

## **Place-Based Community Planning: Philosophies, Trends, and Technologies**

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Before I began my career in environmental design I wanted to be a minister. In 1965 I was enrolled at the San Francisco Theological Seminary. Fortunately for myself ... and my parishioners ... I went into the field of architecture instead. However, I should warn you, there's still some of that "preacher" in me. So, if you would like to check out what is going on across the hall or head for the local movie theater, I'll understand.

There's a saying, "The role of a good preacher is to comfort the disturbed and to disturb the comfortable." Now, as I look out over our audience, you folks appear pretty comfortable. Well, my role this evening is not to be disturbing, but rather to stretch our minds and our imaginations a bit as we begin this conference together.

Often in our work, either by choice or by direction, we end up focusing our attention on narrow subjects, on provincial values, and on limited geographic areas. These ego-, eco-, and geocentric views cause us to lose sight of the broader picture. Consequently, we often end up attempting to solve problems within the context of a narrow field of vision. Given this situation, I'd like to talk about the broader picture ... about what it means to look at place-based design from a more holistic point of view.

Being a sailor, I will use a few nautical terms to help us "anchor" our subject ... pun intended. I will talk about the philosophy of design; this will be our "keel." I will then address two ominous trends we are facing; we'll call these the "impending storms." I will talk briefly about the integration of three emerging technologies, which we will call our "rigging." And finally, I will talk about our "sailing strategy" ... that is, the implications these topics have on place-based community planning and design.

**So let's take a look** at our "keel" for a minute ... and talk about the philosophy of design.

I'd like to spend a little more time here. You folks are well equipped to discuss among yourselves the trends and technologies surrounding the subject of place-based community planning ... and you will do this over the next two days here in Chattanooga. I would like to focus a bit more this evening on the broader subject of design, and consider (if you will) how it relates to the subject of this conference.

There are two aspects pertaining to the philosophy of design that we need to consider ... the definition and purpose of design and the behavior of living systems (which I will connect to the subject of design in a few moments).

The definition of design is this ...

**"Design is the thought process comprising the creation of an entity."**

Let me say that again ...

**"Design ... is the thought process ... comprising ... the creation ... of an entity."**

This concise and deceptively simple definition of design is the foundation, or "keel," for the rest of our discussion. To dismiss it as being overly generic, or even obvious, is to miss the power it affords us as designers. So let's take a moment to dissect its meaning.

"Design is the *thought* ..."

It is "first thought," or that type of thought we call *insight*. It is the mental synapse that instantly sees the potential connection between problem and possibility; that sees the capacity for order in the midst of chaos, or for improvement amid inefficiency.

Design is also *intuition*, that form of subconscious thought that leads us to a deeper sense of knowing, often in the apparent absence of rational confirmation. Intuition is akin to an elongated insight that tells us we are on to something. It is the hunch that often underlies our efforts to perform rational analysis.

Design also involves *reason*, that fully conscious form of thought that assesses the problem and analyzes the possibilities for solution. It is the analytical process that relies on method and mathematics to assess, refine, and verify its various hypotheses.

And finally, design is the *synthesis* of all three of these aspects of thought (*insight*, *intuition*, and *reason*) that forms the complete, and verifiable, conceptualization of possibility. To assume that thoughtfulness in design is limited to one or two of these aspects is to stifle the power of our creative potential as designers. Design involves the *utilization* and *synthesis* of all three aspects of thought: *insight*, *intuition*, and *reason*.

"Design is the thought *process* ..."

As presented in this definition, design is the activity of creation, as opposed to the product of creation. It is a sequence, or set, of thought-filled events and procedures that lead to the creation of that which is being designed. This *thought process* also involves the various activities associated with thought (contemplating, speaking, writing, drawing, modeling, constructing, etc.) that are typically used to carry one's "image of possibility" from initial concept to completion.

In other words, design is not "product"; "product" is the output of design. That which has been created is not "a design," it is what it is (a house, a community, a health care program, a piece of music, or a speech); it is an "entity" unto itself. Design is the *process* used to create that entity.

"Design is the thought process *comprising* ..."

That is, it includes, or contains, every thought and action required to create that which is being designed. The whole of design comprises all the individual parts of that thought process leading up to, involved with, and even following the creation of the entity being designed.

Depending on the type of entity being designed, this process can include the following:

- The *identification* of a set of needs
- The initial *conceptualization* of a way to meet those needs
- The further *development* of that initial concept
- The *engineering* and *analysis* required to make sure it works
- The *prototyping* of its preliminary form
- The *construction* of its final form
- The implementation of various *quality control* procedures
- The *promotion* of its value to the consumer
- Its *delivery* to the consumer
- The provision of *after-service*
- The acquisition of *feedback* regarding its utility and quality

Each of these steps contributes to the generation of form and thus is part of the design process.

"Design is the thought process comprising the *creation* ..."

This comprehensive process is directed toward, and culminates in, *creation*. That is, it leads to the tangible realization of a mature completion of the "image of possibility" that originally served to initiate the process. Without this realization the original "image of possibility" becomes an unfulfilled dream, or a frustration, and in time can vanish altogether. This is not to say that the original image does not change during the design process, for it does and often quite drastically.

What is important is that this change is a natural part of the maturation process and that the successful completion of this process, which often begins as a mere figment of our imagination, culminates as sensible reality in time and space.

The *creation* of this reality serves as the pivotal point in the overall design process; for without *creation* the process is either incomplete, or fallacious. It is incomplete when the *process* stops prematurely and fallacious when *creation* does not meet the needs of the consumer.

"Design is the thought process comprising the creation of an *entity*."

An *entity*, that is, the product of the design process, can be:

- *Physical*, such as an object that occupies space (e.g., the house we live in, the community we live in, or a piece of art)
- *Temporal*, such as an event that occurs in time (e.g., a musical concert, a political rally, or a public hearing)
- *Conceptual*, such as an idea (e.g., the theory of relativity, the concept of cybernetics, or even the definition of design)
- *Relational*, such as a relationship that describes, or specifies, the interaction between entities (e.g., the procedure for operating a computer, or even a friendship)

Any *entity* can be designed, that is, can be created with intent and purpose. The total *thought process* encompassing the *creation* of that *entity*, the process that gives it its form, be it *physical*, *temporal*, *conceptual*, or *relational*, is design.

Notice that this definition of design embraces just about everything we do or brush up against, and that each of these *entities* can be designed. Also notice that we are all engaged, in one way or another, in creating (or cocreating) the entities in and around our lives ... the ideas we live by, our relationships, and our communities. The design process is not limited, as so many of us have been led to believe, to that narrow class of objects or events that are supposed to have some sort of special "aesthetic" appeal. Nor is it limited to a special class of professionals (architects, environmental planners, etc.) that we typically call "designers."

We are all "designers."

Furthermore, and this is very important, we must see ourselves first and foremost as designers and then as scientists, as politicians, as bureaucrats, as educators, and even as parents. If we see ourselves only in these roles, and not as designers, we live our lives *at the effect of what is coming at us*, as opposed to *at the cause of what is coming out of us*.

**This definition** of design, however, provides no ethic. In other words, by this definition of design we cannot tell whether the entity we are designing is good or bad. We need to understand the purpose of design to determine if what we are designing is good or bad. Now, it is interesting to note that the purpose of all design is the same ... that is ...

"The purpose of design is to facilitate life."

I would like to pause here for a stretch ... a mental stretch, if you will, that could change how we think about ourselves, how we think about other people, and how we think about our role as designers.

We just said, "The purpose of design is to facilitate life." But, if you think about it, isn't this also the definition and purpose of love ... that is ...

"To love is to facilitate life."

Simply put, if you love someone you facilitate their life. If you want to know if someone loves you, ask yourself, "Are they facilitating my life?" If the answer is "yes," they love you; if the answer is "no," they don't. This is a very simple "operational" definition of love, and it is also the purpose of design.

So, if you are designing, you are loving. Let me say it another way: "If you are a designer, you are a lover." Or, "If you want to be a great lover, be a great designer." (I thought this would get you attention.)

This is a very playful idea (to say the least), and I know the reality of it, in practical terms, is a bit difficult to grasp, so let me give you an example. This is a true story ...

Many years ago I lived on the Olympic Peninsula in Washington. I had an old Toyota pickup truck that was full of dirt and dents. One day I was driving down a country road about 50 miles an hour and something hit the windshield ... a bird, or a rock, or something. The windshield shattered into thousands of little crystals. I found one large enough to look through to get my bearings, slowed down, and pulled over to the side of the road. I sat there for a moment to catch my breath. After I regained my composure I rolled down the driver's window, hung my head out in the rain (it's always raining in Washington), and found my way to a gas station where I eventually got my windshield replaced.

Later, that same year, I was teaching a class on design to a group of gifted high school students. During my preparations for this class I realized that this "near death" experience I had had was actually very meaningful. I realized that the people who conceived of the idea of safety glass, those who did the research to determine it was feasible, those who did the engineering and manufacturing to make it a product, and those who lobbied Congress to get it, by law, into the windshield in every vehicle in America, saved my life ... they, in a very real way, loved me ... because they truly facilitated my life!

Now, obviously, I'm not talking about romantic love here. I'm talking about that nitty-gritty love that makes a tangible difference in people's lives. This is the type of love designers have an opportunity to create when they design things ... *entities* ... like a community. When you design a community that facilitates the lives of the people living in that community, you are loving them. Through design, you are embedding love into that community that will be experienced by the people living there. Perhaps I should clarify, you are not *making love to them* (saying it like this could be a little misleading), you are *making love for them*.

Now, if the purpose of *design* and *love* is to facilitate life, it might be helpful if we understood the nature of living systems.

**There are three aspects** of living systems I'd like to bring to our attention this evening. First, all living systems are open systems. Second, all living systems are self-organizing. And third, all living systems make use of feedback loops (networks) to manage themselves.

Open systems require the input of an energy source, for example food, oxygen, and sunlight, to sustain themselves. They also output *stuff* ... if this *stuff* can be used by another living system it is called *product*, if not it is called *waste*. It is important to acknowledge that communities ... like all living systems ... are open and require a continuous input of resources, and that they constantly produce some type of output. I bring this to our attention because sometimes, when we talk about sustainability, we give the impression to others that sustainability means self-sufficiency, and this is not the case. Sustainable communities are interdependent communities, not independent communities.

Living systems are also self-organizing. Self-organizing systems respond to their environments to acquire and process the resources they need to sustain themselves, to maintain and reproduce their individual and collective vitality, and to protect themselves from harm. More advanced living systems are also able to retain information (learn), so they can handle similar situations more effectively. Higher forms of life ... like man ... I'm assuming man is a higher form of life (some of my friends will debate this) ... also have the vision and ability to modify their environments. All life systems are self-organizing to one degree or another.

It is important for us to remember this when we design our communities, so we don't stifle the communities' ability (and need) to self-organize. Community plans that do not let the members of the community participate as cocreators in the community-building process do not work. In fact, all community plans, no matter how well conceived, should be seen as *catalytic*, as opposed to *conclusive*, prognoses of the future.

The third thing we need to remember is that all living systems use some form of feedback network (a system of loops) to control resource acquisition and processing (as an *open system*), and to manage the adaptation and modification of their environments (as a *self-organizing system*). This is one reason why community planning needs to be a process and not an event. Community planning should be an ongoing process where the bandwidth of community feedback is greater than the bandwidth of the planning team's proposed solutions.

**Now that we** have established our values, let's take a look at the "impending storms" ... and talk about two trends we need to face as we plan for the twenty-first century.

The first trend, or storm (if you will), is the inevitable fact of population growth. This is not someone's concept, or an idea that is currently in vogue ... it is a fact, it is real, and it is facing us now. The question is, "Are we ready to face it?"

The world population today is 5.9 billion people. We currently have 271 million people living in the United States. The world population will double in the next fifty years. Think about it ... during the life of the emerging generation, that is, those students (our children) currently graduating from high school ... the world population will double ... that's another 5.9 billion people. The U.S. population, according to the medium projection, will increase by 50 percent.

What does this mean for your community or the communities for which you're responsible?

Let's look at it this way ... from a global perspective we will be facing double the demand for food, for shelter, for infrastructure, for services, and for energy. In the United States food production will need to increase 50 percent, as will housing, the construction of roads (assuming we maintain our dependence on the automobile), the distribution of public utilities, information processing, and the production of energy. This is a lot to plan for. We also have to consider the equivalent demand for the intangibles ... intelligence, cooperation, and the dissemination of cohesive social values. I would suggest that the demand for these "intangibles" (intelligence, cooperation, and social values) will be more difficult to fulfill than the demand for the "tangibles."

This wave of growth is going to hit us like a slow-moving tsunami. By the time it reaches our shore, if we don't know it's coming, it'll be too late ... we will be overwhelmed and crushed by the weight of its consequences.

**The other trend** I would like to address this evening is really an idea ... sustainability. This is not a trend, like population, but rather a social value. It is not a provincial value, indigenous to North America, but rather a new level of social consciousness emerging all around the world. Sustainability was one of the main subjects at the United Nations Conference on Environment and Development, held in Brazil, in 1992. It was also the focal point of numerous other international conferences, including the Pathways to Sustainability Conference, held in England, in 1977; and the International Conference on Environment and Society, held in Greece, in 1997. The concept of sustainability is being considered worldwide as it relates to our communities and to our natural resources.

Sustainability must be defined in such a way that it supports the three basic aspects of living systems: that they are open, that they are self-organizing, and that they rely heavily on feedback for their vitality. Sustainable communities are not independent communities, closed to the rest of the world, but rather open communities, connected to the world in ways that provide a valuable flow of goods and services to and from other communities. Sustainable communities are not rigid, but rather respect the propensity of their members to self-organize to enhance individual vitality, the vitality of their members, and the vitality of members in related communities. Sustainable communities are not held together by rules and regulations (though some are necessary) but rather by shared social values, respectful of life ... and not just the life of an individual, but of all life ... where words like "family," "community," "mankind," and "Gaia" are honored with both word and deed.

Our understanding of what constitutes a "sustainable community" when we initiate a particular planning study will have to accommodate the interpretation, criticism, and subsequent feedback from the members within that community. Sustainability will mean different things to different people, depending on the specifics of their personal interests and the context of their particular community.

Accommodating the population growth foreseen during the first half of the next century, and the intelligent management of that growth, with regard to sustainability, will require the evolutionary reinvention of our society. This is a tremendous challenge.

Now, I know this is a technology conference, but I think as we discuss this topic you will agree that our biggest challenge lies more in the "reformation" of our organizations and how they work with each other, and not so much in the "formation" of the technology we use.

By and large, most of our governmental organizations, and even our non-governmental organizations (NGOs), are organized to handle issue-based community planning and decision making. In other words, they are organized to think and act topically and not holistically with respect to a particular community. Successful community planning requires a different focus, a focus on "place" as an entity and not just on a particular issue, or set of issues, related to that "place" such as transportation, water management, or the reduction of crime. Strategies and organizational structures supporting "place-based" planning will need to be established to respond to the trends and values facing our next generation.

**OK, let's examine** our "rigging" ... and take a look at three technologies.

I would like to touch on the following technologies this evening: geographic information systems (GIS), decision support systems (DSS), and the Internet.

The subject and technology of GIS emerged in the early 1960s in Canada. Roger Tomlinson, one of the great visionaries in the field, first coined the phrase "geographic information system" in 1962 while working on what later became known as the Canadian Geographic Information System (CGIS). He initiated the First International Conference on GIS, which was sponsored by the Canadian government, in Ottawa, in 1970 ... one year after ESRI was founded by Jack and Laura Dangermond. Forty people attended that first conference.

In 1993, Vice President Al Gore founded the National Spatial Data Infrastructure, a clearinghouse for geo-referenced data, as part of his "reinventing government" program. Today, Vice President Gore is talking about the "digital earth" and establishing centers of excellence to facilitate the use of GIS by local governments.

We, meaning all of us, have made a lot of progress in the last thirty years. We've done four things that I think are important for us to acknowledge:

- We have established the subject of geographic information systems as a multidisciplinary subject in over 2,000 universities around the world.
- We have developed a robust set of tools for automating, storing, analyzing, and displaying all types of spatial information ... not just geographic. For example, the Biovox Corporation in California is now using GIS to map the human body to better understand the behavior of Alzheimer's disease.



- We have automated tons of spatial data. Ten years ago people were asking, "Where's the data?" Today, in many cases, we are facing the problem of data overload. The National Spatial Data Infrastructure, which I referred to just a moment ago, is just one of many such clearinghouses that have been established throughout the world.
- We have seen GIS applied in a wide variety of fields ... from land planning to managing crops, from the automation of tax assessor files to managing 911 response systems, and from selecting sites for new facilities to determining the optimum route and pick list for retrieving goods in a warehouse.

Today, GIS is a well-established industry. According to industry estimates, GIS is a 4.8 billion-dollar business worldwide ... that's hardware, software, data, and services.

Now, what about the future of GIS?

Relative to the focus of this conference, I foresee three ways GIS will prove itself to be extremely powerful:

- As a framework for community-based decision support ... I'll talk about this in a minute.
- As a way to visualize information and the probable impact of our decisions ... the new visualization tools in GIS, such as the 3D Analystâ extension to ArcViewâ GIS software, allow people with different backgrounds, representing different disciplinary interests, and even with different levels of intelligence, to view content with a common understanding.
- As a vehicle for integrating multidisciplinary planning groups ... I say "group" because sometimes the word "team" is a misnomer. The fact that GIS is a multi- or cross-disciplinary field is giving birth to a new type of professional. GIS professionals work with all types of spatial information (pertaining to the earth, life, social, and management sciences) and apply it to problems at all levels of complexity in our society. In many ways, these professionals are becoming our new renaissance thinkers.

If you are not presently working in the field of GIS I would encourage you to get involved, in some way, so you can participate in this new renaissance.

A moment ago I mentioned I would talk about GIS as a framework for community-based decision support. So let's take a moment to look at this topic, which is the focal point for this conference.

**The field of decision support** systems (DSS), or operations research (OR), got its start shortly after World War II in assessing military operations and quickly migrated to other fields, principally the field of communications and later the field of business. Today, DSS and OR techniques are used in just about every field ... by someone ... usually an anal-retentive analyst who is highly paid and underappreciated.

Many of you actually work in this field, so I will not go into detail here. There are four topics, however, pertaining to the use of DSS in GIS, which I believe merit specific comment.

- People working in the field of decision support need to focus their energy on developing effective group-based decision strategies. More and more decisions, particularly those pertaining to community planning, are being made by groups of individuals ... individuals with different opinions and often in conflict. The resolution of conflict and the facilitation of group-based decision making strategies should be a high priority.
- We need to be able to do more what-if modeling. What-if models allow us to look at different assumptions and value sets. They allow us to examine an area from different points of view and, in many cases, discover those solutions, or solution components, supported by those advocating opposing views. Most models can run different sets of values. But few models are actually designed to show the resulting conflicts and opportunities representing the difference between value sets. Wouldn't it be nice to have a model that accepted input from two opposing sets of values, showed the result of each set, and then assessed and presented the difference between the two ... all graphically, of course, using maps?
- Simulation-based decision support systems need to be developed to model both our natural and urban environments, as well as the interaction between those environments ... I should say, "especially" the interaction between those environments. This is different than what-if modeling, which looks at a predetermined set of alternatives. Simulation allows us to look at those "undetermined alternatives," or probable consequences, of what might happen based on a set of assumptions. What we need here is a SimCity<sup>ä</sup> approach to GIS that allows us to study the interactive behavior of multiple environments over time. The next major breakthrough in GIS will come when we can build valid time-dependent simulation models of our landscape.
- Finally, our models need to be interoperable. This was one of the main points discussed at the Aurora Conference in Jackson Hole last month. We spend a lot of time building models of various types ... wouldn't it be nice if we could exchange those models and share them with others? Well, it just so happens that ESRI is presently working on a software program called Landscape Analyst that will do just that. We want to provide the decision making environment within ArcView GIS software that allows individuals to build various types of models, share them with others, and even link them together to form larger models.

I believe the creative combination of GIS and DSS will lead to the next generation of GIS and will, in the very near future, become one of the three core components of our planning arsenal ... spatial data, spatial decision support systems, and the visual simulation of geography.

**The third technology** I would like to address, and I will do this quickly, is the Internet. I'm going to do this quickly because all of you are aware of the Internet and what it means to us relative to data sharing, collaboration, education, and community-building.

The really incredible thing, which we are all starting to take for granted (at least in America), is the fact that it's both affordable and easy to use. This new "space" that we call "cyberspace" is going to become the new GIS network. By the way, the Landscape Analyst software I alluded to a few minutes ago will be Internet-enabled ... that is, you will be able to share data and models over the Internet.

**I would like to close** with our "sailing strategy" by outlining a few implications these comments have on place-based community planning.

In 1956, George Miller (no relation) wrote a paper titled "The Magic Number Seven Plus or Minus Two: Some Limits on Our Capacity for Processing Information." What he basically said was that an average person could keep track of seven things in their mind at once. If you were really smart you could handle nine. If you weren't so bright you could handle five. Now, because you folks are obviously on the high side of this scale, I'm going to offer you nine implications of the thoughts that I've shared with you this evening.

1. We need a holistic definition of design that helps us understand the breadth and depth of our role as designers ... we are all designers.
2. Design (planning, community development, etc.) must be seen as a continuous process. We don't design it and then we're done ... we are in the domain of *continuous creation*.
3. Our ethic for judging good design vs. bad must also be holistic. We must see that the purpose of our design is to facilitate life ... all of life ... and not just the life of those advocating a special interest.
4. We need decision support systems that make *cooperation* easier than *isolation*. Let me say that again ... we need decision support systems that make it easier for those involved to cooperate than to sit in isolation.
5. Sustainability must be defined to accommodate growth, its rate, and its limits.
6. We must be literate and competent with GIS, decision support systems, and the Internet. These three technologies are going to work together.
7. We need a new institutional framework for our singular governmental agencies so they can cooperate more effectively and truly embrace the notion of place-based planning and design.
8. The role of "design manager" (an "environmental architect," if you will) must be established and crafted to provide the leadership for place-based planning programs.
9. And finally ... and this is very important ... the inhabitants of a "place" need to participate as cocreators ("codesigners," if you will) of their place.

And ... if we do all of these things, we will truly ... be better lovers! Thank you.