Second, is the importance of *making design decisions in the context of reality*, or with reference to accurate simulations of reality, rather than through abstractions. This relates directly to the distribution of control, since it usually means that a single person cannot be in the position to be connected directly to the reality of all aspects of a complex building or urban plan.

This way of making decisions improves their accuracy. It is also strongly connected to pre-twentieth-century practice, in which the architect's primary activity was on the building site, where drawings were often done in reference to the emerging reality of buildings on the site. This may seem to challenge the idea of design as prediction, but the point is simply that such prediction will be more accurate when it does not get too far away from a pre-existing physical reality.

Third, as an outgrowth of the second, is the importance of *breaking down the barriers between design and construction*. This is perhaps the most difficult to accept within professions that have become highly entrenched in the last hundred or hundred-and-fifty years. Alexander's point is that if design decisions are to be made in the context of the real thing, then they cannot stop when the construction of the building starts.

The work straddles "technology" – where technology is seen at least partly as an explicit, quantifiable system, and "high-style design." Alexander has a strong background in the English empirical tradition – he began his university education studying mathematics and science at Trinity College, Cambridge, where Newton also worked – but he is also an artist, with excellent intuitions about form and color, and functions well with the ambiguities that are often inherent in artistic creation. His theory of architecture and architectural production, along with the innovative building and planning projects he has carried out, are explicitly intended to allow rational and intuitive thought to co-exist. The work incorporates understandings of the structure of the environment that are explicit and rational, and demands scientific precision in developing those understandings. At the same time, it recognizes the importance of informed judgment, and most of all that the success of a building or place is to be ultimately measured in human experience and feeling.

The work as a whole provides a theoretical umbrella to a number of different positive initiatives that are taking place throughout the world, all of which are attempting to develop alternatives in process that might result in more humane built environments.

This is illustrated by three examples:

First, zoning and the application of building codes are two of the most technologically rigid systems in the contemporary building culture. Twentieth-century American zoning ordinances are notoriously rigid in their application, and one of their worst effects is the separation of uses within the city. These zoning and building codes are being changed in ways that increase their flexibility and allow some discretionary judgment. "Form-based codes" allow for a mixture of uses in a zone, not allowed by most ordinary zoning ordinances, within a framework of rules that try to ensure the compatibility of the buildings within a zone. Discretionary zoning allows for some degree of negotiation between the owner and the municipality, allowing for the particular location and situation to play a role, rather than only

rigid rules. And design review requires that each project be looked at individually within the framework of common design guidelines.

These new forms of zoning allow for human judgment – which statutory zoning does not – within a framework of commonly understood and agreed-upon standards. There is the need for rationality in the development of these standards, and for discretionary judgment in applying them.

Second, certain uses of digital media in the design process are leading to better communication and visualization. These include techniques of visualization, that allow the architect and her clients to place themselves into a virtual three-dimensional environment, that may be a close simulation of the building as it would be built; they include the direct translation of physical models into drawings, as done in Frank Gehry's office. They also include programs that allow for the very quick calculation, based on rough initial sketches, of such things as the energy performance of buildings or their cost.

Until now, digitial media techniques have mostly been used to speed up production within a paradigm of practice that has remained essentially unchanged for the last century. The new techniques help to support a transformation of the practice paradigm, by changing the kinds of information available to different participants; in many cases they help to break down the barriers between architects and clients, by helping the client visualize design proposals as easily as the architect can.

Third, there are new arrangements among contractors, architects, and fabricators, which form an attempt to break down overly bureaucratic arrangements, and allow for direct and useful connections between people in different firms that are concerned with the same aspect of the building.

These initiatives are not as exciting, perhaps, as the things one sees in architectural periodicals today. They are however all concerned with the processes through which buildings are built, and therefore have the potential to instigate change with respect to a large number of buildings and to affect the quality of the built environment as a whole. From the point of view of Alexander's theory, these initiatives are attempting to make the design process more transparent, to link it to the reality of buildings and places, to make it available to more people, and by so doing, to allow design to contribute more effectively to the repair of the built world.

My attempt to extend Alexander's thought into the realm of a variety of real-world pragmatic initiatives is probably not as important as the initiatives themselves and seeing the initiatives in the framework of how the processes of making buildings have changed over the last century and a half. But one thing that Alexander's work does is help put positive initiatives that are happening in different fields – planning, design, construction administration – into a common framework. This framework allows for these initiatives to be understood as emerging from compatible sensibilities and perhaps thereby giving support to those who are actively trying to find alternatives to the entrenched systems of building that make our world today.

The pre-modern architect worked in the framework of a process that allowed for a dynamic response to the physical and social context of the building. The ability to achieve that dynamic response was greatly reduced in the twentieth century and largely replaced by a way of building in which the satisfaction of explicit quantitative