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Rendering Design Thinking from the Pattern Language

Looking back on the Pattern Language, all fresh and rosy with promise in the mid to late 70s, what impact has this ambitious project had on planning and design theory? What theoretical renderings from this Christopher Alexander & Center for Environmental Structure's (CES) paradigm challenging design experiment add light to today's discussion of design thinking?

With the publishing of The Oregon Experiment (1975), A Pattern Language (1977) and A Timeless Way of Building (1979), Christopher Alexander launched a sharp and critical analysis of the state of planning and design. Modern theory in architecture was bankrupt, Alexander wrote, and he proposed a radically new system of designing towns and buildings to take its place. Present theory needed more than remodeling or repair. It should be replaced by the kind of thinking his group had uncovered that was as old as society itself. The answer, he said, lay in a "timeless way of building" and a Pattern Language that grew, not out of the ideas and images of modern experts, but directly out of the experience of those responsible for the really great places, the people themselves.

The central idea was this: armed with an essential understanding of the critical environmental relations at the heart of a place, the relationships that really mattered, everyone could be a designer and an active participant in creating alive and healthy places, humane places that worked and felt just right.   And a group that shared those essential understandings, called patterns, would be able to work together harmoniously – organically – in resolving their local environmental problems. Eventually, as this shared "language" of patterns became habituated in a community's designer-builders, the Pattern Language would no longer be needed and would fade away. As Alexander explained:

"*Once a person has freed himself to such an extent, that he can see the forces as they really are, and make a building which is shaped by them alone, and not affected or distorted by his images – he is then free enough to make the building without patterns at all – because the knowledge which the patterns contain, the knowledge of the way the forces really act, is his. – P. 543, The Timeless Way of Building.*

And, "*When we are as ordinary as that, with nothing left in any of our actions, except what is required – then we can make towns and buildings which are as infinitely various, and peaceful, and as wild and living, as the fields of windblown grass…One day, when we have learned the timeless way again, we shall feel the same about our towns, and we shall feel as much at peace in them, as we do today walking by the ocean, or stretched out in the long grass of a meadow."* P. 549

Alexander's writing was both spiritually and scientifically seductive.   It held a special appeal for those with a deep yearning for an anti-authoritarian, participatory, ego-less and ideal human world. At the same time, it offered the guidance and security of a rigorous step-by-step design system that non-professionals could follow, grounded in the best available knowledge from the social sciences.

The theory suggested a biological equivalence between environmental patterns and DNA. It claimed a legitimacy and foundational authority built on a base of scientific objective environmental research. After all, Oak tree DNA led to an infinite variety of individual Oak tree expressions. Might not environmental patterns do the same - enable the translation of a system of truly essential relationships into tailored, place-specific environmental expressions. Why not such a thing as an environmental genome of patterns that stakeholders in democratic communities could use to build healthy and beautiful places?

In 1975, Alexander and his colleagues at the Berkeley-based Center for Environmental Structure (CES) brought their new system of Pattern Language based master planning to the University of Oregon campus. The university hired the CES to replace its traditional campus planning system of fixed master plans with their flexible and new, "organic" master planning process. "The Oregon Experiment," as it was called, became a proving ground for the ideas, application and acceptance of a pattern-based planning and design system.

The system overhaul the CES proposed would be grounded in six principles: **organic order**, **participation**, **piecemeal growth**, **patterns**, **diagnosis**, and **coordination**. But this was more than a list; it was a model of interdependent ideas that were needed for the planning to be successful. The whole model was the plan.

Looking back, it's hard not to admire the utopian scope and optimism of the undertaking. A committed community, a village, in this case a campus, could emulate healthy growth processes in nature (**organic order**). Everyone would be an enfranchised user or stakeholder (the more popular term today) and would participate in the many small incremental changes and the less frequent larger ones that continuously went into the building of a campus environment that was whole, healthy, and alive. (**participation**).

Experts would not be needed because the citizens of the campus would be empowered with a common "language" of patterns to solve their problems (**patterns**). Campus areas and situations would be diagnosed yearly for their pattern deficiencies and project priorities set and managed through the coordination provided by an expanded office of university planning (**diagnosis and coordination**). Coordination would also include modification of the state legislature's capital funding rhythms to better align capital resources with the university's new principles of organic order and piecemeal growth.

Such far-reaching political, economic and social restructuring may have seemed possible in the mid 70s. It was a time of cultural upheaval and social unrest and campuses were still caught up in the backwash of the protests to the Vietnam War. With authority and expert opinion in very low regard throughout the nation, a populist planning system like the Pattern Language, as Peter Rowe characterized it in his book, *Design Thinking*, fit right into the tenor of the times. The irony that the Oregon Experiment was an artifact of a group of architect-experts imposing an expert system of design, a system that denigrated expert opinion, would have to wait for a later time.

The Oregon Experiment was a social, economic and political house of design theory built on the foundational concept of a pattern. What, then, was a pattern? Where did patterns come from? What was the basis of their authority? And how were they to be properly applied?

Patterns were conceived as a nested system of universal solutions to archetypal environmental problems ranging in scale from the regional to the proximate. In his book, *A Timeless Way of*

Building, Alexander explained how the patterns of the Pattern Language were derived from older times and places when making healthy, alive and beautiful towns, villages and buildings was tacit knowledge. The object of the Pattern Language process was to distill this ancient fundamental knowledge and use it to empower people to build unselfconsciously again in our modern world. The Alexander group claimed that this was possible because environmental problems were recurring archetypal situations that could yield timeless universal solutions.

It had nothing to do with a superficial concern about style. Healthy places, they claimed, were experienced as such because they were expressions of these universal pattern networks. Unhealthy places always felt bad because they lacked those important relationships. They way back to life and health required replacing the missing patterns using the pattern language manual developed by the Center for Environmental Structure. A designated group of users was best situated to diagnose local pattern needs and deficiencies. They, not outside experts, really knew their local situation and could best prescribe the pattern repair needed to restore its overall health. In time, these user groups were expected to be able to write their own patterns. And eventually, the goal was to have the planning process become so habitual as to consciously whither away.

The Structure of a Pattern

The interior structure of each pattern in the CES manual consisted of three key parts: an issue oriented discussion of the central conflicting aspect of an environmental problem; an examination of the existing evidence and salient facts related to the unresolved situation; and a therefore type prescriptive recommendation. The recommended action took the form of a policy-level prescription and an essential conceptual diagram to help guide local adaptation. If you couldn't also abstractly draw the prescription, it wasn't a pattern. The outside shell consisted of a pattern number, showing its position in the overall pattern continuum, an image of the archetypal situation, and advice about larger contextual and smaller pattern connections.

Nikos A. Salingaros, a University of Texas mathematician and Pattern Language admirer, summarized his understanding of the pattern concept from The Timeless Way of Building as:

1. A repeating solution to the same or similar set of problems, discovered by independent researchers and users at different times;

2. A more or less universal solution across distinct topical applications, rather than being heavily dependent upon local and specific conditions;

3. A simple general statement that addresses only one of many aspects of a complex system. Part of the pattern methodology is to isolate factors of complex situations so as to solve each one in an independent manner if possible;

4. Discovered or "mined" by "excavating" successful practices developed by trial-and-error already in use, but which are not consciously treated as a pattern by those who use it. A successful pattern is already in use somewhere, perhaps not everywhere, but it does not represent a utopian or untried situation. Nor does it represent someone's opinion of what "should" occur;

5. A higher level of abstraction that makes it useful on a more general level, otherwise

> we are overwhelmed with solutions that are too specific, and thus useless for any other situation. A pattern will have an essential area of vagueness that guarantees its universality.

It is clear that much was riding on the CES's success in choosing and mining archetypal environmental situations for designer gold. In the Timeless Way of Building Alexander declared that, "An architect's power … comes from his capacity to **observe the relationships which really matter** — the ones which are deep, profound, the ones which do the work." (p. 218)

And, "A man who knows how to build has observed hundreds of rooms and has finally understood the 'secret' of making a room with beautiful proportions … It may have taken **years of observation** for him to finally understand …" (p. 222).

Salingaros in a 1997 essay adds, "The skill of observation and prioritization is critical, and this highlights what will make an architect successful or not. We have to focus on the key solution aspects and not get caught in the weeds for too long."

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A Theoretical Critique

Are there such things as archetypal environmental problems that always reoccur? And is it possible to detect and extract universal and transferrable solutions to those problems that can be systematically applied today? Forty years later, the answer is no. The thinking about such matters has moved on. But there were already early indicators of the philosophical changes underway in the 1970s that would eventually undermine the CES's assertions about the ontology of patterns and environmental structure.

In 1969, in his introduction to *The subversive science: essays toward an ecology of man*, ecologist Paul Shepard had written that the ecology of a pond included our ideas about the pond and that human thought was natural and in nature. Of course Shepard wasn't the only one, and many others followed. What began as a rising awareness of mind in nature has developed slowly over the past half century, through the usual stages of outright denial and resistance, to a dawning acceptance and efforts to account for its presence.

In matters related to design theory, this has lead to a new exploration of design thinking, the nature and role of mental processes in designing, and ways to talk about it. Awarding consciousness full citizenship in designing has also required major revisions in the taken-for-granted-concepts, what Goethe called our mental organs for thought, that are our disciplinary ground.

Consciousness in Environment

Take for example what has happened to the meaning of environmental problems and how that change impacts Pattern Language concepts like environmental structure. This requires some theoretical archeology and an historical unpacking of each of the concepts individually

before putting them back together.

The prevailing meaning and use of the concept environment in the 70s when the Pattern Language books were being written was technical. Environment meant natural systems, the natural world that etμmologically surround   ed humans. Humans interacted with it, lived in it, breathed it, used its resources and polluted "the environment." Environment meant something that was separate and out there. Courses in universities were entitled, Man and Environment and Environmental Control Systems. Dualism was stubbornly present in such categorizing as Culture and Nature even as philosopher Alfred North Whitehead was describing overcoming dualism in his introduction to *Process and Reality* as one of the most important philosophical projects of the twentieth-century.

I well remember my own attempts to define environment as related to the developing cultural concepts of landscape and place at that time being treated by reviewers as mistaken, out of the mainstream and discouraged. Ecology too at that time was still only a more powerful and integrative conception of those same external natural systems believed to be separate from conscious thought. Now Shepard's early insight that a conscious human nature is an integral part of environment is not quite a commonplace, but it is a disruptive visitor who expects to stay. In 1972, philosopher William Barrett following the same path wrote, "Culture is an extension of nature by human means." And forty years later, as human mental processes - ideas, desires, sensations, feelings and the like - are assimilated into the meaning of environment, the issue for our own time is how to stop avoiding this remarkable "fruit of the evolutionary tree" (Holmes Rolston III) and accommodate our "inness."

Consciousness in Problems

What we think of as a problem has also undergone a similar growth in understanding. The word problem, which comes from the Greek: *problema*, means anything thrown forward. Thrown forward where, we might ask as it relates to this discourse? And today's answer is thrown forward into consciousness where problems are human artifacts, products of human perception, conception and construction.

The human mind perceives unresolved differences in situations that it cares about – differences that matter to its personal and social agendas. People, groups, societies… are drawn to and attend to the "differences that make a difference" (Bateson) to them and that provide opportunities for preferential change. They conceive, represent, and work toward the resolution of those differences (sometimes even democratically), allocating time and resources to the ones that are the most pressing and matter most. Look as far back as you like in the press: unconscious nature has no reported problems.

Class One and Class Two Problems

By inspection, as it always said in our math textbooks, it is clear that there are two distinct classes of human problems. Class One problems are those related to the human need to know, to know how things in the world work, to understand their structure and their function. The target of this directed need is the knowledge of how things are. Class Two problems differ in that they relate to the human need to make things and are aimed at the creation of human artifacts and their amalgamation into culture. If the former class is

directed toward understanding how the world is, the latter is about how we would prefer it to be.

This important distinction recognizes the human minds demonstrated capacity to purposefully organize and orient human thinking toward different ends. It is an ancient fork in the road. We forget that it was Plato who removed most of the sense of mystery and wonder from the concept of problems in Western thought and set the stage for rational inquiry and empirical science. It has been the strategic ability to privilege evidence over personal beliefs, interests and concerns, i.e. to narrow the focus of human valuing to what we call being "objective," that has powered modern science.

Where Class One problems yield patterns of knowledge (problems and their factual resolutions), Class Two problems yield patterns of culture (problems and their artifactual expressions). While Class One Problems require an adequate disinterest, Class Two problems embody a culture's many interests. When Alfred North Whitehead writes that, "Science is the study of pattern," he is talking about the former. And when anthropologist Ruth Benedict in her book, *Patterns of Culture*, writes that patterns of culture are patterns of value, she is writing about the latter.

Environmental planning and design problems, then, are a sub-set of the vast region of Class Two problems related to cultural making. The contemporary pond of environmental planning – and all designing generally - is alive with human needs, interests and concerns. And problems in this class reflect the wide spectrum of human interests and preferences that generate the artifacts of human culture.

If Plato is a father of Class One, Omar Khayyam, the tentmaker poet, best captures Class Two when he writes:

> Ah love,
> Couldst thou and I with Fate conspire
> To grasp this sorry scheme of things entire
> We'd shatter it to bits and then
> Remold it nearer to the heart's desire.

Looking through the lens of science, Nikos Salingaros describes patterns and Pattern Language to be pre-scientific. But that's like saying that human valuing will be all better when it grows up instead of recognizing that cultural making occupies a neighboring kingdom of human thinking with its own interests and its own ends. Today's best advice for those wanting to clarify design thinking is to understand the differences between the two classes of problems, but also to see them as symbiotic, each serving the other's ends.

Do Environmental Problems Continuously Reoccur?

A key axiom of the Pattern Language is that environmental problems are things that continuously reoccur. And that it is possible to draw prototypical design principles, called patterns, from these archetypal problematic contexts that can be universalized and transferred. But if problems are situated human constructions, saturated with the interests and ethos of a people, time and place, then they can't be other than historically unique.

In the same manner, our own perception and construction of a problem is bound up with our own time and interests, and we can only look at other situations in other times and cultures through the lens of our own time, place, interests and experience.   The problems that they constructed are not the ones that we construct any more than their meaning is the same meaning we construct out of the repertoire of who we are. Their environment, if they had the concept, would be naturally be filled with their ideas not ours. Ditto with environmental structure. The environmental structure of the Pattern Language is built out of the cultural artifacts of the CES. Culture-bound environmental problems might not be able to repeat themselves, but, as Mark Twain wittily remarked, they can rhyme.

The main mission of the Pattern Language project was an admirable one. Even if you can't step into the same environmental situation or condition in the same place twice, that doesn't mean that designers should give up trying to understand, learn from and apply the many possible lessons to be drawn from the study of historic works. The patterns, where they have proven insightful and useful in designing, deserve to be acknowledged.   But acknowledged as memes not genes, and environmental structure as memetic not genetic.

The distinction is clear. Genetic patterns physically exist. The memetic patterns of Pattern Language artifactually exist. Patterns carry forward no objective certainty but can be useful preferred prescriptions. At their best they can be appreciated as paragons of good advice and policy. The truth of a pattern lies in its high social acceptance and regard and the degree to which it influences design thinking. A pattern truth, which for some may reach all the way to belief, is a Class Two form of "truth" where truth is a truth of value.

Kimberly Dovey, in an article on "The Pattern Language and its enemies," believes that epistemological objections to the Pattern Language "can be defused by letting go of the claim that patterns have objective certainty." This is the view from scientific thinking again. It's not enough to say what patterns are not. Dovey's work begs the questions: If patterns are not Class One, then what is their nature and to what class do they then belong?

The answer advanced here is that all problems constructed from perceptions of problematic difference that must be resolved through representation, evaluation, judgment and artifactual preference are Class Two problems.

Valuing in Designing and in the Pattern Language.

How best then to talk about the presence of consciousness in designing. I believe that the process concept of valuing is one very useful way of representing human mental process in Class Two problematic situations. Valuing, defined as the structure:{interest in something / something of interest} captures out interests. It unites, as does language in transitive sentences, the subjects and objects of our interests, passions and concerns. Interest, here, is a metonym for all the needs, wants, hopes, desires and concerns of consciousness in human thinking that drive designing.

Because valuing is always transitive and whole, using the valuing vocabulary means never having to say psychophysical. Human life and culture is a bouquet of human interests, or if you prefer, a tapestry of values. Once one lifts the pretense and guise of science from the idea of a pattern, the presence of the valuing structure of the pattern concept and process blooms forth.

"Interest," Evaluation, Judgment and Preference Differences: Class Two Problems vs. Pattern Language

- In Class Two problems generally, the perception of a problem is itself recognition of the presence of interest as already discussed because perception of difference always indicates a point (or points) of view. Planning and design problems as Class Two problem members always reveal multiple interests that lead to preferential choices and formative expressions.

- In the Pattern Language, the interests present have already gone through a process of evaluation and have been narrowed down to "the ones that really matter," and "the ones which are deep, profound, the ones which do the work" by the CES and embedded in a pattern. The issue statement of each pattern is about the focal interest that the designer of the system believes you ought to have.

- Experience with Class Two problems suggests that they are not givens, as in math, but are born into a social consciousness and developmental life. Their growth in problematic understanding requires cycles of exploration and evaluation in order to resolve their innate complexities and contradictions.

- Environmental problems in the Pattern Language are presented as givens. The differences that matter have been predetermined.

- The development of a Class Two problem requires the social construction of an agenda of its "aboutness," what the problem is about. . Representing problematic difference in existing situations and constructing mutually agreeable programs of preference are central aspects of the social and political process of designing.

- In Pattern Language, the patterns and pattern sequences to be followed set the agenda, predetermining what is valuable to consider. Choosing to use the patterns and pattern language process requires a willingness of stakeholders to defer to the value judgments in environmental planning and design matters already cooked into the patterns by Alexander and the CES.

- Class Two problems rely on Class One knowledge to evaluate possibilities and preferences in order to make choices. A sub-set such as planning and design problems, because they are typically multi-valent and can be highly technical, requires the continuous input of expert knowledge related to the interests involved.

- The central issue of each pattern in the Pattern Language is backed up by information developed by the CES, but it is limited to that pattern's focal interest. Predetermination of what is thought to be critical in an environmental situation seriously limits the number, range and kinds of interests considered and the timely input of critically important knowledge.

- The artifacts of Class Two problems are legion, reflective of an open-ended and evolving modern culture. Environmental design problems, as a sub-set of this class, create unique artifacts out of historically situated social processes of goal-oriented conceptual blending, integration and expression.

- Pattern Language prescriptions, in the form of universal planning policies, are more closed-ended by design. Supposedly once one has decided what really matters, pre-packaged, policy conclusions are all that are required. Tying sequences of pattern policies together places an unfair burden on lay users who are most often unprepared to perform the necessary conceptual blending and integration required by the work.

- In Pattern Language, users are instructed to proceed rigorously from larger to smaller scale pattern considerations, a process designer's often refer to as outside-in. Most designers will tell you that they have been well advised to always think in the next larger and smaller scale of a problematic situation in both time and space. And that they routinely think from outside-in and inside-out as part of the normal process of recycling. Pattern Language process, along with placing limits on design interests and considerations, also sharply curtails developed modes of design thinking.

Pattern Structure and Design Thinking

Theoretical archeologists excavating the bare bones of pattern construction {Issue - knowledge – prescription) will no doubt draw our attention to the correspondences between the skeletal structure of a pattern in Pattern Language and its contribution to present design thinking.

Issue: The use of issues in patterns drew early attention to the need to focus on problematic difference and a useful way to represent it.

Knowledge: The expectation that pattern issues were to be subjected to and resolved using the best available research was an important step toward evidence-based designing.

Prescription: Patterns demonstrated the strategic role of policy guidance in design situations that unfold through many phases and dependent projects over time.

Of course missing in the pattern structure is any indication of what took place in the CES in the space opened in each pattern between knowledge and prescription, "where things show themselves and truth is revealed." Perhaps opening the black box of pattern development to the pattern sequence, Wings of Light, Light from Two Sides and South-facing Open Space would enhance our understanding and appreciation.

One of my favorite examples of the presence of situated valuing in a pattern is "Pattern 21: Four-Story Limit…High Buildings Make People Crazy." The assertion in the title is backed up by some not very convincing mental health correlations. And, of course, correlation is not causation. There is nothing wrong with the recommended prescription of a four-story limit rule: it just isn't everyone's choice of the best or only way to dwell. Pattern 21 merely expresses the authors' preference for low-density village life over that of medium or high-rise urbanity. Consider, if you will, this Parisian contradiction to the four-story rule:

Some Summary Comments and Conclusions

Alas, environmental problems turned out to be situated and historical. There was no timeless way of building. Patterns didn't cut environmental structure at the joints. The projected map of healthy relationships was not the territory.

The patterns of Pattern Language are not factual or universal and not natural entities or processes like climate, viruses or DNA. They are instead clearly Class Two artifacts, the cultural products of expert interpretations of highly selective environmental objects, situations and conditions. Their environmental sources didn't harbor a-historical universal prescriptions to enduring environmental problems.

They are not the reliable, reproducible and falsifiable results of scientific experimentation. Instead, the patterns of Pattern Language are constructed out of the focal interests and value region choices of the experts at the CES, who aggressively – and with all the best intentions –promoted their pattern system as a set of universal building blocks of environmental analysis and construction.

The CES team brashly expected everyone to accept its environmental analysis and predigested conclusions of what was really important. Most people, and especially professional designers, were skeptical from the beginning. They much preferred then, as they do now, to fill up their own plate and chew their own food.

The continued authority of a pattern today resides primarily in the demonstrated usefulness of its insight and advice. The Pattern Language Manual, now available online, remains a mixed bag of practical and preferential advice that most designers are familiar with. The pudding-proof of a pattern-generated body of work remains very limited. Supposedly anti-style, the use of the pattern process and commitment to its prescriptions produces it own.

Some of the initial enthusiasm for the new way of planning on the University of Oregon campus faded as users found the pattern process getting in the way of how they were used to thinking. As the Head of the Biology Department put it, "Why do I have to learn a whole new language just to tell you what we need, what we want and what we know?"

Stakeholder groups, especially when they included students, didn't come from a stable enough population to become more than superficially conversant with the patterns. Infrequent exposure to the patterns by its intended users also limited any chance of ever developing a critical understanding or appreciation of the patterns or the process. And so the dream of a common design language leading to frictionless stakeholder choices slowly faded, while, of course, campus egos remained as healthy as ever.

User groups, initially made up of faculty, staff and a few students, were far from immune to the power politics of deciding. One Dean memorably complained, "Hey, I'm a user too." Over time, the planners in the Planning Office became the high priests of the supposedly populous system. The administration maintained its control over planning activities on the campus by governing the resources and size of the planning office. And the state legislature made it quite clear that it had no intention whatsoever of changing the way it funded capital improvements and construction to suit the University of Oregon's conception of organic order and piecemeal growth.

Naturally, professional planners and designers resented their agency being reduced to facilitation and being told that they were to keep their advice and experience to themselves. But professional payback isn't the reason the Pattern Language plays such a minor role in professional practice or design education today. From early on, even those who were eager to explore new methods for designing sensed its conceptual flaws and drawbacks. Pattern Language required too great a willing suspension of disbelief. One had to accept that the designated pattern sequence you were expected to follow with stakeholders provided an adequate agenda of the critical interests of a situation; that each pattern already contained an expert analysis that cut through to the essentials of the problem that really mattered; and that the pattern sequence already contained all the needed key prescriptions for a successful resolution.

Professional designers who are committed to working with stakeholders today expect a much more open and social process of problematic understanding and programmatic construction. They expect a more open discussion of issues, issue priorities and the opportunity to work out conflicting points of view. And because they recognize and regularly work with Class Two problems, they know that problematic "aboutness" needs to be richly represented and comes from multiple regions of human value; that problematic understanding unfolds; and that formative resolutions require many cycles of exploring, prototyping, conceptual blending, integration and testing.

There have been other critiques of the Pattern language not dealt with here: that its language metaphor was at best an aspiration; that the system is and remains excessively rigid, conservative and provincial; that it is too much like building with Lincoln Logs or Legos; that it was an expert system forced on people who lacked the knowledge and integrative skills needed to implement it; and that its fostered a cult-like belief system whose sacred "Book of Pattern" was beyond design criticism. I leave such matters for others.

My view is that The Oregon Experiment was a bold experiment in design thinking and that we are the better for it. What we should ask is, where is its like today? As with any artifact, the affordance of the Pattern Language is what we are able to make of it, the rendering of meaning that it has for own interests in our own time.

Thinking about the ontology of patterns and Pattern Language only helps draw design attention deeper into the heart of a class of problems that are in a class all by themselves.

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