P2P (PEER-TO-PEER) URBANISM.

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Part A. Problems with existing urban implementations.

1. Centrally-planned urbanism doesn't address anything but a big-picture view, and misses all the local details that significantly affect the solution. This centralized approach invariably works through large-scale destruction of existing structures (either man-made or natural), followed by the construction of lifeless non-adaptive solutions.

2. Money-centric large-scale development occurs when developers buy up huge pieces of land, then build cookie-cutter buildings (e.g. houses, offices). Alexander, Duany, Krier, Salingaros, and many others explain why the present top-down approach is a terrible way of doing things. A new generation of urbanists has demonstrated that the solution involves user participation and Smart Codes. P2P-Urbanism is not centrally-planned: it is built on evidence and real science, and it channels the forces of money together with human-centered considerations so that the outcome turns out to be more economically sound in the long term.

3. Small-scale projects are ruled out. Developers owning most of the land make it hard or impossible for "normal people" to buy small lots and build their house; to fix the place they rent; or to have authority to fix a small part of their street. The accompanying loss of local crafts and knowledge about vernacular building leads to people hiring an architect or builder and letting him loose. Since those professionals don't know all the details of the local environment (and have in fact been trained to ignore locality), they usually create something that doesn't quite work, and is built badly. The solution here relies upon the dissemination of knowledge, including building crafts.

4. Lots of people have big ideas that may not work (e.g. "they should make all of downtown pedestrian!"), yet everyone has small ideas that are almost certain to work ("that derelict sidewalk could very well be a tiny garden"; "that bus stop could really use a simple roof"). It is hard to find like-minded people who, once grouped together, may actually turn thought into action. It would then be useful to know about similar projects that have succeeded or failed. The dissemination of knowledge would tell everyone the current state of the practice of urbanism, where lots of central planning is invariably bad, academia is fixated on improvable philosophies, and money-oriented development rules without any controls.

Part B. Definition and solutions.

P2P (PEER-TO-PEER) URBANISM is an innovative way of conceiving, constructing, and repairing the city that rests upon five basic principles.

1) P2P-Urbanism defends the fundamental human right to choose the built environment in which to live. Individual choice selects from amongst diverse possibilities that generate a sustainable compact city those that best meet our needs.

2) All citizens must have access to information concerning their environment so that they can engage in the decision-making process. This is made possible and actively supported by ICT (Information and Communication Technology).

3) The users themselves should participate on all levels in co-designing and in some cases building their city. They should be stakeholders in any changes that are being contemplated in their environment by governments or developers.

4) Practitioners of P2P-Urbanism are committed to generating and disseminating open-source knowledge, theories, technologies, and implemented practices for human-scale urban fabric so that those are free for anyone to use and review.

5) Users of the built environment have the right to implement evolutionary repositories of knowledge, skills, and practices, which give them increasingly sophisticated and well-adapted urban tools.

DISCUSSION.

The demise of the "expert".

A new generation of urban researchers has been deriving evidence-based rules for architecture and urbanism, using scientific methods and logic. These rules replace outdated working assumptions that have created dysfunctional urban regions following World-War II. A body of recently derived theoretical work underpins human-scale urbanism, and helps to link developing architectural movements such as the Network City, Biophilic Design, Biourbanism, Self-built Housing, Generative Codes, New Urbanism, and Sustainable Architecture. Open-source urbanism allows active users to freely adapt and modify theories, research, and practices following proven experience and based upon their specific needs and intuitions. This collaborative scientific approach based on biological and social needs supersedes the twentieth-century practice where an "expert" urbanist determines the form of the built environment based upon improvable and "secret" rules, which are often nothing more than images and ideologies. Unfortunately, those improvable rules were claimed to be "scientific" since they maximized vehicular speed and building density, even at the expense of the residents' quality of life.

Peer-to-peer urbanism is applicable across a wide range of implementation scenarios benefiting from various degrees and forms of user participation. The most "formal" instance assigns the responsibility of constructing urban fabric to professionals, who however apply open-source guidelines and work together with end-users to develop the design. Even in this instance, which is most congruent to existing practice in the wealthier industrialized nations, design is carried out jointly and collaboratively. We avoid the current practice where a centralized power concerned only with ensuring that each part is working according to a rules schedule eliminates all external input. The other end of the peer-to-peer spectrum occurs in "informal" building, where professionals who are trained in open-source urbanism act mostly in an advisory capacity to guide citizens primarily responsible for both design and construction.

Researchers working within New Urbanism have developed the Duany-Plater-Zyberk (DPZ) "Smart Code" and other versions of comprehensive, open, form-based urban codes that can be legally implemented and can replace the post-war modernist codes now legislated into practice in almost all the developed countries. These codes are free for downloading. The DPZ "Smart Code" is also open-source, since it requires "calibrating" locally, a task of adapting it to traditional (i.e. pre-war) urban dimensions for those who wish to implement it. Unfortunately, many regions refuse to revise their modernist urban codes that are the opposite of the "Smart Code".

The Importance of Human Scale and the Problem of Gigantism: Patterns as Solutions.

Throughout history, human-scale urban fabric was always designed by people to fit their bodily dimensions, to accommodate their everyday movements, and to feed their sensory system and basic human need for socialization and interaction. With industrialization, architects and planners turned away from these geometrical mechanisms for building social structure to instead impose a visually empty, banal, and lifeless environment built with spaces and dimensions that are far larger than the human scale. The traditional ergonomic modules have been forgotten and the knowledge of how to build them lost. Since then, a visually sterile gigantism has become the goal of a false urban modernity.

P2P-Urbanism begins with spontaneous owner-built settlements. Rather than being a threat to formal urbanism, user participation contains an essential ingredient of human-scale urbanism. The architect and software visionary Christopher Alexander anticipated P2P-Urbanism in the book "A Pattern Language" in 1977. He and his co-authors launched the idea of the right of citizens to have a say in designing their own environment, and also gave an open-source methodology for doing so: the 253 "Patterns". These Patterns were not offered as a final word on design, but as working documents that could be adjusted and supplemented as needed after further research. So far, the Patterns have helped in two ways. First, as

a diagnostic tool for judging whether a design — proposed or built — is adaptive to human use by whether it satisfies or violates the relevant Patterns. Second, in providing an essential tool that, when combined with an adaptive method of design, will help to produce an adaptive end result. (The Patterns are not a design method *per se*, and their application is described in "Principles of Urban Structure". Also, despite their original intention of being "open-source", the Patterns have remained unchanged since their publication).

Participative Planning and its Foundations.

Similarly, communicative-action planners have sought to re-discuss rational, scientific urban planning by advocating the need for better and truly engaged democratic participation. Rather than being only a science — and one that was badly misapplied up until now — urban planning should be understood as a communicative, pragmatic social practice where planners need to get their "hands dirty" so as to facilitate intercultural dialogue and implementation.

Even in a large project such as a hospital, airport, or Art Museum, it is very often the case that the design is arbitrary and sculptural rather than functional. The users were not sufficiently involved in the design, nor were Patterns developed and applied towards the appropriate uses. This is the reason why some of these extremely expensive buildings range from being not optimally functional, to downright dysfunctional, and detract from instead of contributing to the urbanism of the region in which they are inserted.

A separate strand for reflection comes from urban activism and transdisciplinary urbanism. Here, innovative thinkers have sought to contest classic and market-led urban planning and policies. Moving beyond the purely physical form-oriented aspect of urbanism, we are beginning to emphasize the political and social interpretations of urban environments. Artists, designers, and activists have cooperated with local stakeholders to claim alternative forms of democratic participation (full citizen participation, etc.) and improve the human quality of urban living.

The Importance of P2P and Open Source.

Recent developments in information and communications technology are having an impact on P2P-Urbanism. The free software movement, thinkers who are establishing a new domain of open-source productions freed from the restrictions of copyright, and the peer-to-peer network emerge from the World-Wide Web and re-examine the basis of closed-source thinking. The Wiki format coupled to the idea of Patterns brings the approach to city building back to genuine human needs. The Internet has made possible an open-source environment, thus challenging the

obscurantist wave of "experts" and copyrighters who drastically limit both choice and innovation.

P2P-Urbanism: A New Community of Practice.

In the XXI century, new architectural movements, socially-engaged urban planners, innovative urban theorists, and online/offline P2P communities are coming together to challenge the established post-modern professional and architectural academic environment — the latter dominated by the belief that a few single demiurge-architects can determine urban dynamics. The definition and ideals of P2P-Urbanism are constructed from the bottom-up. This process takes scientific results and theories on human biological and social needs and adds them to the on-the-ground experience of a myriad of actors and agencies (architects, urbanists, small firms, professional studios, NGOs, social workers, etc.) that are confronted daily with urban problems on the micro-scale. P2P-Urbanism is now in continuous development, and merges technology with practical experience in a way that is innovative, open, and modifiable.

Beyond its obvious socio-political implications, P2P-Urbanism means to establish a framework for sustainable built environment in the following sense. The ability to adaptively shape the urban fabric allows its residents to actively participate in its growth. This endows emotional ownership to the place, coupled with the responsibility to care for it and love it. A collective vision — whether generally shared or embodying a healthy diversity — makes it possible to connect to living local traditions and to better resist anti-urban forces imposed from the outside by systems of power uninterested in the inhabitants, the culture, or the unique specificities of the place. Often, the answer involves re-kindling the local building tradition that has been suppressed by outside developers implementing a generic industrial model.

Re-Establishing The Commons: Learning from Squatter Cities.

The world's housing problem can only be solved by channeling those same forces that generate informal settlements. Bottom-up forces arise from a natural need to use available materials, to build the most physically and emotionally comfortable human-scale environments, and especially to weave the urban fabric so as to nurture ordinary life on the street and in urban spaces. P2P-Urbanism, therefore, is not just about design; it is about enhancing and supporting the energy in informal settlements by providing P2P services of all kinds. We will also develop the idea of social credits as a possible way for governments to recognize and honor the social capital of informal settlements. A community that provides support to its own members and the rest of the city would earn "social credits", which could be traded a bit like carbon credits for building materials, infrastructure, or anything else the

community needs. This approach makes informal settlements not just recipients of what government needs to do for them, but it puts communities in a stronger position to negotiate what they want on their own terms.

A Biological Paradigm.

After the work of Edward O. Wilson on Biophilia, we now know that human beings react positively to the biological information in their environment and to specific types of complex mathematical structures such as fractals. Thus, the need for a certain type of structural complexity in our surroundings is not simply a matter of aesthetics but a key to our physiological wellbeing. Alexander, and other researchers following his lead, identified those precise structures that generate a healing environment. P2P-Urbanism is intrinsically biological, in the sense that it learns from nature and from living processes, and follows as an unintended complement to natural morphogenesis. It is impossible to follow this process without keeping in mind the problem of "objective science" and a critical envisioning of subjectivity, real human needs, goals, and meaning.

A new synthesis between consolidated architectural and urbanist thinking and peer-to-peer urbanists is arising from the failures of a political approach to urbanism, and this will allow us to plan for a better urban environment in our future.

Background on human-scale urbanism.

http://zeta.math.utsa.edu/~yxk833/lifeandthegeometry.pdf

Some publications on Peer-to-peer Urbanism.

www.biourbanism.org

http://www.greekarchitects.gr/en/architectural-review/peer-to-peer-urbanism-id1973

http://blog.p2pfoundation.net/urban-seeding-and-the-city-as-computer/2008/09/08

http://p2pfoundation.net/Peer-to-Peer_Themes_and_Urban_Priorities_for_the_Self-organizing_Society

Reference Books.

Christopher Alexander, Sara Ishikawa, Murray Silverstein, Max Jacobson, Ingrid Fiksdahl-King, and Shlomo Angel (1977) *A Pattern Language*, Oxford University Press, New York.

Nikos A. Salingaros (2005) *Principles of Urban Structure*, Techne Press, Amsterdam, Holland.