On Organicism
with Sarah Bonnemaison

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Luke Kimmerer

Can you tell me what organicism as an architectural theory is? And what does it reject? Another part of this question refers specifically to the 1993 book *Organicism in 19th Century Architecture* by Caroline van Eck. In this van Eck illustrates a thread of history where the desire for elegance and truth in architecture is understood as having the capacity to evolve with the cultural and social landscape. What are the fundamentals that allow this persistent evolution?

Sarah Bonnemaison

It is this *persistence* that got me interested in organicism. Architects have been learning from nature, copying nature, or finding inspiration in nature for a very long time as we see the work of Philip Beesley among others today.

It seems that whenever there is a sea change in society such as in the 19th century with industrialization, and all the machines replacing what craftsmen used to do by hand – people get stressed and say "let's turn to nature as a model" because that seems infinite and fundamental. Maybe with all the changes that are happening today with the digital world, the same kind of phenomenon is once again looking at nature as a model. It is actually "funny" how big digital companies call their creations: "raspberry" for a telephone, or "apple" for a computer. Why are they using a natural terminology to name machines? I think because it makes these machines softer and friendlier.

As architects, we want to be right at the forefront of both ideas and technical development. But a large part of what we do is crafting materials. We want to do it well so we learn from the past. The other aspect of what we do is promoting a better way of dwelling together. This attitude distinguishes architects from builders. Like craftsmen builders repeat and improve, but they are not interested in the idea of living. The desire for a better co-existence introduces Organicism, which originally came from rhetoric - the art of building a convincing argument by using techniques drawn from nature.

In our relationship to nature, we partly want to learn from it. We have an insatiable curiosity to understand how things work, why the planets turn that way, why the folds of the earth have these colors? And we partly are fascinated with the creation and the adaptation of nature.

As creators and inventors, we draw from nature because nature appears as a model of perfection. There are two different sides to organicism; one is more analytical and driven by curiosity and the other one is more - you could say - rhetorical, creative, artistic, and inventive.

Does van Eck not use the words "invention" and "interpretation"? Are they not also what you are trying to illustrate?

Yes. In this discussion, whenever you want to create something convincing, you are going to use materials that are already available to you. Organicism suggests that in order to invent something new, you are going to look at nature in order to be creative, and to come up with new ideas.

This suggests that nature is the ultimate persuader. It's hard to argue against nature because it is the truth. It is inherently the strongest "thing".

Early on the highly debated question was "what is the difference between nature and God or spirituality?" Even though the people knew that nature was the ultimate truth, what they wanted to do was to approach God. But they couldn't copy God because God was a mystery. So, the next best thing was nature, because nature had been created by God – that was the logic. When they built a church, nature inspired both the structure and the decorations. Believers visiting the church felt spiritually elevated.

I want to talk about the 19th century. When organicism became secular and the focus turned to the natural sciences; and the Cuvier versus Saint-Hillaire debate was perhaps the turning point. Can you expand on it?

What did you get from it? Did you feel like it was a big sea-change from before to after?

Absolutely! To me this is really a question of my own spirituality, which has admittedly changed during my pursuit of an architectural education. That said, I am hesitant to think of things as having a function before they arise.

That's exactly what the debate was about! One person thought that there was an idea before the form of an animal was created. The other would say no, the form of an animal came because it was trying to overcome a problem. The more modern perspective is the second one. They would say, well, "the shape of the claw of a lobsters came about because they were trying to grab something" – there is no idea behind it, no plan, in other words: no God.

Nowadays with DNA and chromosomes, it gets more complicated because before an animal is born, there are all those languages in the DNA inside the cells. So, the plan for development is already "out there." As the animal grows, the environment has an effect on it. It reacts to the environment in a certain way according to its DNA. What is happening in nature actually encompasses both schools of thought.

I have been thinking about neurophysiology since last fall. When I read Maturana and Varela [*Autopoeisis* and *Cognition*], the idea that interactions, physical interactions, and one's neural system are constantly in a state of change; and one "circuit" affects its neighbours; and the neighbours inherently affect their neighbours, so there is always flux and influence. We, as a unity, engage in the same recurring interactions. Naturally the synapses that occur form a bit of a "memory,"

which is almost evolutionary. As living organisms, we reproduce and that memory is carried forward.

Or not! Depending…

Or not. Yes! That raises the question of persistence. It would be curious to observe whether mechanical movements of my arm, or mental activities that I engage in have any effect on my offspring.

Well apparently it does. It is evident in the fact that now we are using the mouse pad a lot. This action is different from grabbing something, which we have done forever. But now it's done with just one finger. Apparently it also changes how our brain is structured. Some of the younger students that I am seeing right now cannot tie their shoe laces anymore. It's wild!

Even in my generation, I cannot seem to type on a keyboard properly. Everybody aged 50 and over keeps asking me, "why are you typing with your one finger?" Well that is the only way I know how to do it; everything that I use only needs one or two fingers. But I can do it quickly.

Yes. And you get very good at it too. Probably your one finger is as good as all your fingers.

Yes. Absolutely! I take my given form and I learn to use it to the best of my ability.

Back to organicism, I am seeking specific examples to illustrate the difference between mechanical and organic forms. For example, I would use the *Urpflanze*, the archetypal plant for organic form that would directly illustrate the idea of growing from within which is one of the key ideas of organicism. And then I would juxtapose a Lawrence Harris painting of the Northern landscape with a mountain or snow drifts. The mechanical form of nature does its thing in that sense, but it wasn't living. And I know you feel that the Northern transept at the Notre Dame illustrates aspects of humanist and transcendence. How could a reader – somebody who isn't well informed on organicism, or organic form versus mechanical form – best understand these two images?

Well, in architecture, most people know how nature is represented in stone decorations, for examples, in capitals. You see flowers or plants cut out in stone and

you think, "ok, that is talking about nature." What more difficult to illustrate are the internal forces in the building that give it its form. Calatrava understood these forces and represented them well in his architecture. One can imagine that the form is the result of the compressive and tensile forces that are flowing through the material.

By contrast, you have the mechanical activity that is based on repetition. This is the mountain being shaped by the water or the snow drift shaped by the wind. This does not come from within, it comes from the outside. The main thing, again, is to go back to "what is the idea that is being expressed by the form that you see?"

So is the word "organicism" the most appropriate label for what the LASG is doing and the type of philosophy that they are trying to work within or under? I understand "organicism" in the sense of a microcosm and building the space within it. As a composite to its form, organic matters exist almost like organs in a body. I agree that LASG is working towards a philosophy that is certainly in line with the persistence that organicism has. But whether organicism as a word has to also represent that composition.

I have shared with you a list of words that in a way I think the LASG addresses in some aspects of their works. Those specifically have come up in conversations between Philip and me because he has got a certain rhetoric, history and poetics that yield that type of conversation. Regarding the word "organicism" and the work of the LASG, do you think you would approach it with more flexibility?

I think the point of using the word, and why I was excited to use it, is not so much to put a label, but more to give it a historical context. Simply to say that the work we are trying to do at LASG has a history in architectural history. The umbrella term of organicism is multifaceted and complex. When you look at it deeply, you understand that a great deal of the mechanism embedded in it is very similar to what is going on now.

For example when you say, what about "abiogenesis," "emergentism," or "synthetic," all those words are like subsets of "organicism." In the 19th century, architects like Semper, who developed a theory of construction as layers (as opposed to mass), were very excited to have conversations with Naturalists. Semper was excited to get into the details of the natural world from a scientific point of view, and then apply it to architectural theory. It is exactly the same thing

Philip is doing now when he has conversations with scientists.

He gets excited about pluripotent cells because he feels that his works can be nourished by that scientific idea. Our creative process, as artists and architects, is really the same. Science has evolved so of course there is a difference. Now we are not looking at bone structure like we did when we were reading D'Arcy Thompson. We are looking at nature at a much smaller scale: cells, or neural science as well as larger scale, the cosmos and the flows of big data constantly "listening" to nature.

However we are really just learning from it. We are not scientists. We are not here to solve cancer or the evolution theory. We are just learning about what scientists are thinking and the methods they are using.

The other important issue is aesthetic and its reception. Ultimately, "organicism," or Alberti's favorite word *concinnitas* – on which I am writing an essay – is another rhetorical term that refers to art modeled after nature that is skilful and purposeful. Both terms aim at how we create art or architecture from our observation of nature. In other words, organicism contributes to the philosophy of art. When you create with the mindset of drawing inspiration from nature, the result reflects what is interesting to you at the time. To me it as simple as that.

We can use other words than "organicism." But the good thing about that one word is that it encompasses two ideas. The idea of understanding from nature and of wanting to create. Whatever we create, we are trying to make beautiful and communicative ideas that will make an impact on the viewer or the user. That is why, for example, we use the sentence "God is in the details" – that's absolutely "organicism." It means to be able to make things and enjoy them in beautiful ways, intelligent ways, efficient ways and meaningful ways. We believe it to be something beautiful and eventually spiritually uplifting.

Another aspect I like about "organicism" is that it is also very humble in some ways. We are going to make something here. We're going to put two pieces of plastic together, and a little bit of digital whatever. We're going to mix it all up, and then hope for the best. That is very different from the purely analytical mindset of scientists who are trying to figure out how the world works. We have words like "growth," "ecological design," and "responsive architecture," which are more on the side of design. I think that's what we have to keep in mind throughout this whole thing. What LASG is doing is close to ecological design and responsive

architecture. It is again all about new design can work with nature.

Our last question before we get into the lengthier ones. Something in my own work as of late has been a prevalent thing. I call this my proposition: "the means to which an end is achieved must be understood in a manner in which an end desires to emulate."

If we are in pursuit of an organic design, do we also have to mimic organic process? Is that fundamentally true? Or can something organic be achieved through a more scattered?

Intuitive way, you mean?

Intuitive? Sure!

A conversation I recently had with someone: a craftsperson or a wood worker is almost one with the wood. They feel it. They work with their hands. You could argue that it is a very natural thing to do, to engage your own body with the material, with the process versus automation, leaving it to prescribed logics that have been developed by the scientists. But we're still able to achieve somewhat organic things through automation sometimes.

Because somebody still writes the program.

I guess this might extend to the next question about craft and what it is.

Obviously the divide is not simple. On one hand if you are working with a little tool, it will be more organic. If you're using the big machine then it is repetitive and not going to be organic. That's way too simple.

What craftspeople will tell you is that they have been using and adapting tools for a long time. Now they are using computer-driven machines as another tool, but to them it is no different from the tool that they made 200 years ago. The machine is still made by the human being, right? It is not self-replicating like cells, you know, like an organic body.

Right. We don't necessary think about design and outputs as being part of

that natural world, but inherently we use nature. That just seems fundamentally an act of fiction.

Doesn't Caroline Van Eck call it interpretation? That means to interpret things in ways we understand nature.

Yes, she calls it an interpretation absolutely.

But you think it is an artifice?

In some ways, yes. In my opinion, the definition of nature has to include us and our products. I think we see that in Hannah Arendt, and perhaps more recently as well. But the two definitions that Burnet proposes about nature, I think draw the line somewhere around us. There is nature, there is us, and there are products that mimic nature in ornaments and in forms. And that changes throughout history. But there seems to be a consistent divide where architecture is not necessarily considered living, as part of the living system.

Perhaps that is just my confusion. I think in a way all architecture is part of a living system. City and social system function as living systems. But there seems to be a conversation about fictionalizing the act of doing architecture as being a fiction of nature. Is that a false statement? Is there a misconception on my part?

I would not say false. A lot of people feel like you. But if you want to use nature as a metaphor such as the city has veins, etc. you could look at the 60s and 70s when urbanists used nature to talk about something larger like cities. In some respects, it failed a little bit due to scales. The metaphors need to change as one changes scales. So for example when Philip Beesley designs a detail he calls a frond, he can say, "I'm learning about how to make this detail by learning about this particular natural phenomenal I observe in fronds." And he designs it as an interpretation of natural fronds. They are very small, and bundled together they create a group. At this point you need a new metaphor for your next design move. Maybe you look at a groups of ants or bees. Is it more about communication, data going back and forth than about the flexibility of the fronds?

As you are going up a level of complexity, and this is the idea of organicism again, you have to change your way of looking at it. If you rely on the same idea from the very small to the very big, you are going to end up with something that feels fake. Just like you say, it feels very much artificial and does not feel correct. You

have to be very careful of how you use nature to design so that the scales correspond to the ideas.

Scientist who rely on organicism when they analyze a body and the nervous system do just that. When you look at the cells you have some kinds of ideas. And when you look at a group of cells you have to look at different ideas. Then you go to the brain and so on. They are very clear about it; you need levels. Each time you have to change the way you conceive of it. All to say is that you're absolutely right. We should feel that the human is part of the whole thing. It is so important. I wish we really believed in that.

Before the 18th century, humans were part of nature. In the Vitruvian Man, Leonardo Di Vinci represented nature. He was not representing just the human but the natural creation of it all. After the 18th century, people started saying, "Oh nature, we are not that!" That started the divide; there was a living and there was a dead. More recently in the 19th century, there was a divide between what was mechanical, innate, and what was living. And I have the feelings that now with the digital world, we are trying to put it back together with the whole idea of ecology and natural systems. Everything is linked; it is not about what is dividing.

To build on your comment about scale, and you spoke about being careful in how we should apply nature, you were saying that we could in fact misrepresent nature in design. How would you speak to biomimicry in that sense?

When we say "let's make a plane like a bird," you cannot just mimic the bird shape for the plane and hope it is going to fly. They tried it and it did not work. You have to first understand the dynamics of wind and air flow in order to make it work. And how a bird gets lifted in order to design your plane. So, you have to go deeper in what you are learning about nature, especially when you get to different scales, different materials and so on.

I had a very good conversation with Dana Kulić about the idea scales. For example, there are many different layers in Philip's work. Philip and Dana had huge discussions to decide whether all the information should be concentrated in one spot, or should each small element have a little bit of the intelligence. And they went back and forth, pros and cons, for a long time. Ultimately, they decided to have the learning happening in many different places. Because philosophically they wanted to show that there was more brain power in many of us together than in just one person. It was really a political stance. They tried to demonstrate

how a machine with very little intelligence was capable to learn a lot more when there were many of them.

What was interesting is that Philip and Dana are looking at sciences and trying to say something with the installation. They are trying to give us an impression that these little things are responding, how amazing it is that they are learning so fast, responding so well. The impression slips into your unconscious while you are inside the installation through a sort of vibration.

I think those things are very interesting and they are very experimental because they try to offer some suggestions about larger ideas. It is not only robotic like "Oh this little thing is so cool!" It is able to move up and down now, but five minutes ago it couldn't do it. The whole experience represents something bigger and more uplifting because it makes you feel something positive about what you are seeing.

Of course. And I think we need to recognize the importance of Dana's work in being able to engage with cause and effect on a more observable level. You called Philip and Dana's decision a political gesture. We can say that the sculpture is a product of invention. A gesture is being prescribed both in the form and in many components, in the way it actuates, in the way it behaves, and in codes.

As a visitor underneath a sensor engages with it, they feel the movement of their arms versus that of the whole sculpture on a larger scale. I have my eyes on one piece and I can see it moves. But in my periphery I can also see the rest of the sculpture doing something else. If I am able to look at a computer screen while a visitor is interacting with the sculpture, I could see how one action could cause patterns throughout the sculpture that was perhaps not as identifiable when I engaged with it physically.

When I am immersed in one of Philip's works or any beautiful installation or architecture, its beauty excites me. I am uplifted because of the beautiful and amazing experience. I find that Philip's work can get to your subconscious. It is a bit like when you are looking at a field of high grass and the wind blows through it. That kind of vibration caresses your brain. This differs from my experience of looking at a painting on the wall which could be more intellectual. My mind is at work to comprehend the implied space and the content.

However, when you are submerged in an installation or an architectural

environment, it is all around you. As a result it touches all your senses as you move in it and gets more into your unconscious. When you describe your experience of looking at the screen and your analysis of the action and the reaction, you go from a sensual experience to an intellectual one. I cannot imagine the screen makes you feel good, but it is satisfying to understand how it works. It gives you an objective distance.

But in terms of a logic loop and how our subconscious works, the screen being a reductive tool allows you to learn how you interact. You can go back and say, "I am going to do this. I am going to have a conversation with this sculpture because I know how it works, and how to trigger its behaviours."

Like a learning tool in a way…

It is a language tool I would say.

To communicate with the sculpture?

Exactly, in the context of information and living system, I think it is very key. In some ways, the interface does not let you engage materialistically with the sculpture.

But that is the point, you can step out. You learn about it and then you can go back in. In a way, it refers back to what we were discussing at the beginning about the whole idea of organicism. First, you learn something and then you apply it to represent what you understand. Afterward the creative part is to go back into the sculpture and to play with it. Then you can go out again and be more in your head, and reflect on what you learn from the responses. As you go back and forth, this brings the environment and your experience close to each other.

Regarding the domain of things available to create our build environment, what does that look like a hundred years from now? What are the goals of the LASG beyond this SSHRC grant? What is the new medium coming out of the work today? More generally, how might the toolbox of the architect look in the future? I have been thinking about the gentlemen from 4DSOUND. Sound has a designable medium as opposed to designing a space with some acoustic treatment on the surface that already exists. More explicitly, you cannot control sound in a space but you can give it shape, and movement per se. How is that going to enable designers going forward? We can speak to computer science, the idea of a building with a network of information that is not of the people moving through

it but of its strata. So what are the tools? And what is this next generation of architecture as we think about living architecture? What does it look like to you?

It seems like sensors are key. The way Philip works is by taking some ideas which have their own organic growth. With each generation, he changes them a little bit. When sensors came along for him, and for all architects, they have totally opened up this idea of a learning architecture because the technology is so quick and so human-like. When I talked with Alan Macy (Biopac) about sensors, we noticed that they were really progressing. But the main question is what to do with the information you get from a sensor?

So then, what do you create? What do we want to do with it? We have this technology that always changes, that is becoming more available to us as it is getting cheaper, more compact and even wireless now. We have institutions like universities supporting us to do research. But the question "what do we want to do with it?" stays completely whole. We know that we are driving the bus. It is great, but can we get off the road? That is why ethics and philosophy are really important in these cases. Because if not, you can get into hot water.

Certain political actions have taken place because of this mega data and power. People buy it and they do not do the best thing with it. So I think we have to be very careful. I am not saying we should refuse. We just should be really aware of what we are doing, how we do it, and what it means.

If you design a space on a 16 x 16 grid and you give some treatment to the walls or the columns, you can hypothesize "well I suspect that people will react this way." And now you introduce the idea of sensors, you can be more specific on the feedback we get from how people interact with the spaces. You can make stronger predictions, and you can be more deliberate in the way you design.

In a way, that seems a little bit controlling. Having people engage with an architecture - the mysteriousness. I cannot recall exactly the title of an article – maybe one by Dianne Kanne – but it talks about the mysteriousness of nature. And having people engage with an architecture that is mysterious can be something that is exciting and engaging.

I see where you are going. If I understand you correctly, you think it is important to keep the uncanny and the poetry in things and not wanting to control everything. Is that what you are thinking?

Then, of course I would agree with you. On a more mundane level, I think that we should always understand that humans are very different from each other. The more technology and architecture can help us control elements and our environment individually, the better our individual experience is. For example, if someone has decided that the whole room should be at a certain temperature during winter and we each want a different temperature, the majority of us will suffer in that environment. Therefore, it is fundamental to be able to set the temperature in parallel with people being able to open their windows. They are now able to control their environment. If your office is too hot, then you can open your window. So it is really a philosophical attitude to saying "not everybody is the same and we need to be able to connect with the environment outside" and so on.

I see the opposite is happening now. A lot of the new buildings being built are hyper controlled. Somebody has decided on everything: the colours, the windows etc. Most people are really just suffering in there - they are not happy and they get sick. They actually develop *building sickness* because we are not meant to live in a machine.

I am giving a very simple answer but I think it is fundamental. We still need to have control over our environment, but it should not require a million computers between us and opening the window. For example, on trains in France they have decided that each passenger can heat their seat according to how they feel that day as opposed to heating the whole train. If the seat is not occupied, it will not be heated so they also save a lot of money there. The overall focus is saving energy but it also addresses individual needs.

Alan Macy's work goes in this direction because he works closely with the body. He knows that each body reacts to everything differently – physically and emotionally. He then writes programs and builds the hardware to create those little devices that help you to cope. For example, he makes pacemakers to make your heart beat better, but not without an awareness that the technology has to adapt to each body since each one is different.

So subjectivity and the individual scale are being the drivers.
Yes. His whole thing is how you go from analogue to digital. Think about how your heart is beating; it is not beating like a machine. Your heart is beating

differently from my heart. So how would you take this analogue information and design a machine that works with digital information with the aim of helping one's heart beat better? It sounds simple but actually it is very complicated to go from analogue to digital on an organic, living body.

In this case, it is the individual versus the machine. But with our intelligence and computer programming, we can really adapt to the organic.

In closing, I want to ask you a question generally about Stream 6 (Theory) and how that fits into the LASG. I guess the role of philosophy is research collaboration. Can you share what you are trying to do? Why is it important to the group?

When I spoke with Philip at the beginning, my hope was to communicate better between each other. In trying to share the visions of the work we do, I began to read about the relation between architecture and nature. I asked, "why is it that it is interesting?" and gave myself time to reflect on it. The next thing I thought was to engage with different people in the group. So I started to interview other LASG members. The conversations are seeding ideas so that people have time to think and reflect on their work before our gathering in March, which will be the next step.

The challenge is that everybody is very much into their own work in a very narrow way. They go very deep and they are very good at what they are doing. So I think my job, and maybe your job as well, is to pull them out and ask, "ok let's look at this. Why are we doing this? How are we communicating between each other? What idea am I taking from this? What does it do?" I think that is basically it.

I think that sums that up very nicely.

Good. I am glad.

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