A Pattern Language* (1977) Alexander hoped to give people a tool with which they could create places that have "The Quality without a Name", similar in quality to the traditional examples these books are full of, but appropriate for our time and culture. However, Alexander felt that, while the houses built using pattern languages by other people were nice, and more humane, they did not have the same strength as the buildings that were created in traditional

society. They were not as beautiful, strong, and emotionally moving as the examples that one could see in traditional and vernacular architecture, or in traditional arts and crafts.

Alexander realized that, despite providing a good account of socio-spatial patterns that worked throughout human history, from a functional, social and psychological perspective, *A Pattern Language* did little to describe the formal, geometrical aspects of objects and places that seem to have life, and with which we are able to connect emotionally. Therefore, he turned his thinking towards figuring out what it was specifically in the geometrical form of things which have life that gave them that special character. That exploration took around 25 years starting in the late 1970s, and the findings were finally published in the beginning of 2000s in the four volumes of *The Nature of Order* (2002-2005). It turned out to be not just about the geometric form of things, but even more so about the process of making things with beauty, and ultimately about an underlying conception of the world necessary to allow us to create living wholeness.

Alexander became convinced that it was not possible to achieve buildings or settlements which have wholeness, life and beauty, and that these terms are rather interchangeable in the text, within the existing process of procurement and building, either private or public. The very process that exists at the moment, one based on (i) the separation of design from building, (ii) development whose goal is the maximization of profit, (iii) the fragmentation of responsibility for the built environment and (iv) the distancing of control of the built environment from the people who actually live and work in the places



produced, all make it very unlikely to achieve a living built world.

At the heart of / Underlying the difficulty in achieving a living world lies the question of value. Already in the *Timeless Way of Building* (1979) and *A Pattern Language* (Alexander et al., 1977), Alexander posed the hypothesis that certain kinds of spatial configurations allow us to feel more wholesome, free from internal conflicts and comfortable, and thus improve our sense of well-being. In fact, much of the criticism of those books denounced this ethical objectivism as arbitrary, or as imposing on the world “West Coast values.” Critics felt that architecture should reflect the contemporary lack of a privileged system of values, or a shared moral basis for architecture, and therefore uphold the freedom of expression of the individual architect (Dovey, 1990). *The Nature of Order* delves deeper into the question of value, and the surprising connection between the structure of the world in which we live, and our own sense of wholesomeness and well-being.

The divorce of value from our conception of the world has its origin in the mechanistic world view that dominates our scientific culture. This exploration further led Alexander to question these very foundations. In the end, according to Alexander, the reason for our inability as a culture to create deep wholeness, beauty and life, is the dominance of the mechanistic worldview. A world view in which questions of value cannot have a meaning, but are always external to the mechanism, arbitrarily imposed from without. This leads him to postulate a transcendent reality. A reality that serves as the ground, or source of all life, and which when we are building, making, or shaping our world, we are able, if we pay close enough attention to create the “centers” that allow us to connect with that ground, or allow the light which is that ground to shine through.

The first book *The Phenomenon of Life* (Alexander, 2002a), starts by recognizing that places, events, people and artifacts have life, and that we are able to feel that life through our own sense of being alive. Life exists to some degree in each bit of space, depending on its spatial geometrical configuration, and the way it relates to its context, or the wholeness in which it is embedded. The central concept established by the book is that of centers. A center comes to life, by cooperation with, and definition by, other centers while itself contributes to the life of other centers and the larger wholeness in which it is embedded. The definition of centers is thus recursive, as a center is defined as a field of other centers. However, there is no way around that, as centers are a fundamental concept, and can only be understood within the field they help to form with other centers.

Alexander then describes the 15 fundamental properties observed empirically that exist in things that have life (either natural or artificial). These can also be understood as 15 ways in which centers can help each other to bring wholeness to life. To understand the 15 properties properly relies on seeing the centers in their configuration. One cannot apply them mechanically because there are relationships between centers. It is difficult to represent the centers, as any abstraction of them will also have to be a field of centers in order to capture their particular

character. In the end, it is argued that they must be felt, so even in that sense, the definition of centers is recursive because you must rely on feeling to recognize centers, and yet the centers are what brings out feelings within us, that is, what touches us and our feelings.

This brings us to the main claim in the second part of the book. The affinity between a well-formed field of centers, or wholeness, and our sense of self. Looking at the wholeness is like looking at a mirror of the self. This allows us to make distinctions between objects, places, events and even people. Our ability to judge wholeness in the real world grows with our ability to recognize our own self. However, this self is not only the unique individual self that each one of us has, but also includes a shared self, that touches what is shared between us as human beings, and perhaps what we share with all beings.

Throughout the book Alexander makes a point of showing wholeness, life and beauty in nature, as well as in human artifacts from different cultures. This is to convince the reader that the wholeness and the field of centers are objective facts, and are neither culture dependent, nor a result of our cognitive apparatus. In fact, he points out that our own ‘modern’ or industrial culture is unique throughout history in its relative inability to create wholeness, or objects and places which have a well-formed field of centers. The failure to create living structure is a result of the mechanistic understanding of the world, our inability to see the wholeness, and our disregard for feeling as being entirely subjective and therefore non-important.

The second book, *The Process of Creating Life* (Alexander, 2002b) grapples with the question of how living structure is created in nature and in human artifacts. Alexander describes the Living Process, which lies at the basis of the millions of detailed processes that create life in nature, and the human cultural processes that were able to create life and beauty in traditional cultures. The key point in the book is the idea of structure preserving transformations (SPTs) or as Alexander later called them: wholeness enhancing transformations. At each point in the process, some centers in the wholeness are more developed, and some are still latent in the configuration. SPTs are the emergence of new centers that embody the latent centers – and thus strengthen the existing centers, make the field of centers stronger and enhance the wholeness. In doing the SPT, feeling is a key guide to recognizing where the weaker areas are in the wholeness, and for judging whether our intervention is increasing or decreasing the wholeness.

In this depiction of life and beauty as the outcome of a particular kind of process, the failure to create living structure is due to the fragmentation of building processes, and the lack of feedback structures that allow feeling and the personal sense of well-being to be the governing criteria in making development, design, and construction decisions. Underlying our inability to create life and beauty is not just our difficulty in grasping the wholeness, or our reluctance to rely on human feeling as a criterion for the success of development, but stronger cultural, legal and economic structures. Even when we are fully aware of the wholeness, and attempt to increase its life and beauty, we come up against the established separation between



design and construction, often mandated by law, and embodied in standard contracts, the nature of the planning process, and the rules and expectations of all the players in the real-estate market, driven by profit, and not by the aim to increase life and beauty in the land.

The third book, *A Vision of a Living World* (Alexander, 2005) is an illustration of the processes that could succeed in making wholeness in today's world. In contrast to the first and second book, where the structure and process of things that have life are described in more general terms, this book is more specifically about building and planning processes, in response to typical problems of urban design and building. The main issue dealt with in the book is the problem of human connection, that is, making a world in which people are able to connect once again to themselves, to each other, and to the earth as a living entity. The examples are mostly drawn from Alexander's own Center for Environmental Structure's work, and they present typical urban and building design problems related to site planning, organizing the massing of a building, designing a building's structure, planning or renewing a neighborhood, laying out the public space of streets and squares, enabling communities to be self-governing, planning high density housing in a way that allows each home to express the individuality of families, designing beautiful and comfortable rooms. The examples address all scales of human settlements, from urban areas right down to the making of an ornament that enhances the structure of a building and brings it all to life. At the end of the book Alexander envisages an entirely different way in which the professions of building and architecture could be organized to allow this vision of a living world to emerge.

Finally, in the fourth book, *The Luminous Ground* (Alexander, 2004), Alexander goes deeper into the nature of centers, and the connection between living structure and our feeling of self or the "I". The "I" is, to quote his own words: "the interior element in a work of art or work of nature, which makes us feel related to it" (2). His belief is that the nature of matter is "soaked through with self, or I" (8). This means that our sense of self is not just a product of mechanistic processes in the brain, or between the brain and the body, but on the contrary, it is a real thing which exists in all matter of the universe and which, obviously, we share with the whole universe. Here, then, is the core of the problem of our inability to create beauty and wholeness in the world. It lies in our fundamentally mechanistic view of the world, which, in the end, does not take the sense of self seriously enough, and cannot conceive of all existence as being endowed with it. This conception leads Alexander to reinterpret the idea of center as a window or an opening to that luminous ground which lies below or behind all existence. Thus, a well-formed field of centers, a particularly beautiful place in nature, the crashing waves at the seashore, a work of art, a piece of furniture, a beautiful room, or a wonderful street are able to connect us with that ground.

The Nature of Order in the context of Building Beauty

The Building Beauty program was modeled on the Building Process Area of emphasis as it was set up by

Alexander and Neis in the beginning of the 1990s at UC Berkeley (Ingham & Ettlinger, 2023). It is based on the theory developed in *The Nature of Order*, on a design studio, that builds up the student's understanding of self, and the use of one's feeling of wholeness to make judgements and choose between alternatives in the process of design and making, and on the actual making of objects and places, which allows for continuity between design and construction.

We teach the books as a reading seminar. This method of teaching is less authoritative and lets the students encounter Alexander's text directly on their own terms, and find their own understanding of the concepts. Sometimes we give a short lecture about some of the concepts that we feel are important. We ask the students to do some exercises to understand the concepts more profoundly and discuss these exercises in relationship to the text. Often the students would bring ideas and thoughts from their own readings and experience, and that would enrich the intellectual content of the course.

In the second year, wishing to open the program to people from all over the world, while making it easier for invited lecturers to come and talk to the group, we started experimenting with online teaching. It was also the first year we opened the course up as a webinar to people all over the world. During the Covid-19 years, online teaching became our main teaching method for all of the courses. In this process of migrating online, the course took on a somewhat more complex form where we combine a seminar with the registered students with an open webinar that is free and open to everyone.

Over the years, I was joined in teaching the course by Architects Munishwar Nath Ashish Ganju (Muni) and Narendra Denge, authors of *The Discovery of Architecture* (2013), as well as Savyasaachi, an anthropologist and sociologist who joined subsequently. They all brought valuable insights and approaches based on their knowledge of Indian culture and traditions, and their own professional experiences.

Gradually the methods of teaching the course changed. The reading seminar was kept as the main teaching method for Books I and II. Then three years ago, we began to change the approach to Book 3: *A Vision of a Living World* (Alexander, 2005); rather than discussing the examples of CES's own work discussed in the book, we started inviting other practitioners to present and discuss their work in the context of the relevant chapters. Some of the guests are former students of Alexander, others are professionals who have found their own ways to his insights, or who hold similar and compatible views of design, building and making. Several of them are also regular participants in the webinar. The reasons for the change are twofold: firstly, we aim to bring in the experience of other practitioners, and show the students that it is possible to practice the living process, aiming for the achievement of wholeness and beauty, even if you are not Christopher Alexander; secondly, our goal is to separate the ideas and practice from his own particular personality, and show the students that it is possible to use the living process in different ways than theirs. These lectures were also an opportunity to connect Building



Beauty with people in the world who practice and do things that are similar or akin to Alexander's way of doing things, but without even being aware of him. The positive responses from the students and participants show that these lectures have been very well received.

The teaching of book 4: *The Luminous Ground* (Alexander, 2004) was always a mix between the two methods: the reading seminar and invited lectures. In the last year of the webinar however, there was actually a departure. While the students in the seminar continued with their readings of the chapters, followed by discussion in class, the invited lectures this year were critical lectures of *The Nature of Order*, and Alexander's body of work as a whole. Lectures either exploring alternative explanations to his observations, connecting his work to other disciplines, or placing him in the context of philosophy, theology, and the psychology of knowledge.

Impact of the course

At the end of each year of teaching *The Nature of Order* at Building Beauty, we carry out a survey to learn to what extent the students' outlook on, or conception of, the world has changed as a result of being exposed to the books and discussing them. We ran the survey separately to our registered students in the seminar, who are also usually taking other courses with us, and to the participants in the webinar, who are by nature a much more diverse group, and who are also less invested in the study.

The survey includes several questions that gauge the level of comprehension of the theory by the participants, as well as their level of acceptance of it. For example:

Did *The Nature of Order* make you question or change the picture of the world you had? Please explain why or why not? What is a center? What is the field of centers? What do we mean when a place, an object or an event is alive? What is the nature of our feeling towards objects or places? What is the principal aim of building and construction? Is value in the environment objective or not? The level of agreement with the statement that space and matter are inert and subject only to mechanical laws which, in principle, can explain everything there is to know about the world; and the level of agreement with the statement that science has nothing to say about spirit, the soul and God. Most of the questions are multiple choice, or an evaluation of agreement with the statement on a scale from 1 to 5, but there are also some open questions that allow the students to freely express their views.

The results show that most students and participants accept Alexander's structural analysis of buildings and objects, and the conception of centers as focused areas in space (about 85% of responses). Most of them agree that the field of centers is a real phenomenon that goes to the core of how the world is constructed (73% of the webinar's participants and 58% of the seminar students). Most of the students and participants are willing to entertain that value in the environment is an objective matter and has to do with its degree of life (90% of them either strongly agreed or agreed with the statement). Participants were willing to accept Alexander's challenge to the mechanistic conception of the world (over 70% of

students and 90% of webinar participants either strongly disagreed or disagreed with the statement that asserts that the world is subject only to mechanical laws and that they will be able to explain all there is to know about the world). However, there was somewhat less certainty among students about the connection possible between science and an understanding of the soul, spirit and God (only 54% of the students disagreeing with the statement that science has nothing to say about these matters, with the rest being undecided; among webinar participants 75% disagreed and the rest were undecided).

Here are some of the things students and webinar participants wrote on how reading and studying *The Nature of Order* changed their view of the world:

"... I feel that I found in the readings the true meaning of architecture, which is essentially humanist."

"*The Nature of Order*, as Alexander describes it, is broadly compatible with ecological, developmental, and Taoist views on the world. I feel very comfortable with Alexander's way of seeing things. Where I felt challenged was imagining how I might apply his methods and practices in my work; they seem right, but very different from the conventional way of doing things."

"His principles and processes for identifying and adapting structure to context were new to me and have already totally shaped how I go about repairing and influencing my decisions in design, adjustment, repair and construction of the world around me. In particular when working on the various properties I have the pleasure of helping to build up, the principles and patterns and approach he lays out became immediately useful once read."

"Through sharing thoughts and ideas from the series on Twitter and with friends in person, I've met amazing folks of high resonance that are interested in creating a beautiful world as well. It's been a wonderful experience :)"

Conclusion

The Nature of Order is the summation of Alexander's life and work. As he writes in the acknowledgements at the end of book 4, dedicating them to his students over the years at UC Berkeley: "The continuous re-writing I have done for twenty-seven years has been largely stimulated by my effort to give them something clearer, each year, and my wish to make it worth the time which they spent studying it." (Alexander, 2004: 350).

Alexander's main vision, which ties together the idea of life and the configuration of space, eliminating the separation between our own self and the objective reality of the world, and potentially unifying human building processes with the living processes of the natural world - has the potential to pave the way to a science, technology and a spiritual value system that is urgently necessary to help us resolve the multiple crises of human civilization with which we are confronted. This vision is consonant with the mission of *Ekistics and the New Habitat*: the improvement of human settlements, across all scales and developmental contexts through a science that is both systematic and holistic.

The Nature of Order is not the final word, but perhaps only a beginning. The living process Alexander describes works mainly through differentiation and integration at the local



scale, but the living processes that create the living world work at many scales, and so do human artefacts. Large scale order is often imposed from above, but then gets elaborated, softened, eroded, and adapted at the smaller scales. The role of competition, conflict and strife is fundamental in the natural world, and probably in the evolution of human society, and while cooperation is likely equally important, it is not understood well within Alexander's description of the living process. There is still work to be done to understand living process better.

Personally, I am uneasy about a transcendent reality underlying our world, as was Alexander himself about this notion, although I must say that I haven't found any good alternative explanation to what 'ultimately' are centers. Not being a religious person, I find the reference to God more disturbing than illuminating. The grandness of the universe, our own fleeting moment within it, the intricacy of life and its fragility, the beauty of the world, that humans can touch and emulate, if they just pay attention to it and to the way it resonates with our own self - these are enough for me as an ideal to strive toward, in my teaching of The Nature of Order.

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