CITIES FROM THE BOTTOM UP: 22@ PLANNING, A SYSTEM ATTACHED TO CHANGE

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> "A system is a set of things- people, cells, molecules, or whatever- interconnected in such a way that they produce their own pattern of behavior over time.
>
> The system may be buffeted, constricted, triggered, or driven by outside forces.
>
> But the system's response to these forces is characteristic of itself, and that response is seldom simple in the real world."
>
> - Donella H. Meadows[1]

PURPOSE, BOTTOM UP URBAN DESIGN

I first became familiar with 22@ and Poblenou here in Barcelona, Catalunya, visiting in 1998, living there in 2007 and doing focused research over the past three years. The research has focused on a theory of bottom-up urban design as an opportunity to demonstrate how a framework for participation between the individual blocks may enhance existing connectivity by supporting *local cultural events* and protected *modernisme* built-fabric to create an adaptive neighborhood system that integrates 22@ workers and residents to local differences of identity over time. To understand a systems approach to city planning I will explain *organization* from the bottom-up, *calibration* to existing conditions and *evolvability* to emerging cultural identity. These systems are not merely designed for change, but are deeply attached to change. The value of such a theory is the ability to devise a method for city planning that allows the identity of a place to evolve with its people from the bottom up.

Background

In 2000 the city government of Barcelona conceived of an information activities district, similar to Silicon Valley, located in the post-industrial and residential neighborhood of Poblenou.[2] Its dual purpose was to diversify the city's business activities and to continue urban renewal along the waterfront. Unlike the *tabula rasa* top-down urban planning for the 1992 Olympic Games that demolished large expanses of the city, the planning of 22@ promoted a plurality of small and medium sized enterprises by protecting historic industrial fabric and newly specified block-by-block guidelines for minimums of 10% open space, 10% protected residential and 10% 7@ social service uses.[3] Rather than adopting classical axial structure to connect blocks, the *connectivity* of the 22@ blocks will depend, I argue, on material and cultural events already characteristic of the district to weave public spaces together at the scale of emergent pedestrian neighborhoods. This generative process encodes small-scale differences of urban design interventions to link existing behavior patterns and frameworks for the evolution of Catalan culture in the district.

Organization from the Bottom Up, Agents and Dispersed

The organization of the 22@ district is made up of a set of block agents that are dispersed over the Eixample planning however, unlike the Plan Cerda with consistent blocks of open courtyards and residential above commercial ground floor storefronts, the guidelines for distribution of uses of 22@ parcels are non-specific to location within the block. The guidelines remind us of work by Sol Lewitt that is a set of drawing instructions resulting in iterations of drawings that are contextual dependent to the variety of places of deployment. The 22@ blocks like the iterations of Lewitt are variants belonging to a family. The resulting plan is decentralized. The guidelines adapt to a variety of local conditions such as historically protected buildings different in each block as well as existing plot lines and existing identities in each block and pedestrian scaled neighborhood.

The background of identity and scale of neighborhoods in Barcelona traditionally centered on previously autonomous town halls and the quality of pueblos in the city provides a critical background for understanding the operative nature of physical space and cultural events that define places as frameworks for participation. Les Festes de Gràcia for example is a series of events that connect small, non-continuous streets that creates an organization of spaces calibrated to human scale becoming the places for new themes each year materializing changes in cultural identity of neighbors across ages: months before the festival to plan, weeks before the festival to collect materials and fabricate decorations; days before the festival to install materials, during the five days of the cultural event activating the installations and ultimately removing the materials for recycling. A plurality of identity emerges from the agents of local residents upward organized at the scale of the block as residents eat, drink, dance and socialize together meshed into a non-hierarchical[4] network of these blocks across Gracia. The event, its memory and its anticipation, becomes the organization of the neighborhood throughout the year.

Figure 1. Community participation installation at various blocks for Les Festes de Gràcia, © Ilcla:BCN.

The everyday phenomenology[5] of Les Festes de Gracia highlights a dependency on external atmospheric affect or conditions that emerge from the dispersed local identity. In this way Gracia operates as a solution to what Bruno Latour would criticize as the static[5] nature of architecture, moving closer to the 'attachments'[78] of architecture that is alive. I see an important distinction in the way architecture today incorporates time, during the design process to test a variety of possibilities and iterations, and looking beyond the design and construction process but to scenarios of ways in which the architecture will play out with changing conditions over time. The later idea of scenario planning for the life of the building and the idea of changing phenomenon as a mode of attaching architecture, calibrating to external forces is helpful to understand bottom up urban design.

Calibration: Scale, Politics and Time

As we try to understand the design process of an adaptive system that recognizes and supports cultural features of current local identity, the system must be calibrated to a specific type of change. Artist Ned Kahn's work identifies a change, namely the changing patterns of wind, I will call a *free energy flow*. To make visual this phenomenon of the fluid dynamics of air Kahn's work calibrates small unit elements to shimmer in just the right amount within a predicted range of external forces of wind. What is so powerful and clear about Kahn's work is that the final visual system he creates is *part identification of the phenomenon of wind* and *part calibration of the material interface*. The physical work, like Lewitt's drawing, is incomplete without the external force and in fact shows no indications of complex patterns at all, until attached to the external *free* forces of the changing world. Bottom up city planning has the ability to act in the same way.

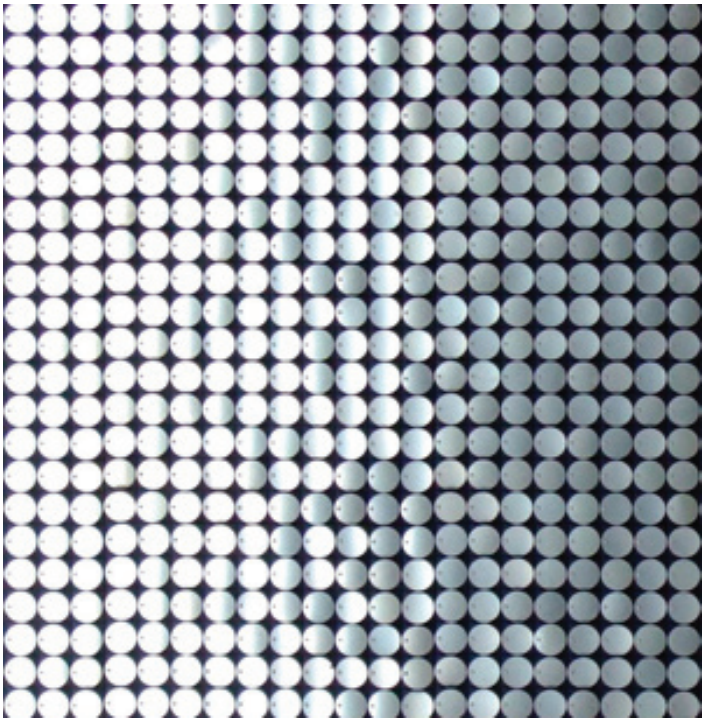

Figure 2. Artist Ned Kahn, SFO BART

The shift in city planning strategies in the nineteen eighties under mayor Pascual Maragall and city architect Oriol Bohigas from the Lapiz de Oro strategy to effect many of the everyday urban spaces

across the city to the top-down tabula rasa planning for the Olympic Village dismissed the values of existing local conditions and leaned toward private and internalized spaces that were less capable of self-organization through participation.[9] This example points out political forces that counter the effective use of bottom-up planning. The lack to this day of Barcelona identity and ground level storefront street activation in the Olympic Village may be attributed to the short-term planning of the Games as serving the short-term Catalan regional purpose of large-scale infrastructure and global media exposure rather than the long-term identity of the neighborhood rooted in the ethos of its place- suggesting that calibration alone is not enough but one must ask what the political scales of calibration as local and regional in planning.[10] Neil Smith and David Harvey point out the globalization and neoliberal forces of capitalism specifically in Barcelona 'that eroded both economic boundaries set by the national state system, which in the late nineties was increasingly difficult to identify a coherent national economies, separated from each other,' recognizing calibration to *scales of politics and time.*[11]

The political empowerment of neighborhoods as left by the tradition of pueblos and previously autonomous town halls in Barcelona provides a locally calibrated, scale-specific identity to the expectations of identity to residents. Specific cultural features include the music festivals Primavera Sound and Sonar, harvest celebrations such as calçot gatherings, Temps de les Flores in Girona and cosecha grape harvests, daily food culture at the network of public food markets throughout the city, annual patron saints and Los Reyes celebration for each neighborhood and other cultural events specific to neighborhoods. In Spain and Catalunya in particular where social interaction is prevalent in outdoor public spaces, these spaces operate as frameworks calibrated to specific types of events that are in no way generic but in everyway a wedding of physical morphological space, climate, agriculture and other external conditions that attach the organization to place.

Evolvable: Open-endedness and Precise

The objective of bottom up planning as a theory and in the 22@ district is that it not only calibrates to a single, *static* existing condition but that it adapts to *each new* local conditions that emerges over time. This move from singularities toward relationships is precisely where the development of a 'third generation of digital technology' embraces the 'practical' realm of parametric systems and external forces that support evolvable design strategies.[12] Years ago Stan Allen introduced me to *The Art of the Long View*[13] in which futurist Peter Schwartz examines the use of scenario planning not to predict specific outcomes but to consider systematic solutions that are inherently open-ended in design as a structure that supports a multitude of probable outcomes, resisting the invasion of outside complexities that may overtake the system.[14] Scenario planning suggests a specific set of events to develop an evolvable system open to change over a specific timeline identified at the time scale of times of the days, days of the week, parts of year and over years of a design.

Bottom-up approaches maintain an open-endedness of design that reveals rather than obscures newly emergent differences, urban mutations that allow urban ecologies to evolve. The High Line in New York City is an open-ended framework that 'propagates organizations' for anthropological and natural systems to adapt over time that are 'specific material form and precise design organizations.'[15] Architect Stan Allen explains the need for such a system to have precise and adaptive units that allow for 'not yet realized relationships.'[16] While the objective affect is that the public experience a heightened awareness of changing colors and smells against the view of the city beyond, the thin section of the High Line's structure that produces this affect is highly specific responding to conditions of flowering type, planting soil, drainage, gravity, accessible surfaces, seating and other local, external conditions. For the Lifescape design for Freshkills Corner and Allen used the timeline of nitrogen charging with mustard seed to bootstrap the external forces that would propagate this small intervention into a predictable evolution of varieties of forestation scenarios for the park. In yet others examples of public art work I have done with artist Janet Echelman in Porto, Phoenix, Vancouver and San Francisco we have precisely tuned both net material and cells diamond geometry to evoke open-ended dialogues of local identity intentionally layered into the meaning of the work. The emergent dialogue of values by local citizens *is* the organizing bottom-up effect, not the material work alone- the effect is dependent on this outside condition.

This timeline of scenarios of external forces creates the 'attachment' that Latour speaks to. Thusly the system is calibrated to this set of scenarios creating an open-endedness that is depend on precisely tuned material form. This describes the quality present in Gracia and other neighborhoods in Barcelona identified by current and local participation and that guide the objectives of two related strategies of bottom up urban design for blocks in 22@ that provide a scaled organization of shifting open-ended neighborhood identities: 1) material interventions that calibrate a type of material affect to existing cultural events and 2) parametric systems modeling research to identify external conditions and how the unit of the block may be embedded with coding that attaches to and parametrical adapts to these external forces over time.

Ilcla:BCN: Frameworks for Material Affect

An example of a project developed calibrating material affect to a local condition for the 22@ block planning is the research work done for the life, city, adaptation: Barcelona Urban Design Program, Ilcla:BCN. The project Sound Attenuation @22 by student Ida Yazdi demonstrates how connectivity across the blocks may be organized using local conditions. The project begins with the idea to connect various open spaces across a neighborhood of blocks with music events. It utilizes the bottom up methods described here to organize according to block and open space planning. The most critical moment, *the Ned Kahn moment*, was identifying the specific external quality to which the project would calibrate itself- namely sound attenuation to relate to the existing cultural event of music

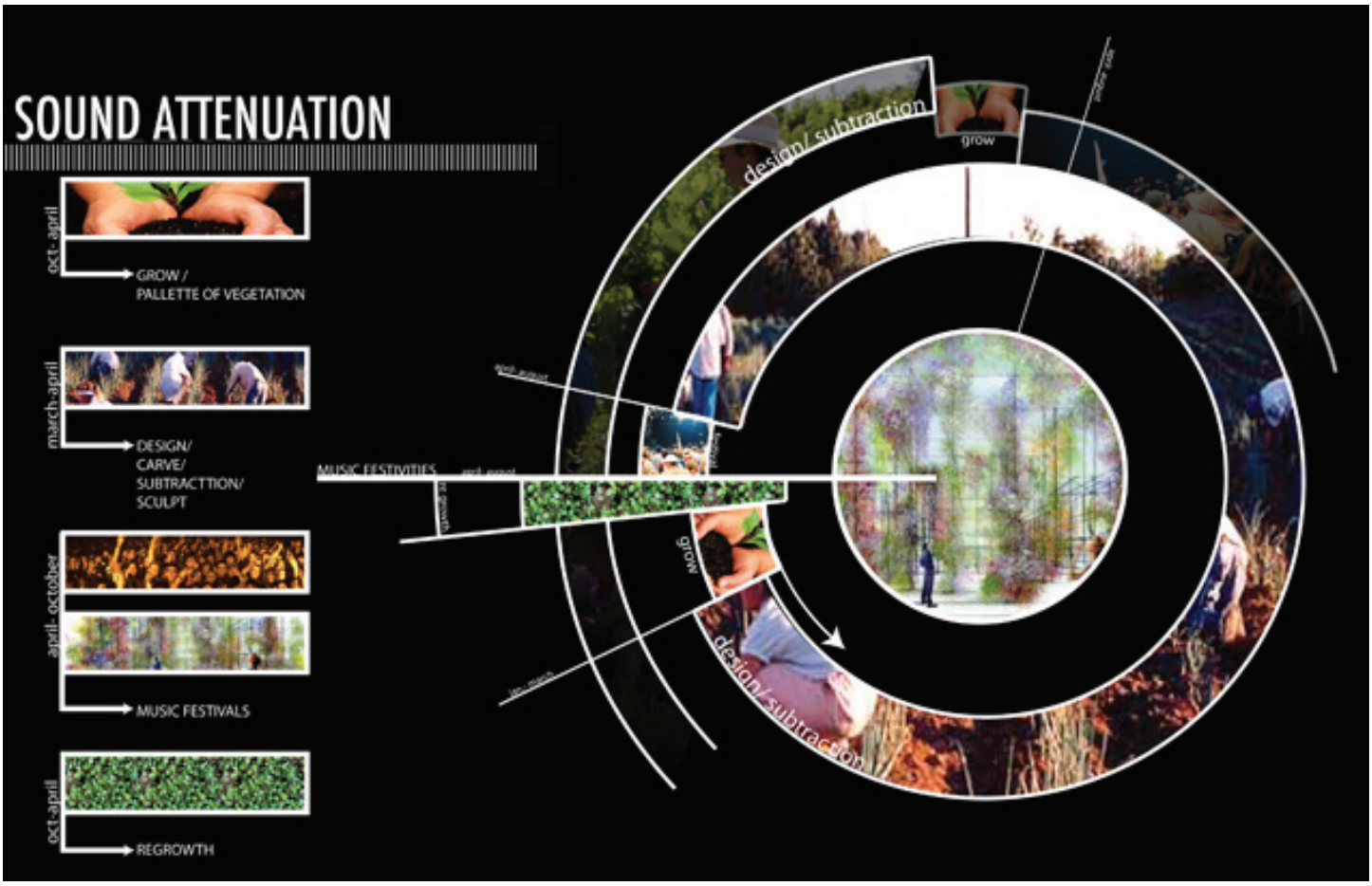

Figure 3. *Sound Attenuation*, Time-Based System Diagram, student Ida Yazdi, © IIcla:BCN.

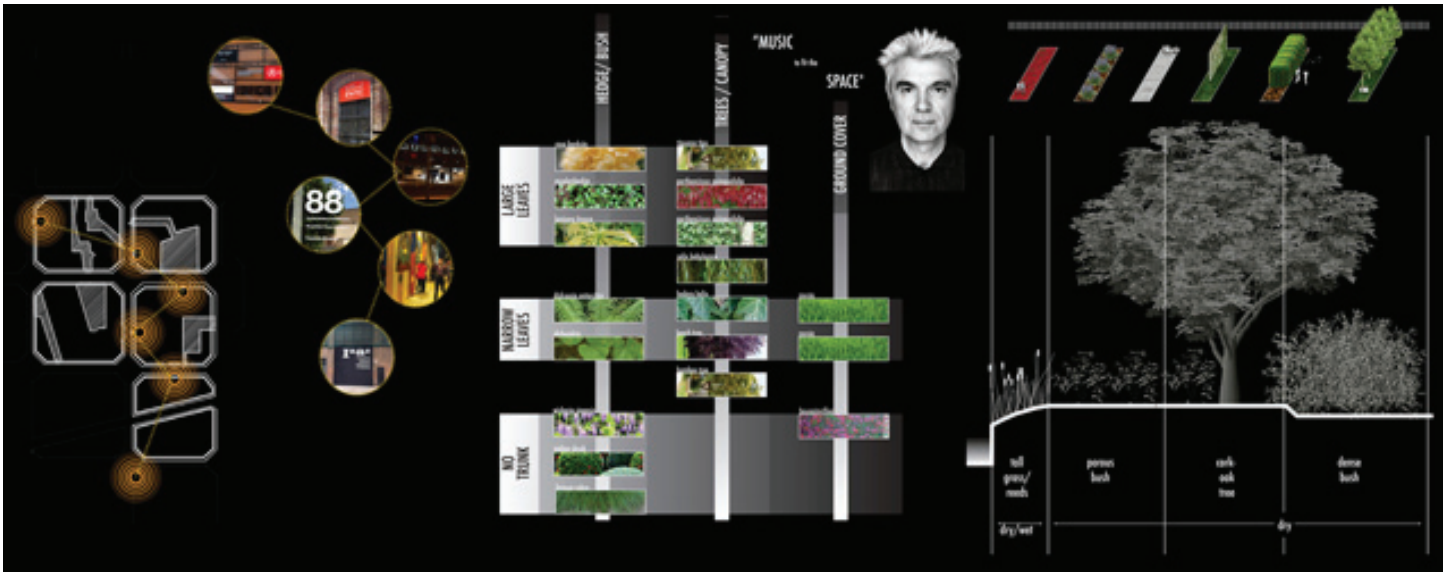

Figure 4. *Sound Attenuation*, material affect cataloging and scaling, student Ida Yazdi, © IIcla:BCN.

venues and festivals in the area. The material form was selected as one that could operate to attenuate sound and, having studied a TED talk by David Byrnes, *How architecture helped music evolve*,[17] the project analyzed how sound attenuate for various types of music conditions could be organized by form and vegetation material. The material intervention though open-ended to various predictable and unpredictable conditions of sound was precise and specific with the design choosing species of densities of vegetation material that could be subtracted and shaped by a local design offices for each space. After a set of scenarios were examined and a cyclical timeline created an time-based system diagram was created that relates the phases of growth, design/subtraction, precision tuning, festival and regrowth as events that could provide a bottom-up organization of community that connects workers and residents. In this way the Sound Attenuation @22 project would operate similarly to the year-over-year morphological transformations for Les Festes de Gracia framework that supports new possibilities of participation each year of evolving values of the people of that place and time, *attaching* itself to an existing external condition.

Parametric Places, UO: Parametric

With the previous research focused on the material affect connecting spaces it became evident that a gap in the research was how we define the scale of the neighborhood and how we could use information technology, specifically parametric design tools to develop a unit block system using the existing 22@ guidelines of 10|10|10 open-space, protected residential and 7@ services but also considering other external forces that could affect parameters within the unit block in a systematic way, taking advantage of the technology to process complex relationships. The material affect this research begins to examine is identified as external conditions of programmatic use, walkable distances for food sources, economic and political forces, morphological differences such as mountain to sea relationships, asymmetrical densities of open space such as full blocks, avenues and waterfront recreational spaces, energy optimization including solar collection and shading orientations, and adjacencies to historic *moderniste* fabric.

An example of a project that developed a parametric unit block tuned to external forces is the project Block-Bound Open Spaces by Casey Hagerman and Jared Barak. The objective to the analyze accessibility of open spaces at a variety of scales to block locations. The external force is the distance proximity to large open spaces of full blocks, avenue and waterfront recreation areas. The density of open spaces within the unit block would then calibrate to this external force. The project provides a design tool that would respond to changes in open space density assessment to support pedestrian accessibility to a variety of open spaces as the community evolves. Other possible external forces may be the proximity to unique build-fabric including existing *moderniste* and future material effect[18] to provide a system for evolving local identity.

Real-time and crowd sourcing

The value of a systems approach to bottom up urban design and city planning is that it provides the opportunity to support new cultural identities. The use of material affect in systems building process and the use of information technology affords design the ability to adapt not only to future possibilities but for designers of these frameworks to calibrate and communicate these external conditions in real-team either through fixed material intervention that reflect change or through digital media that possesses the ability to provide a sensory interface that is real-time. Current research to support

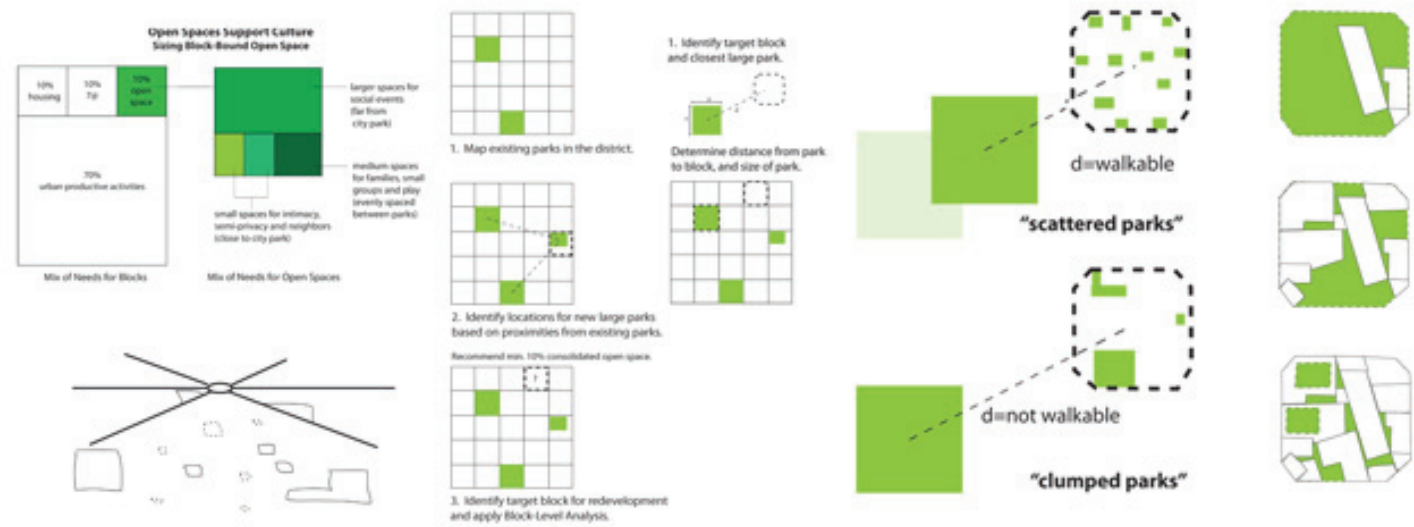

Figure 5. *Block-Bound Open Spaces*, drawings for the course Parametric Places, student Casey Hagerman and Jared Barak, © University of Oregon.

the City of Portland's request for proposal for a bike sharing system that also provides way finding for local place making is focusing on a sensory interface that is uses real-time feedback information similar to music service Pandora.com to create a voluntary profile of predictable desires including safer routing, local food choices and time and location of local cultural events. Like the Ilcla: BCN and Parametric Places research that utilizes first material affect and then parametric information technology, this sensory interface for the City of Portland will provide real-time and crowd-sourced information to build neighborhood identity from the bottom up, finding a solution to Bruno Latour's challenge for architects to calibrate to the "'thingly' nature of buildings' in the changing real world.[19]

ENDNOTES

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19 Latour and Yaneva, "Give," 89.