ISSN 1828 5961

Michael Mehaffy

He is chair of the USA chapter of the International Network for Traditional Building, Architecture and Urbanism, and secretary of its International Council of Chapters. He was a principal drafter of the INTBAU Venice Declaration on the Conservation of Monuments and Sites. He is president of Structura Naturalis Inc. and executive director of the Sustasis Foundation, a research NGO.

Le Nuove Scienze e il Genius Loci
The New Sciences and The Spirit of Place

Oggi la teoria della conservazione urbana sta affrontando aspetti intangibili – notabilmente il concetto del "genius loci". Ma questa idea potenzialmente vaga deve essere compresa nei termini che permettono un suo effettivo utilizzo. L'autore argomenta che tale questione può essere affrontata attraverso un approfondimento della complessità della scienza rivelando i modi attraverso i quali un sistema nella sua interezza può essere scomposto in elementi dinamici.
All'interno dei tessuti storici noi siamo conservatori, siamo utilizzatori, siamo consumatori e, inevitabilmente, siamo coloro che attuano le modifiche. Il nostro compito non è di far resistere quell'insieme, ma di poterlo gestire in maniera più dinamica e di pretendere un più ampio concetto di conservazione. Questo atteggiamento va oltre il dualismo basato sul modello di pensiero del "genius loci" ma abbraccia una più efficace aspettativa di crescita organica.

Today urban conservation theory is embracing intangible aspects -- notably the concept of the "spirit of place". But this potentially vague idea must be understood in terms that allow effective management. The author argues that this can be done through the insights of complexity science – revealing the ways in which a complex wholeness can be maintained in a system of dynamic elements. Within historic environments we are conservators; we are users; we are enjoyers; and inevitably, we are changers. Our task is not to resist that complex mix, but to manage our way through it more skilfully, and to aim for a more holistic preservation. This entails moving beyond the dualist "spirit of the age" thinking of a previous generation, and embracing a more nuanced model of organic evolution.

ISSN 1828 5961

The subject of our conversations at the ICOMOS 2007 conference has been the theme of the "spirit of place", and its implications for conservation. As a number of speakers noted, that concept reflects the fact that heritage is moving from the tangible to the intangible on a number of fronts. Of course this poses a real challenge for the science of conservation. How can conservators manage something that is by definition intangible?

Indeed, we should probably start by acknowledging the argument in some quarters that the "spirit of place" is not a scientific notion at all, because it has no objective structural nature; and therefore it may be a nice poetic or literary idea, but it firmly rests on one side of the divide famously referred to by C.P. Snow as "the two cultures". Thus it isn't a notion that can be treated properly by a true "science" of conservation.

But I want to develop a contrary and more syncretic argument today, an argument that lies within the common ground between structuralism, phenomenology, and the set of historically recent scientific developments commonly referred to as the "new sciences of complexity." In summary, the argument is this: the "spirit of place" is nothing other than the complex set of ecological structures, human events, cultural patterns, and other objective, sharable processes that have etched their traces on the structure of a place. These are vast, deep and connected structural patterns that we can experience, and interpret. And they connect us to other rich structures, including linguistic narratives and cultural beliefs. We can participate in the intellectual picture and the emotional import that these traces convey. In that participation we can draw meaning; and we can understand ourselves and our world more fully, and more deeply. That is surely a principal aim of conservation.

In this sense, the "spirit of place" is in fact a set of objective structures whose properties are properly and usefully treated by a science of conservation.

Indeed, I want to suggest to you that this is a very useful framework for development, and that there is much yet to explore. There is much to apply to very real and challenging environments like New Orleans, for example, from which I have just returned, where we have been working with the Preservation Resource Center, the National Trust for Historic Preservation and others. I suspect there are very few who would disagree that New Orleans certainly has a very strong spirit of place.

A number of people have begun to use the emerging scientific framework I am describing to make useful links to conservation and to the design professions more generally. A magnificent start was made some years ago by that great Torontoan, Jane Jacobs, followed by work by the mathematician and architect Christopher Alexander, and others. So I want to draw on their work to discuss this emerging framework in more detail.

By way of background, let me turn for a moment to the

ISSN 1828 5961

Venice Charter of 1964 – that elegant, superbly crafted document on the conservation of monuments and sites, to which I think we are all greatly indebted. It is a surprisingly short document, very concise and elegant.
It articulated the art and science of conservation in a pragmatic and functional way, and it paved the way for much of the progress we've made in reversing the senseless destruction of important heritage sites over the years.
But one thing that the Venice Charter very clearly recognized was that the science of conservation is not static; and indeed it had changed from the earlier 1931 Athens Charter, sufficiently to prompt a re-evaluation: "Increasing awareness and critical study have been brought to bear on problems which have continually become more complex and varied; now the time has come to examine the [Athens] Charter afresh in order to make a thorough study of the principles involved and to enlarge its scope in a new document."

That was in 1964, 33 years after the Athens Charter. Today, 43 years after the Venice Charter, we can ask, have the problems of conservation become yet more complex and varied? Has our understanding of the scientific basis of conservation changed? Has the scientific world-view on which conservation science rests, gone through any changes in the interim?
I don't think I will be the first to report to you that indeed, our scientific world-view, and in particular our understanding of Planet Earth and its ecosystems, is going through a remarkable transformation in our lifetimes – a sobering and alarming one, in many ways, and yet at the same time, a profound and awe-inspiring one as well. And in that deeper understanding we can find reason for greater optimism.
So, too, there has been a transformation in our understanding of human affairs, and of human environments created through the complex pattern of activities over time. We have a greater understanding and appreciation of their complexity and richness; and we are beginning to tease apart useful lessons for the structuring of future environments.
By contrast, the Venice Charter does reflect a somewhat earlier scientific world-view: one that was more linear, more static, more focused upon the interactions of just a few simple variables, or of large statistical averages.
This changing state of affairs was described beautifully some years ago by the remarkably insightful urban scholar and economist Jane Jacobs in 1961 – even before the Venice Charter - her classic "Death and Life of Great American Cities" gave us a definitive piece on the subject in the book's last chapter, which she called "the kind of problem a city is." In it she talks very lucidly about the history of scientific thought and the way it has shaped human action, and in particular the way it has shaped how we think about and act upon cities.
Quoting Dr. Warren Weaver, Jacobs described how modern science really took off, around the time of

ISSN 1828 5961

Newton, when it mastered so-called two-variable problems, like linking how many houses you have over here to how many stores you can have over there. Or in physics, the laws of motion, for example, are two-variable problems. We have used that science very effectively to land men on the moon, for example.

But by the early twentieth century, something interesting had begun to happen: through statistics and probability we learned to manage very large numbers, where you had myriad variables interacting. The interesting thing that we found was that you could manage those phenomena as statistical averages without knowing much about the actual interactions. This statistical science translated into the phenomenal technological power of the industrial revolution of that period. Much of our industry and the prodigious output of 20th century modernity was rooted in these powerful new statistical methods. And indeed, Jacobs points out that the early ideas of Le Corbusier and others, and the later ideas of planners — often to this day — rely upon this notion of large statistical populations.

So just as there has been a progression in science, there has been a progression from, say, the rigidly formal, "rational" plans of, say, Haussmann, or of Ebenezer Howard and his neatly segregated Garden City plans, through to the more statistically informed plans of Le Corbusier, implemented around the world by the likes of Robert Moses and others.

The conservation sciences were similarly affected by this scientific world-view, seeking to neatly segregate the components of history into simple and legible components set off from a background environmental tableau, not unlike objects featured in a museum case. Any new work, for example, must bear a contemporary stamp to mark it "of its time", that is, of our own time. In effect everything must be "date stamped" as belonging within a neat hierarchical narrative to this moment, to modernity, or to that one, the past.

Meanwhile, however, by mid-century, science itself had already begun to change dramatically. The biological sciences, reaching a dead end with earlier methods, had come to terms with the emergent phenomenon called "organised complexity" – the area in the middle, between simple two-variable problems and vast numbers of variables, involving a number of variables acting simultaneously, and "interrelated into an organic whole." That's where the phenomenon of life occurs, and many other very interesting natural phenomena.

It was clear even then that the problems of the human environment were in many respects emergent problems of "organised complexity". But Jacobs pointed out how the planning and architecture professions were still at that time, 1961, mind you, mired in the old scientific world-view. She says Today's plans show little if any perceptible progress in comparison with plans devised a generation ago. In some respects, there is outright retrogression...

ISSN 1828 5961

The conclusion she drew was that we need to be very certain that we understand the right kind of problem that a city is. Too often, we mistake that problem, and as a result we make rather horrendous mistakes.

Crucially, we've learned is that cities are dynamic, evolutionary structures. They don't fit well into a static conservation model, one that seeks to freeze a particular point in time. After all, which point will we choose? On what basis will we privilege one period over another? As many of you are well aware, these are becoming very thorny questions.

Similarly, the notion of a fixed historical narrative transmitted by fixed forms has begun to be superseded. Most urban environments are much too dynamic, too complex, and too ambiguous to allow us to maintain such isolated, historically legible forms. Rather our focus has shifted to a living narrative, shared by the conservators and the community, deepening with inquiry and investigation, and transmitted as much through interpretive materials as through the monuments themselves.

After all, even when we can observe a historic structure coherently preserved from a fixed point in time, there will always be much that we will not understand about what brought it about, or what was the rich social and economic context, or many other factors. We must surely rely upon interpretive materials to deepen our understanding – upon a kind of conversation, between the conservators and the community. That conversation is open-ended and continuous: we will never cease to learn new things.

Though it does complicate our work, I will suggest to you that this is not bad news, but in fact wonderful news. This new model has created new possibilities for the dynamic management of monuments, and the environments in which they reside – possibilities that can greatly deepen our experience of a monument and of its "spirit of place".

Since Jacobs wrote, the so-called sciences of complexity have exploded, not only in biology but in computer science, economics, climatology and many other fields. You have no doubt heard all about networks, fractals, so-called "strange attractors." Moreover, we now understand much better the complexities of language, as well as its limitations. We understand the inevitable incompleteness of linguistic models, and the irreducibility of complex systems. We are beginning to understand the behavior of small, rule-based iterations, or algorithms – cellular automata and the like, and the so-called "emergent" patterns that they create.

Perhaps the most familiar such system is of course the DNA code of life itself, made from just four molecules – but through a very complex morphogenetic process adapting over time, it produces the astonishingly varied patterns and intricately beautiful structures of living systems. We are beginning to understand our complex universe, and the severe limitations its complexity puts

ISSN 1828 5961

on our human efforts — but also the new opportunities it creates.

There are many people who believe – and I am one of them – that this new scientific understanding of the structure and the process of things, may in time revolutionise our world, just as the old science did previously – markets, institutions, the very structure of civilisation itself. Indeed I would argue that it has already begun to do so. And it holds out the promise of deeper understanding and reform of the horrific mistakes of the industrial period. These are mistakes that it looks increasingly like we had better reverse, and soon, or else we are all in a great deal of trouble. So this is not a mere academic discussion.

Now many design theorists have already made considerable hay with these ideas. For example, the architectural theorist and designer Charles Jencks has famously proclaimed a "new paradigm" in architecture based upon these ideas. I happen to think he's right — although I think even he doesn't grasp the real revolutionary implications.

Jencks celebrates today's exuberantly sculptural iconic architecture. Such icons are no doubt a very fascinating realm of ideas to explore. But it is precisely and only that – a realm of ideas, not the realm of nature and of natural structure itself. That is, this architecture is about complexity, but not necessarily manifesting emergent properties of complexity. It is still in most cases the act of sole designers, with all the greatness but also the limitations that implies.

For example, Jencks' own fascinating landscape based on a "strange attractor" isn't really a strange attractor, but a form based on a scientific diagram of a strange attractors. It is as though we were to create a house made out of blueprints of a remarkable building, rather than the actual building that the blueprints described. This is an interesting and perhaps quite lovely artistic idea, to be sure – but it is not the thing about which the idea was generated. It is, in a word, an abstraction.

To be sure, the celebration of ideas — the adventure of ideas — is a vital dimension of architecture and environmental planning. But architecture has to do something else of course, unique among the arts: it has to serve as *the connective fabric of human life on the surface of the earth*. And whatever ideas we may signify and celebrate in our architecture, nonetheless we must account for the fact that it will shape our use of resources and our patterns of interaction with each other and the patterns of activity and change on the earth, in a way that no sculpture or painting or piece of music ever need do. It shapes and conditions the *emergent* structures of human behaviour – (SO for better or worse, and, as Jacobs and others remind us, too often for worse, in this critical age.

So perhaps we have become so focused upon the *signifier*, that we have come to ignore the larger structure that it signifies, with dangerous consequences. In effect

ISSN 1828 5961

we have stopped having a conversation with nature and with history, and are only talking to ourselves, and listening to our own mental echo.

Some people, like my friends who are more post-structuralist than structuralist, will say that this is just our post-modern reality, because after all, we do to some extent socially construct our scientific understanding of nature. And to the extent to which that social construction is done by a privileged elite, more in the interest of power than in dispassionate science, it is a perfectly valid function of art to explore this truth, and perhaps to "deconstruct" it.

But let me suggest that this view of things fundamentally misses the point given to us by the new sciences. Our bodies, their sickness or health, their life or death — that is no mere social construct. The health of our planet is real enough. And so is the quality of our human environment.

That is what science helps us to see, and to manage. So in managing that environment, our role is less like engineers putting together a series of well-functioning standardized parts, or authors writing a story together, and more like doctors diagnosing a patient, prescribing medicine, having a dialogue with their patient. As professionals in the built environment we are charged with the health of our patient, which, as in medical science, is a more objective and measurable phenomenon than we might sometimes suppose. But it is a complex and organic one as well.

Moreover, nature warns us that we must be careful about too heavy an emphasis on large-scale, top-down planning. There is a place for this, but only a place. In New Orleans, for example, we thought we could improve on nature by creating a series of clever shipping canals, razor-straight, modern and efficient. What we didn't realize was that there is a great deal of slow intelligence and careful adaptation built up in those messy meanders of the Mississippi River, which helps to equalize silt deposits and fresh water and ecosystem health. These bottom-up, emergent structures are vital to understand in an ecosystem. When we work in too top-down a mode, we can cause enormous damage to these important bottom-up structures. And that is sadly what we have done to the wetlands of coastal Louisiana, and to many other ecosystems around the world. If we are going to manage climate change and ecological destruction and resource depletion, we need a new way of thinking about, and interacting with, these complex systems.

Urban systems, it appears, are not so different, as Jacobs pointed out. We need the top-down, but also the bottom-up. We need planning tools to cultivate, as it were, the bottom-up and the emergent, and to treat complex, self-organizing, living environments. New scientific tools to do this are now coming into view.

In addition to Jane Jacobs' seminal work on complexity, I mentioned our colleague Christopher Alexander, who

ISSN 1828 5961

has developed many of these ideas over the years, most recently in his book The Nature of Order. Drawing on the insights of complexity science, and in particular the new developments in biology, he notes the way that whole systems form not from a planned assemblage of discrete parts, but from transformations of previous whole systems.

For example, nature does not really use blueprints. There is not a little drawing of my thumbnail within my DNA code. Instead there is something more like a protein recipe, for growing, folding, unfolding, shaping arms, hands, fingers, fingernail – almost like an Origami process, in which all the previous folds get compounded and the form quickly gets more complex.

Can we learn something useful from these natural processes in generating our own living environments? Alexander argues we can, and he draws on examples from traditional culture, history and ecology to make the case. Sustainability is not about the right masterplan, but about the process of fitting together the elements of a highly contextual system, adapting them to one another, and establishing a dynamic equilibrium.

Among other things, this means we need to see ourselves as organisms within our own ecosystem, and take ourselves and our biological abilities more seriously. For example, our feeling within an environment is not just the reaction of a viewer in a gallery, or a storyteller sharing a narrative. It is, as the neuroscientists and evolutionary biologists are telling us, also a very highly-evolved system for perceiving complex and subtle attributes in our environment – attributes that have a real effect upon human health and well being.

Why is it that certain structures are beautiful to almost everyone? What is it about their processes of formation and our natural relationship to it? And what innate and sharable value might there be in these structures for us, apart from the values we might place on them — somewhat arbitrarily, it would seem? Perhaps such value is not all “in here,” or “out there”, but a kind of harmony, between ourselves and our world – again, a kind of conversation. Perhaps this is the real spirit of place.

Drawing on such insights, Alexander has proposed a series of generative tools to create structures with greater harmony within the built environment. You may know his work with pattern languages, which, interestingly enough, has been extremely influential in the software world. More recently he has developed something he calls a generative code: a stepwise kind of recipe for programming, designing and building a place, based upon context and precedents.

The fundamental biological principle is one of working stepwise with what already exists, and using human feeling and intuition to make a cycle of “diagnoses” and prescriptions, not unlike a doctor would do. And the social context already exists just as the physical one does, so there is a strong emphasis on engaging

ISSN 1828 5961

local residents and their power to self-organize. Most recently we have been applying these insights in New Orleans, working with the Preservation Resource Center and other partners, to set up a series of "neighborhood rebuilding centers" to provide such resources, as a kind of "local DNA" to regenerate the spirit of the place of New Orleans – not as a fossilized theme park, but as a living, changing, organic thing. Surely this is what has always made New Orleans such a rich and dynamic evolutionary mix, incorporating elements from many different periods and places, into a unique local and temporal synthesis.

For the conservation sciences, I suggest that this more rigorous organic view of things has a number of profound consequences. We recently held a conference in Venice of one of the Prince of Wales' patronages, the International Network for Traditional Building, Architecture and Urbanism, or INTBAU for short. INTBAU is very concerned with issues of preservation and conservation, but also with sensitive and sustainable new construction in traditional contexts around the world. In Venice we developed a commentary document on the Venice Charter, called the INTBAU Venice Declaration. We praised the Venice Charter, but noted new problems and new complexities – notably the challenge to "maintain coherent and sustainable urban environments, within which historic monuments are often seamless elements, and living repositories of important and useful knowledge."

Let me just note a few additional highlights, and then I would encourage you to go on line if you are interested.

- In commenting on the preamble, we note that any act of conservation or restoration is inevitably an act of alteration based upon historically partial knowledge. So conservation should reflect the complex pattern of change and recurrence across the ages, including the present, and work as much with interpretive materials as with techniques of accurate conservation.
- Article 1's reference to urban and rural settings may also include a historically unique settlement pattern, which may embody important knowledge for future settlements. We can learn from the patterns of history.
- Article 4 calls for the permanent maintenance of monuments. We note that maintenance using new elements in a compatible character is not "false historicism" provided the new elements can be readily distinguished.
- Our comments on Article 5 refer to the pragmatic reality that sometimes the choice is between adaptive re-use and destruction, and often we will have to be more flexible.
- Article 9 calls for new work which "must be distinct from the original composition and must bear a contemporary stamp". But this goal must be dynamically balanced with other needs. It is not necessary to create a striking juxtaposition, which may also violate requirements of Article 6 and 13 to preserve the traditional setting or

ISSN 1828 5961

the relations of mass and color (and these are often selectively interpreted).

- We note here (art 11) that throughout history styles are constantly being revived and mutated, and they aren't specific to a particular time. Therefore it's often erroneous to try to limit a period to an exclusive style, and that goes for the present too. Nonetheless, a unity of composition is often maintained, even with multiple styles.

- We now interpret Article 13 to mean that contemporary additions that politely take their place (including significant revival styles, as well as innovative new styles) are allowable. Additions that are deliberately discontinuous, discordant, or self-consciously dominant, must not be allowed to damage the balance of the composition or the relation with its surroundings.

Today we are learning the lessons of a networked, overlapping and dynamic world - one that must permit multiple activities by multiple groups with multiple goals. Within historic environments we are conservators; we are also users; we are also enjoyers; and inevitably, we are also changers.

Within those environments we must accommodate highly varied rates of change, including the rapid cycle of retail fashions; the slower change of urban patterns; the even more constant nature of human needs; and the deepest cycles of the Earth's ecosystems.

Let me close by suggesting to you that our task is not to resist that complex mix, but to manage our way through it more skilfully, and to aim for a more holistic integration. In the first instance, this requires that we understand it more fully, in all its complexity. This is what science, in the fullest sense of the word, and partnered with the arts, helps us to do. And it is this living, complex, comprehensible, human and natural structure — this structural harmony —that is precisely what we are conserving when we are conserving the spirit of place.