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*** This project was submitted to an international open context held in June in Italy and titled "Un'idea per la ricostruzione". Together with other proposals, it was selected Among 204 participants for a honorable mention.***

We present in this proposal a scheme for efficient transitional housing for the communities of Abruzzo accounting for the need to maintain the social cohesion of original communities under reconstruction, given the protracted periods of time this may incur with the restoration of the traditional regional forms of architecture which are themselves both a source of cultural identity and economic benefit.

**Emergency, Transition, Restoration**

The greatest threat to a community struck by natural disaster is not the disaster itself but the loss of social cohesion that can result from the immediate actions taken to secure public safety. When this cohesion is lost the ability of a community to function as a social/political unit to work and -sometimes- fight for its existence and the restoration of its physical architecture is greatly diminished.

In any natural disaster there are three basic phases calling for the use of three different forms of architecture; Emergency, Transition, and Restoration. In the initial Emergency, saving lives in the midst of a dangerous situation is the priority and expediency compels a military-style mobilization of populace and resources and the deployment of very rudimentary and temporary forms of relief shelter based on ‘instant structures’, such as tents and similar light pre-fab quick-deploying structures. In the phase of Restoration, the objective is to create permanent housing for a large population as quickly as possible, either by creating
completely new planned habitats or by restoring existing architecture. In the case of Abruzzo the cultural and economic importance of much of the original architecture compels true restoration rather than quick-build substitutes that will ultimately detract from the value of the communities and be deemed substandard, but at the same time imposes a longer period of restoration because of the pre-industrial nature of this architecture.

Between these two phases is Transition where the instant structures of relief shelter must be replaced by very economical and ‘rapid-build’ shelter – ideally as physically close to the original habitat as possible – that can remain comfortable for a protracted period of time as Restoration proceeds and can be removed easily and cleanly when no longer needed. This is a very critical phase but one that is historically not handled well because this is often a point where the needs of communities as communities – not masses of population – come into conflict with political expediency and misconceptions about the time and scope of Restoration. There is often a presumption by authorities that Restoration can be performed so quickly no Transitional phase is necessary. However, this is almost never actually the case and would most certainly not be possible with communities based on architecture going back to medieval periods. Often, as the unanticipated suffering of a populace living for protracted periods in relief shelter devoid of functional infrastructure becomes apparent, authorities grasp frantically for quick solutions and often resort to mass relocation or dispersion of the population. And it is this kind of response that poses the most threat to a community – far more so than the original natural disaster. Because here the disruption of the social structures that bond a community together becomes permanent and the community no longer has the means to work and fight for what they consider to be an appropriate restoration.

The most important thing that needs to be restored after a disaster is not the local architecture but the social cohesion upon which the existence and function of a community depends and which is the reason for the architecture to exist in the first place. Communities are not made of architecture. Architecture is merely an expression of the community. They are the elements of a habitat a community creates to shelter itself with. Coral doesn't make a reef. Coral is what the polyps make the reef environment with. They are the reef. This is an alien concept for many, raised in and accustomed to the increasingly anachronistic paradigms of an Industrial Age which had little use for traditional communities because they hampered from the willing mass-mobility of workers and created political factions inconvenient to those seeking to centralize political power. But in much of Europe history and tradition helped community survive in ways not seen in places like the Americas. The Abruzzo region is an especially good example of this, and of the
significant cultural and economic value of this.

What we propose is a form of transitional architecture specifically intended to quickly re-establish the functional 'social infrastructure' of damaged towns in ways similar to the original architecture being restored and in the immediate proximity of the original towns so that people are 'at home' and able to function as a community to support the restoration effort. Our key tool for this is a concept called Peer-To-Peer Architecture; building methods that allow the inhabitants of a community to design and spontaneously redesign their habitat as they see fit. With this communities can reconstruct, through their transitional housing, the same neighborhoods and socially important structures they know as 'home' in parallel to and in proximity to the original community architecture under restoration. And there's no preconceptions here as to how this works. The communities come together to design their own habitats and whatever doesn't quite work later they are free to change, allowing the community to be fully functional in the midst of the restoration effort.

**Collaborative Community Design**

Professional architects and builders are a very recent invention. For most of the history of civilization people have relied on themselves, their immediate families, and their communities for the creation of shelter - the sharing of labor for that creation, in fact, being one of the key reasons why people formed communities in the first place. There is a common misconception that, barring the occasional ruler with an interest in building beyond his own elaborate dwellings and with the aid of rare geniuses like Imhotep, all early architecture was an ad hoc and largely individualistic affair. In fact, most historic human settlement employed urban densities as a matter of practical necessity and were often based on communal structures such as walled enclosures and contiguous dwelling structures which required communal labor, continuous maintenance, and thus compelled a continuous group negotiation over the allocation, location, and configuration of personal space. A very organic yet orderly evolution of architecture resulted with a certain uniformity yet flexibility in dwelling design that is a reflection not merely of vernacular building methods - which co-evolved as an expression of this collaborative design - but a flexible communal notion of fairness and equity of property rights in lieu of market systems. Before we started on the tact of virtually subdividing the landscape according to imaginary grids, the limits of property were a dynamic social convention constantly - interactively - negotiated.

The sophistication of this collaborative design was often very great, collectivizing cross-generational knowledge/wisdom, exploiting bio-climatics, adapting rapidly in response to environmental and situational changes, producing structures of
tremendous scale and durability, and sometimes anticipating contingencies centuries in the future at times when an average lifespan was half of what it is today. But it was often severely limited in its pace of evolution and ability for response by the labor overhead involved in early construction methods based on high mass materials like earth and stone. This often resulted in a hierarchy of collaboration based on the scale of labor needed for any particular architectural adaptation, ranging from light and small structural features which were within the scope of a single person or immediate family, impacted only immediate neighbors, and thus could be more ad hoc and spontaneous in change to larger communal structural elements which needed whole community participation in their construction/ modification.

As those villages of strategically important location -crossroads of trade/commerce and centers for key resource commodities- evolved to cities and became seats of concentrated political power for ever-larger regions the traditions of collaborate development gave way to hierarchical authority distributed from afar. As we learned to wage war on progressively larger scales the architecture of communities often became ‘militarized’ in the context of strategic military defense and thus their community-level collaborative design often superseded by military ‘experts’ -often rulers themselves- employing them as ‘hard points’ in a larger regional defensive schemes. This resulted in increasingly less organic top-down rather than bottom-up design methodology and the eventual adoption of that key architectural hallmark of western civilization and property ideology, the rectilinear street grid. Collaborative development continued to persist on the smaller scale of neighborhoods and rural villages for a long time, until finally succumbing to Industrial Age mega-bureaucracies which had little or no recognition of community identity below the level of the larger province, state, or nation-state. Our cultural memory of collaborative community development faded and became associated with the dwindling base of skills embodying particular vernacular building traditions.

In the 1950s utopian artist Constant Nieuwenhuys, inspired by observations of the communal behavior of nomadic Romani communities, realized the potential of collaborative community development when combined with the benefits of modern demountable building technology, or 'plug-in architecture' as it came to be known among Modernist designers. Envisioning a utopian culture rooted in the notion of a spontaneously adaptive habitat, he envisioned a new urban environment where structural elements at the human scale were freely adaptive on-demand while progressively larger features of the habitat involved progressively greater planning and collaborative group involvement -very much as with communities of the past but with a far greater ease and pace of evolution and a far
more comprehensive control of the sensual aspects of the environment with the advent of new building, energy, climate control, and communication technologies. Nieuwenhuys saw in this organic collaborative creation of habitat the potential for a far more socially adjusted and intellectually engaged culture better suited to the rapidly evolving situation of modern life that also had the very practical benefits of an improved standard of living and better integration with the natural environment. Unfortunately, the technology of the day was not quite up to Nieuwenhuys’ vision and though a great many modular, demountable, and plug-in building systems have been devised and developed, few have survived to the present day in the face of a reluctant building industry.

Driven largely by the novelty and potential of emerging building technology integrating both the technology and design sensibility of Information Technology, new interest has recently emerged in this notion of collaborative community development deriving from the Open Source software -and now hardware- movement and its strategies of Peer-To-Peer organization of development activity. A new awareness is emerging that the common dysfunction of the contemporary urban habitat is rooted in its tendencies toward personal anonymity and the inability to effectively evolve with changing contemporary situations under top-down, centralized, specialized, professionalized, authoritarian management. New contemporary forms of ‘smart’ plug-in modular architecture offer prospects of rediscovering/reinventing the potential of bottom-up collaborative community development, transforming the relationship between ourselves, our communities, and our built habitat toward a more organic dialogue that imparts upon the built habitat a heretofore unknown level of integral -encoded- intelligence. They also offer new prospects of industrialization of housing through the cultivation of ‘platform’ rather than ‘product’ focused decentralized global ‘industrial ecologies’ like that of the computer industry -a manner of industrialization very different from classic Modernist models derived from examples of the primitive auto industry. However, current plug-in building technologies remain -for the most part- experimental or limited in commercial development, limiting the scale at which implementation of P2P/collaborative development can be explored in the contemporary context, and for that matter immediately deployed for a relief effort. One seemingly unlikely and relatively low-tech modular building technology, however, if ready to use in this context and perfectly suits the situation now facing the communities of Abruzzo.

**Microvillage Cargotecture**

The use of adapted ISO shipping containers -often called ‘cargotecture’- for relief shelter is nothing new and has many advantages in the role of emergency relief
and transitional shelter. Though the cost-effectiveness is dependent upon local market situations and industrial capability - which, thankfully, Italy is suited to - containers offer a means of quickly creating extremely durable, temporary, and comfortable homes and buildings that have low environmental impact and can be quickly removed without leaving a trace. Their only down-side is aesthetic, retaining an industrial appearance unsuited to the tastes of most middle-class people unless costly cosmetic treatment is applied - not an issue for structures intended for the role of transitional housing. It is quite likely that other entries in this competition have proposed cargotecture use. However, we propose to use this technology in a very different way. Container shelters are typically fabricated as trailer-home-like all-in-one units deployed in the manner of military camps. Appropriate for short term emergency relief activity, this offers no advantage over any other form of portable relief building and does nothing to reestablish community infrastructures, invariably becoming dysfunctional and unlivable. We propose to use containers as modular elements for the construction of complex multi-storey structures formed of single, pair, triplet and quad side-by-side room sets with a number of additional accessory elements such as stairways, walkways, pergolas, and outdoor decking. These would be combined into larger conjoined complexes serving as neighborhood clusters - microvillages-, freely designed and adapted collaboratively by their own inhabitants in order to approximate some of the character of their original homes and reestablish, in parallel, the same social, commercial, industrial functions of damaged structures under restoration. It would be as if the community established a retrofit life-support structure within and around the 'body' of their original habitat - their home- as it is being 'healed' through reconstruction. As original structures are restored and brought back 'on-line' in function within the community, these transitional structures can be incrementally repurposed or removed, leaving no trace thanks to quick disassembly and simple low-impact foundation systems based on prefabricated piers.

Assembled from varying combinations of container modules modified for different uses, these microvillages would be mixed-use structures combining residence with public features and some commercial and light industrial activity that assume the same functions of the damaged parts of the original towns and would employ an architecture - deriving from the inhabitants' own concepts of comfortable and functional form- paralleling, to some modest degree, the architecture of their original neighborhoods. Many would center on squares, courts, or atriums as employed by the traditional neighborhood architecture. The objective here isn't to mimic the original architecture. These are not intended to somehow compete with that as a permanent habitat. Rather, the point here is to reestablish the functions disrupted in the damaged towns so that as close to a normal community routine
can be restored while the inhabitants wait and work on the restoration. Emergency shelter need only consider the short-term issue of human safety. But transitional architecture must account for the _full function_ of a community; social, cultural, and economic. So we are talking not just about residential structures but shops, workshops, offices, churches, schools, clinics, recreation—all the things that make a living town and community work and which, in the case of the unique and ancient communities of Abruzzo, are very intimately integrated architecturally. With this seemingly simple building technology we can re-create, in a miniaturized, temporary, form, all these functional elements. And there need be no pre-conception as to what is functional or not. We derive that from the knowledge of the inhabitants through their collaborative design of neighborhood clusters while the free demountability and adaptability of this building system allows one to fine tune these structures as necessary over the course of their use.

The basic module set for our system is composed of the following structural elements;

- **Shelter Units**: basic 20'x8' finished building units for housing and other uses composed of single-room and multi-room sets with one or both ends fitted with windows or sliding door units. Sides are either fully open (for side-to-side connection) or closed with one or two openings matching the end window/door dimensions. Can be grouped side-by-side to make 20' wide clear span bays of any depth in multiples of 8'. Can also be joined end-to-end. Can be stacked many storeys high. A typical minimal single-person dwelling might combine just three modules, two for a common room and one for a combined bathroom/kitchen module. A typical family dwelling may combine 6-8 or even more base shelter modules.

- **Shelter Accessories**: special purpose single container modules for pre-finished bathrooms, kitchens, utility systems, staircases, balcony/decks, repositionable friction-stay partitions, rooftop gardens and decks, and the like.

- **Open Space Modules**: containers modified with no walls used to create outdoor spaces and outdoor structures like gazebos and seating areas interconnected to the shelter modules. Would also be used as open interstitial elements to support raised/cantilevered portions of the shelter structures. Would consist of flat bed decks, open frame decks, pergolas, covered deck/walkway, covered/outdoor staircase, shallow open top planting beds (particularly suited to greywater recycling systems), etc. Would also support optional accessory modules like planting boxes, trellises, integrated bench seating and outdoor tables, tensioned shade tarps, etc. To cover larger areas with fewer modules, flat deck units may employ 40' container frames.
Special Purpose Modules: concerned mostly with infrastructure systems including solar/wind power, telecommunications, water supply, waste processing (though most dwellings may employ marine incinerating toilets), trash handling, etc. Would also include kiosks for small shops and outdoor cafes and certain health and recreational facilities.

Industrial Units: simple work-shed variation of the Shelter Units intended for light industrial applications and used for local container modding facilities as well as work facilities for the ongoing restoration work. Would include translucent roof panels and a side-mounted garage door unit allowing handling of large bulky objects and the use of small fork lifts.

Participation and Urbanism 3.0

The situation of earthquake victims demands expedience and so a simple and straightforward approach to design collaboration is necessary to make the process of designing neighborhood clusters as speedy as their physical assembly — a process which, with these container modules, may take one to a few days for basic assembly and one to a few weeks for complete outfitting. In both traditional community development and anticipated community development based on more advanced future small component plug-in building systems a more direct physical interaction with building elements would allow for a very direct design conversation between people and building elements as structures are built. This will be particularly apparent with future building technologies where the building elements are very easy for individuals to physically manipulate and where structures will embody integral information systems that, in a sense, have the structural engineer built-in and very actively communicate with user/builders the details of structural integrity and safety standard compliance as structures are assembled and changed. But for the moment we must deal with rather large structural elements manipulated by crude machines such as reach loaders and so we need a means of ‘conferencing’ the design collaboration process in advance in a way easy for people with little or no building experience to understand.

However, our main priority is to develop a design process which is open to the local community. We think that after establishing a nucleus of our cargotecture we could then involve local stakeholders in the development of temporary settlements. This participation process is actually coherent to our P2P ideal. We think that for the self-sustainability of any design process a direct involvement of locals must be achieved. To do so we will use a previous experience that our network had the opportunity to carry out in Tallinn in 2008.

Plug & Plan urban centers are a system of temporary, removable, and adaptable
urban workshops creating the necessary space to allow experts (say architects, planners, region makers, researchers) and non-experts (say NGOs, inhabitants) interaction.

Within these urban centers will be carried out P2P urbanism to inform the re-construction of L'Aquila. The projects developepd will be atlases, plans, maps, texts, software, anything useful to inform a new life for L'Aquila.

Wiki planning could be one of the task of Plug & Plan centers. With simple tools (say paper models) architects and inhabitants could together develop different urban scenario, displace economic and cultural activities, mediate impacts on the surrounding environment. Architects would assist with pre-designed dwellings residents could pick and then customize. In the neighborhood conference stage these individual dwellings are then combined into a neighborhood cluster with more active participation of assisting architects and building engineers. Once a communally agreed-upon design is created from all these models, the architects then compile the whole community assembly plan, which would then be given to the container modification shops and the on-site assembly work crews.

This conferencing approach is not only intended to be a mode of collaborative design but also a means to restoring a sense of empowerment to the members of the community. Victims of natural disaster suffer much loss of dignity and sense of self-worth by the way they are pushed around by their situation, first by the cataclysmic forces of nature, then by well-intentioned but still militaristic emergency aid personnel, and then –over protracted periods of time– by government bureaucracies. Though commonly overlooked, it’s important to consider the psychological impact of all this on disaster victims. With this collaborative design process we give back these individuals a sense of control over their own destiny through active and shared participation in their own transitional habitat and thus their own recovery process. We give them ownership as a community of the restoration.

Yet in Plug & Plan centers will be developed Urban Artistic Interventions to simulate the actual change and collect, ex-ante, social feedbacks. A Urban Artistic Intervention is a performance, or a panel of performances, in public spaces meant to stimulate people imagination upon alternative urban scenarios. Using UAI to collect social feedback will be extremely useful to forecast social, economic, and environmental sustainability of our project.

We have called this approach Urbanism 3.0, a new way to deal with urban issues, where trans-disciplinary research and P2P urbanism merge together for the study/planning/developing of urban environments.
Flexibility of our proposal

Because the containers employ the simplest of modifications and are otherwise generic building elements, they would be completely free for further customization by their inhabitants with many means for self-expression possible -everything from interior decor to gardens and other outdoor features. Residents will likely employ their own ingenuity and invention in adapting these structures to their needs and tastes as part of fine tuning them -a process likely to continue for as long as these dwellings are used. Aiding such customization would be a local container modding facility near the communities and employing local people which would serve for maintenance and modification of community structures over their period of use. Much of this customization would be indoors and on the level of the household or small business and so would need little community involvement beyond negotiation with immediate neighbors. But larger outdoor projects -such as community gardens and outdoor recreation facilities- would also possible and would be handled by neighborhood conference. Gardens and building customization are not commonly considered elements of relief architecture but we see this, again, as having great importance from the standpoint of psychological recovery and the reestablishment of a normal community routine. We must bear in mind that this transitional architecture must house a community comfortably for many years. Indeed, some of the original architecture damaged in these earthquakes may take decades to restore. We don’t want to compete with the permanent architecture under restoration but at the same time the microvillage must not impose hardship on its inhabitants.

The free demountability of the structures also means that the initial community design is not set in stone. At any time things that prove less workable or effective than originally anticipated or which must be updated to suit changes in the neighborhood situation, can be changed with minimum disruption to the community. In fact, the neighborhood cluster would actually have the option to physically reconfigure with the seasons to maximize the bioclimatic function of the architecture. For instance, becoming more enclosed in the winter months and more open with open outdoor spaces in summer and being able to deploy special seasonal structures. This adaptability would also be important for light industrial and commercial activity where businesses must cope with less space than they may have previously had with their permanent buildings. All architecture learns. That which does not anticipate the need to facilitate this learning will still learn -the hard way.

As restoration of the original community architecture proceeds, these transitional structures would be incrementally obsolesced. Some would be removed, others
repurposed and moved to different locations. Durable as they are adaptable and demountable, there are innumerable possibilities for repurposing and recycling of these container modules for use in other relief efforts, as light industrial buildings, and for facilities such as schools, dormitories, hotels, commercial buildings, and more. Some might also be returned to their original purpose as shipping containers or they could be completely recycled as scrap metal. Ultimately, these transitional structures would disappear completely from their sites leaving no trace. However, we anticipate that their impact – particularly the social and cultural impact of this P2P collaboration – will be lasting, leaving stronger communities with a greater sense of empowerment and community identity.

Conclusions

Though the disaster that has struck the Abruzzo region has brought tragedy and hardship, we see here a potential opportunity to demonstrate a much more effective and humane response to disaster recovery. Recent history has been rife with examples of national disaster response as destructive and disruptive as the disasters themselves. Unfortunately, we are in an era of history where disasters, natural and man-made, are occurring at an unprecedented pace. We, as a global society, must devise more effective responses to this. So far, the Italian government has done an admirable job of initial emergency response in Abruzzo. With this proposal we hope to offer a strategy for continuing this exemplary response through a transition and restoration that will serve as a model for the world. We believe this unique peer-to-peer approach to architectural collaboration will result in swifter and more complete recovery for these stricken communities and an even stronger social infrastructures than may have existed previously, preparing them for other future challenges that will most certainly come in time with our rapidly evolving world.
"we can think of urban centers as deployable, with a flexible topology to fill wherever..."

2\PARTICIPATION\PLUG & PLAN

HOW PLUG & PLAN WILL WORK: URBANISM 3.0

Urbanism 3.0 is a new generation of urban research and practice, focusing on plug and play strategies. The core idea is to develop a methodology that allows researchers and practitioners to design and implement interventions in urban space.

Participatory Action Research is an intervention methodology that puts all stakeholders and experts in the decision-making process. It is based on the idea that everyone should be involved in the planning and implementation of projects.

Actor-Pluralism is a methodology that allows researchers and practitioners to collaborate and work together towards a common goal. It is based on the idea that everyone should have a voice and be heard.

Open Source is an approach to the design, development, and distribution of knowledge. It is based on the idea that knowledge should be freely available to all.

Participatory Planning is a methodology that puts all stakeholders in the decision-making process. It is based on the idea that everyone should be involved in the planning and implementation of projects.

P2P Found: CITIES

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