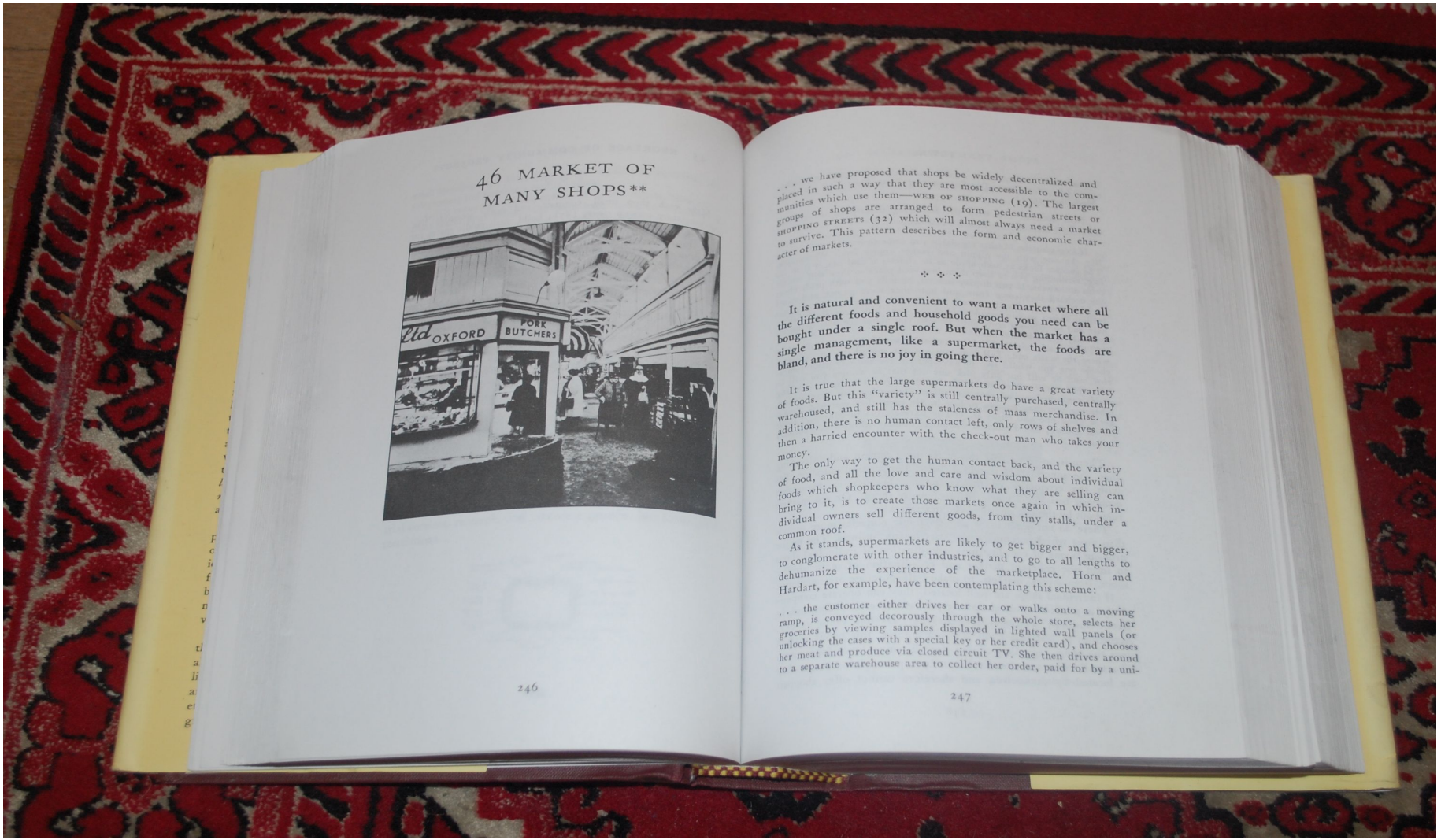
Frontiers of Pattern Language Technology



46 MARKET OF MANY SHOPS**

. . . we have proposed that shops be widely decentralized and placed in such a way that they are most accessible to the communities which use them—WEB OF SHOPPING (19). The largest groups of shops are arranged to form pedestrian streets or SHOPPING STREETS (32) which will almost always need a market to survive. This pattern describes the form and economic character of markets.

⁘ ⁘ ⁘

It is natural and convenient to want a market where all the different foods and household goods you need can be bought under a single roof. But when the market has a single management, like a supermarket, the foods are bland, and there is no joy in going there.

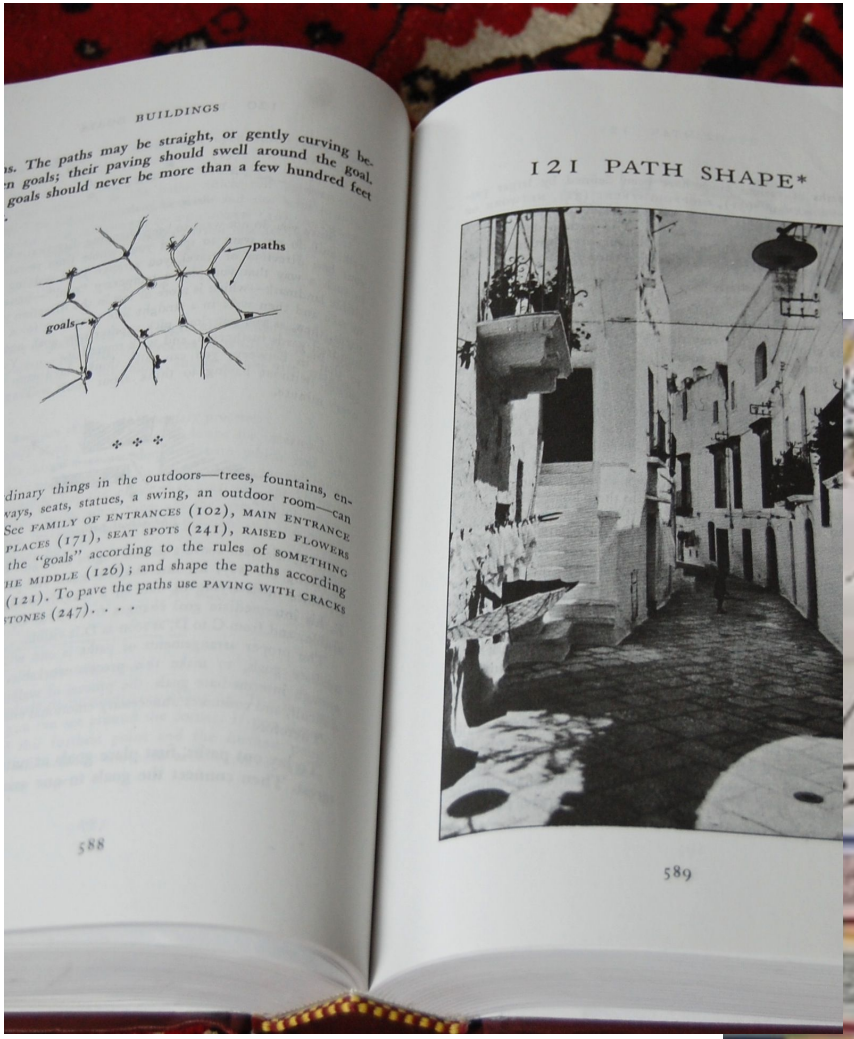
It is true that the large supermarkets do have a great variety of foods. But this "variety" is still centrally purchased, centrally warehoused, and still has the staleness of mass merchandise. In addition, there is no human contact left, only rows of shelves and then a harried encounter with the check-out man who takes your money.

The only way to get the human contact back, and the variety of food, and all the love and care and wisdom about individual foods which shopkeepers who know what they are selling can bring to it, is to create those markets once again in which individual owners sell different goods, from tiny stalls, under a common roof.

As it stands, supermarkets are likely to get bigger and bigger, to conglomerate with other industries, and to go to all lengths to dehumanize the experience of the marketplace. Horn and Hardart, for example, have been contemplating this scheme:

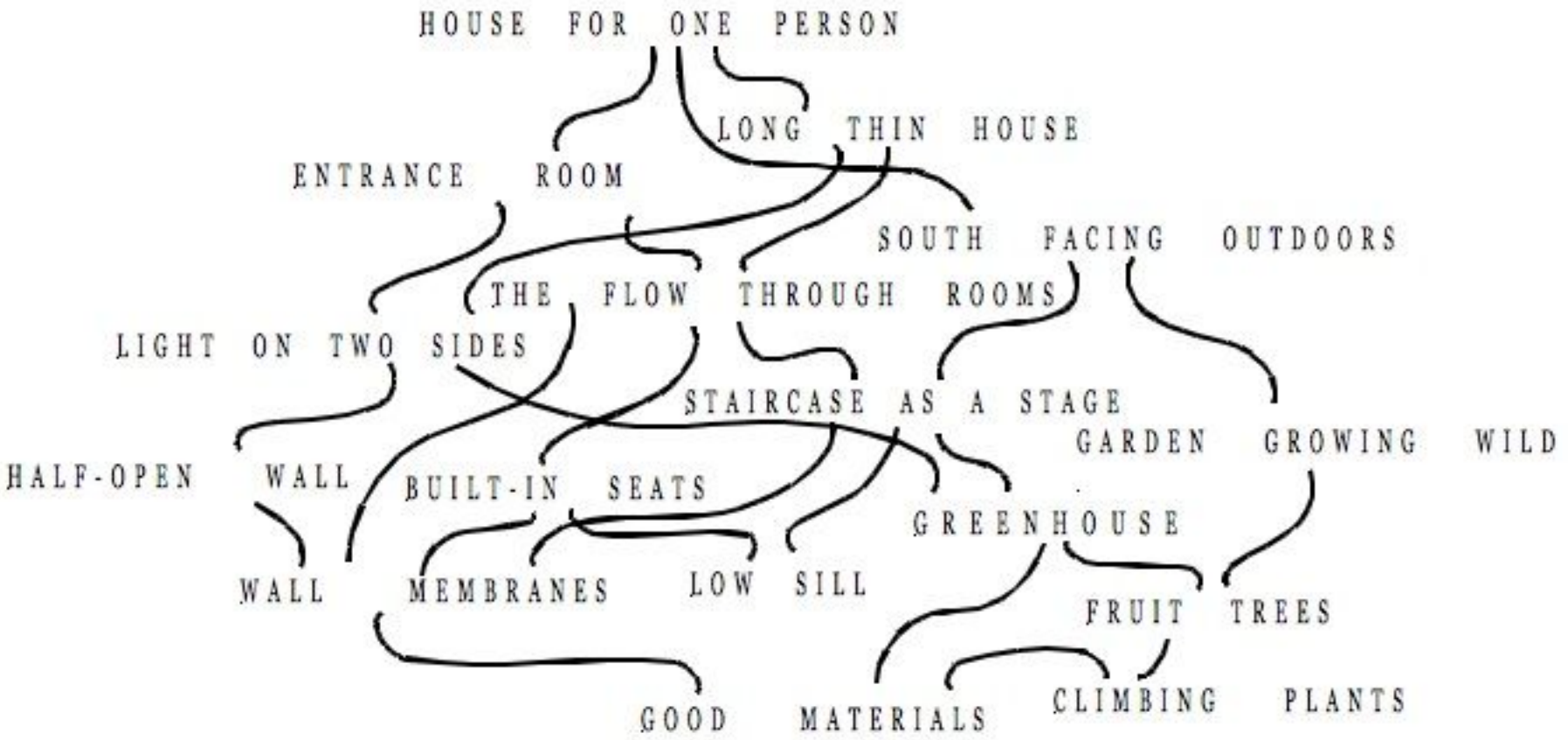
. . . the customer either drives her car or walks onto a moving ramp, is conveyed decorously through the whole store, selects her groceries by viewing samples displayed in lighted wall panels (or unlocking the cases with a special key or her credit card), and chooses her meat and produce via closed circuit TV. She then drives around to a separate warehouse area to collect her order, paid for by a uni-

Pattern Language, 1977



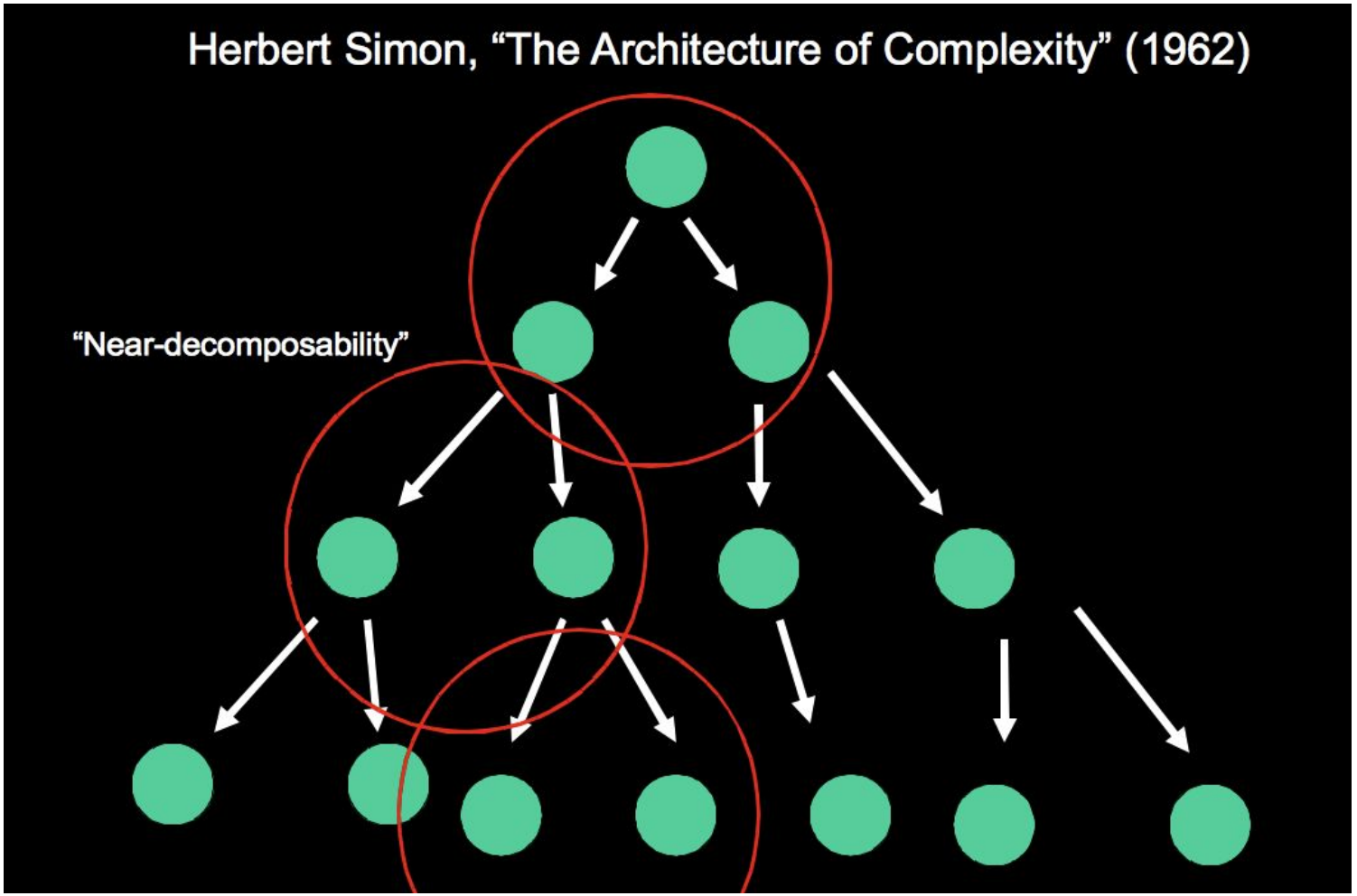
Network of Relationships

"We need a web way of thinking." - Jane Jacobs



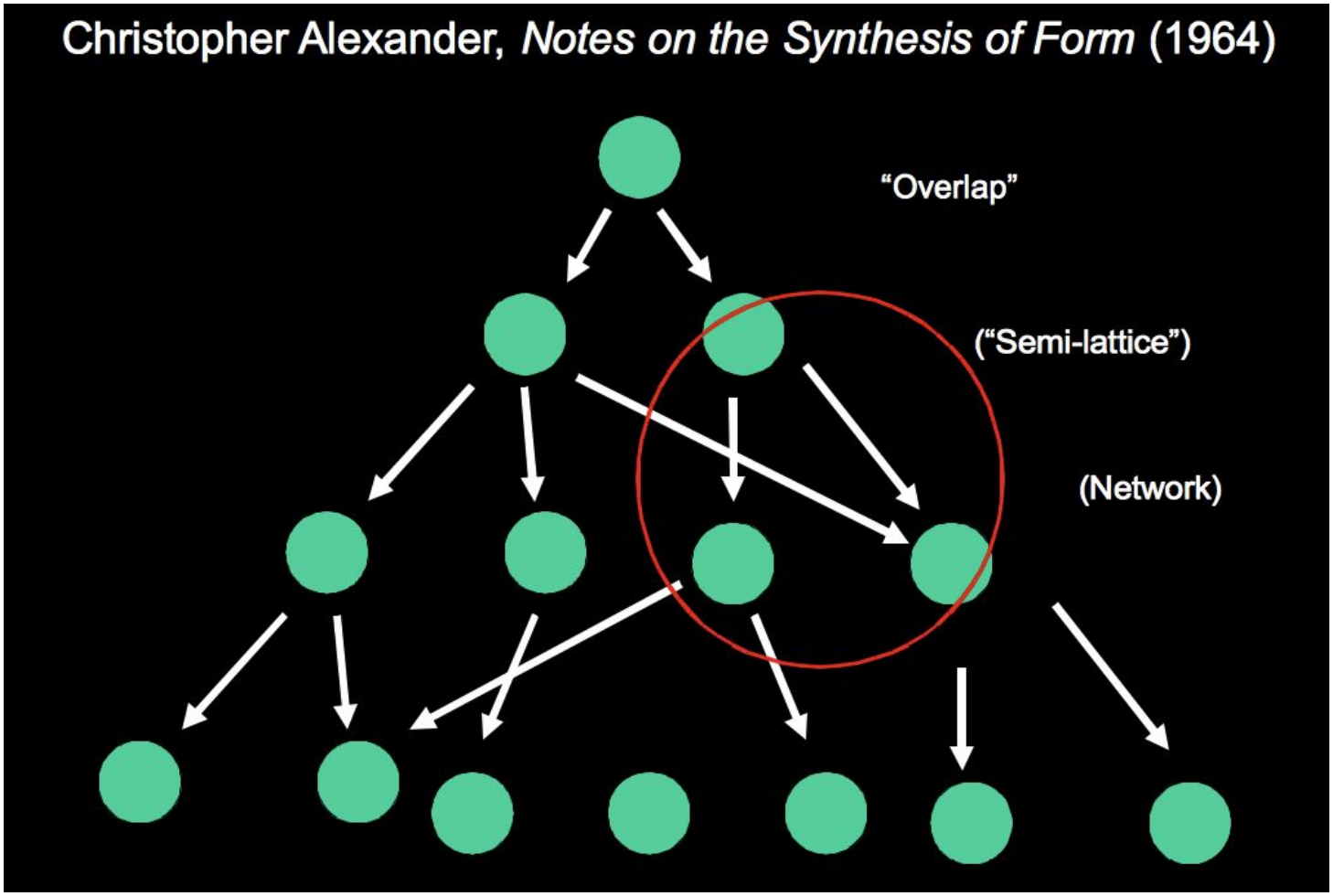
Herbert Simon, 1962

"The Architecture of Complexity" - nearly decomposable hierarchies (with "panarchic" connections - Holling)



Christopher Alexander, 1964-5

"A city is not a tree" – its "overlaps" create clusters, or "patterns," that can be manipulated more easily (related to Object-Oriented Programming)



The surprising existing benefits of Pattern Language technology....

** "Design patterns" used as a widespread computer programming system (Mac OS, iPhone, most games, etc.)*

** Wiki invented by Ward Cunningham as a direct outgrowth*

** Direct lineage to Agile, Scrum, Extreme Programming*

** Pattern languages used in many other fields*

…. So why have they not been more influential in the built environment???

Why have pattern languages not been more influential in the built environment?....

* *Theory 1: "Architects are just weird!" (Preference for "starchitecure," extravagant objects, etc.)*

* *Theory 2: The original book is too "proprietary," not "open source" enough for extensive development and refinement*

* *Theory 3: The software people, especially, used key strategies to make pattern languages far more useful, leading to an explosion of useful new tools and approaches*

…. So what can we learn from them???

An Oregon 501(c)3 Public Benefit Corporation
Reg. no. 462867-95

Sustasis Foundation

Developing and applying neighborhood-scale tools to meet the complex challenges of the future

* *Portland, OR. Based NGO with international network of researchers*

* *Executive director is Michael Mehaffy, student and long-time colleague of Christopher Alexander, inter-disciplinary collaborator in philosophy, sciences, public affairs, business and economics, architecture, planning*

* *Board member is Ward Cunningham, one of the pioneers of pattern languages in software, Agile, Scrum etc., and inventor of wiki*

* *Other board members are architects, financial experts, former students of Alexander*

Custom "Project Pattern Languages" (in conventional paper format)

ATTACHED BUILDINGS

[Upward hyperlinks: Buildings with *Zero Lot Line Construction* will need to establish protocols for the design and constructing of their attached buildings, which are given here. A lot line may be modified by the pattern *Street Mutation*, and then the owners will wish to develop Attached Buildings, given here. …*etc]*

Problem-statement: As the plots in a block are built out, there is often a need to create attached buildings incrementally. But this requires that many problems be solved. These include fire protection, water intrusion, and protection of each side in the event the other is modified or demolished.

❖ ❖ ❖

Discussion: Let us suppose that two adjacent plot owners have agreed that they would prefer to build attached buildings, but their plans are not necessarily standardized. One unit may be taller than another, or wider than another. Furthermore, one party may make changes later that will expose parts of the other's wall. In each case, care must be taken to protect the separate buildings from damage by water, fire and other dangers.

This requires that a number of steps be taken to protect each side.

- First, each wall must be built as a fully insulated, weather-protected enclosure, of a type that allows flashing to be installed (see below).
- Second, flashing must be introduced at the top edge where the two buildings abut.
- Third, an air space of approx. 1" must be maintained between the two walls. This gap can be enclosed by a method agreed upon by the parties and the building official, such as caulking with a backer rod at the exposed edges, or covering with a piece of trim.
- Fourth, any elements of one structure that project beyond the surface of another must be built with fire-resistive structure, as required by local building codes.

Therefore:

Where attached buildings are desired, build each building as a free-standing structure, with full sound insulation, moisture protection, and all other engineering requirements. Make sure that the party wall is set up to admit flashing for an adjoining construction, and to maintain a minimum 1-inch air space (i.e. 1/2 inch to the property line on each side). When both structures are complete, the remaining exposed areas and gaps can receive an exterior finish that is agreed by both parties.

Maintain an agreement between the neighbors that specifies how many times modifications may be made, and the relative responsibilities of each for incurred costs. Record this agreement with your local property deed authority.

❖ ❖ ❖

[Downward hyperlinks: A portion of a residential yard may need to accommodate a side yard, given in the pattern *Side Yard House*. *Etc…]*

Custom "Project Pattern Languages" create the elements of a "generative code" (e.g. as a module for other conventional codes)

SIDE YARD ACTIVATION

[Upward hyperlinks: Owners who wish to build *Zero Lot Line Construction* may have difficulty coordinating the ingredients of a side yard condition -- especially when windows are desired -- and this coordination is given in this pattern. … *etc]*

Problem-statement: The side yard is a highly efficient urban type that takes maximum advantage of otherwise wasted space, and offers an excellent indoor-outdoor relation. But incremental development of lots can create unforeseen problems.

❖ ❖ ❖

Discussion: The side yard allows activation of what may otherwise be a dark, useless setback area between buildings. Essentially, one building pulls back, in whole or in part, far enough to create at least a 3m (10') strip of yard. (For optimum solar exposure, this is ideally the building to the north or west in most Northern Hemisphere climates, and the one to the south or west in the Southern Hemisphere.)

Such a side yard can allow a very strong indoor-outdoor relationship. Where the yard faces the front, it can also create a strong semi-private relationship to the street and public realm. (In some patterns this side yard becomes a beautiful entrance patio.) Where the rear area is on an alley, there may not be space for a rear yard, and a side yard may be the only option, or a welcome supplement to a very small rear yard, creating a greater sense of outdoor space in an otherwise intense urban environment.

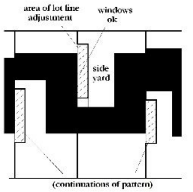
However, when development is incremental, a number of things can go wrong. The adjoining building may have windows facing directly into this private area. Or the adjoining building may have a tall wall and/or broad eaves, which block out sun and create an undesirably dark space (in all but the hottest and sunniest climates). If the adjoining building is set back from its property line to allow for windows -- as many fire codes require – there may be a useless strip of setback yard with a fence, making it all the more difficult to maximize outdoor space.

A series of rules agreed to by the owners can avoid these problems. A standard reciprocal agreement can allow the yard to be maximized in width while the abutting owner is allowed to have windows that manage privacy, and assured the right of access for maintenance. In turn, that owner might enter into the same agreement with the next owner, allowing the benefits to extend down the line of properties.

In practice this means that the property line is adjusted for the building abutting the side yard, to comply with fire codes for window placement. A reciprocal easement is created over the yard, to allow the abutting owner to access their building for maintenance, and to allow the owner of the side yard to use the other owner's strip as part of their yards, subject to restrictions (e.g. items that might restrict maintenance access, or damage the adjoining building).

Therefore:

Whenever an owner of a lot wishes to construct a side yard, and the adjacent owner wishes to have windows in that area, create a lot line adjustment that allows a tract of land sufficient for windows to meet fire codes. Create a reciprocal easement on this tract, and on the yard, such that both owners have access as needed for maintenance. Create an agreement specifying restrictions on use of the yard sufficient to provide maintenance access, and specifying placement of windows, walls and eaves to ensure privacy and good light.



❖ ❖ ❖

Custom "Project Pattern Languages" allow the iterative generation of more complex, more adaptive structure (as in historic cities)

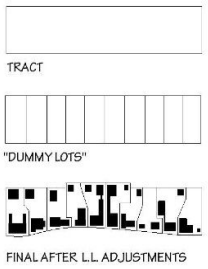
STREET MUTATION

[Upward hyperlinks: TBD]

Problem-statement: Perfectly aligned streets of standard widths can be rigid and lifeless. But incremental variations to street alignment and width can result in unforeseen problems.

❖ ❖ ❖

Discussion: One model of development is for streets to be laid out in perfect alignment, with plots neatly facing them. But there are many other possible forms of street and plot relationship, as history has shown – and many of the most successful grew (or changed) incrementally, without being planned in advance as they ended up. How can we incorporate such a process today?



One problem is procedural. How can such a process occur within the standard platting process that exists in many locations? We have found a relatively simple mechanism, which addresses both street mutations and other sequential adaptations. It creates a series of "dummy lots" within a standard platting process (see example at left) and then allows owners to make sequential modifications to them, using a simple process known as "lot line adjustment." The most difficult part of the process is the treatment of the right-of-way, which is typically "dedicated" to the City or other jurisdiction within the platting process. Again, this can be done as a standard or "dummy" tract, and then adjusted through the lot line process.

This requires that the City or other street authority establish very minimum standards for street width, curb design, sidewalk and streetscape elements, and so on. (These can also be expressed as patterns.) In a low-speed, relatively low-volume condition, such standards can be very loose. (See e.g. the work of Hans Monderman and other researchers in the field of so-called "shared space" design.)

Once the standards are established, then the owners are allowed to make their street mutations as they choose, within the minimum standards. The local authority over the streets will review and approve the plans, or else advise of changes needed.

The only other element that is essential is that each successive owner must connect to the end-points established by the previous owner, and do so without exceeding the geometric standards specified by the local authority. The owners may wish to work together to create a shared pattern such as a front courtyard, garden or parking area.

Therefore:

Where street mutations are desired within a local development area, create a standard or "dummy" street tract, and then specify a nominal, minimum and maximum width. Then each successive owner may establish their own frontage property line, following the simple rule: connect to the previous adjacent owner's frontage property line, stay within the minimum and maximum widths, use the established curb pattern(s) for that area, and integrate other approved design elements into the streetscape.

❖ ❖ ❖

[Downward hyperlinks: If adjoining owners wish, they can create *Attached Buildings*. They can also make agreements to share features, such as *Front Garden*, *Entrance Square*, *Shared Parking*, *Close*…*etc]*

Feedback on recent projects:

"The acclaimed "Pattern Language" process... engages people at an earlier and higher level, asking them to describe a location's unique qualities and values; to imagine a sense of place, and types of use, before anyone even thinks about streets, parking, or buildings—something you just don't get with a traditional approach."

- Skip Novakovich, LTC, USA, (Ret) President, Port of Kennewick, WA Commission

"What I love about this [Pattern Language] project is that it really is about architecture that can be timeless ... that it really feels like it grew there, like it came out of the community and reflects the community's values."

- Carlotta Colette, Metro (Oregon) Council

"With this, the unique thing that I found was that a lot of times we tend to find things that we don't like and we say, 'I don't like this, change that.' And this was, 'this is what I like, keep this!"

- Jeff Klein, Chair, City of Milwaukie Planning Commission

Example of new technology:

"Federated Wiki"

(Developed by Ward Cunningham, Sustasis board member)

federated wiki

mashes data in your browser

Ward Cunningham

Fluent 2012

First step: import pattern languages into the computer, where they can easily be used, exchanged, edited, added to:

A Pattern Language
Alexander

Building Complex

. . . this pattern, the first of the 130 patterns which deal specifically with buildings, is the bottleneck through which all languages pass from the social layouts of the earlier patterns to the smaller ones which def individual spaces.

Assume that you have decided to build a ce building. The social groups or institutions wh building is meant to house are given - partly peculiar to your own case, and partly, perh earlier patterns. Now this pattern and the Number Of Stories, give you the basis of t layout on the site. This pattern shows you break the building into parts. NUMBER O helps you decide how high to make each Obviously, the two patterns must be use

A building cannot be a human building unless it is a complex of still smaller buildings or smaller parts which manifest its own internal social facts.

Therefore:

Never build large monolithic buildings. Whenever possible translate your building program into a building complex, whose parts

Light On Two Sides Of Every Room

. . . once the building's major rooms are in position, we have to fix its actual shape: and this we do essentially with the position of the edge. The edge has got its rough position already from the overall form of the building - Wings Oflight, Positive Outdoor Space, Long Thin House, Cascade Of Roofs. This pattern now completes the work of Wings Oflight, by placing each individual room exactly where it needs to be to get the light. It forms the exact line of the building edge, according to the position of these individual rooms. The next pattern starts to shape the edge.

When they have a choice, people will always gravitate to those rooms which have light on two sides, and leave the rooms which are lit only from one side unused and empty.

Light On Two Sides Of Every Room

Therefore:

Locate each room so that it

Cascade Of Roofs

. . . this pattern helps complete the Building Complex, Number Of Stories, Main Building, and Wings Oflight, to help create these patterns. If building from scratch, these larger helped you to decide how high they have given you a rough idea of what spaces there are of the wings. Now we come to cessary to visualize the building re, above all else, as a system

ep

Cascade Of Roofs

Positive Outdoor Space

. . . in making South Facing Outdoors you must both choose the place to build, and also choose the place for the outdoors. You cannot shape the one without the other. This the geometric character of Wings Oflight - gives you the indoors.

Positive Outdoor Space

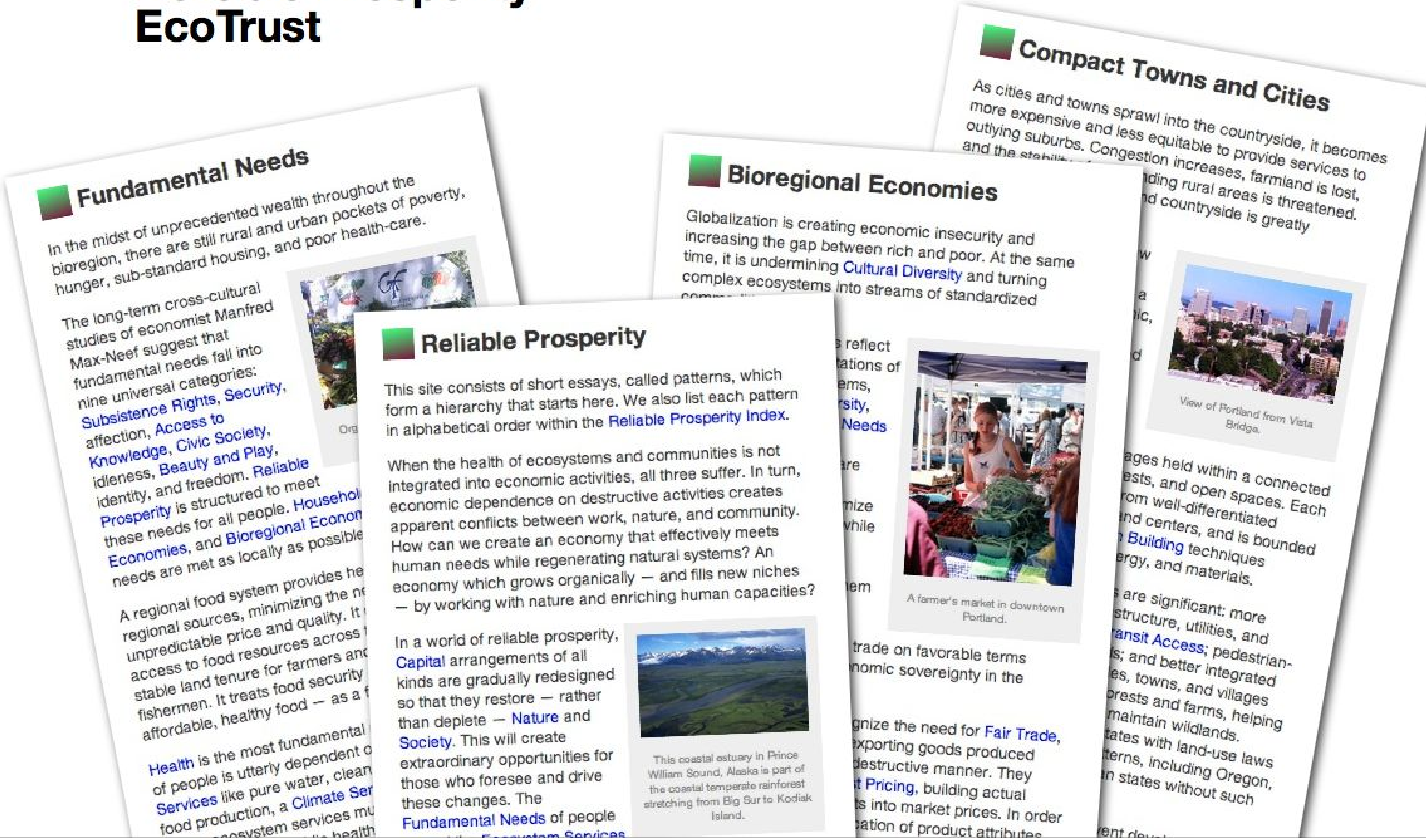
ch space with wings of arcades, and trellised with a positive quality around corners.

ositive Outdoor Space

- are placed on when it has a

Second step: greatly expand the kinds of patterns that can be written, including economics, ecology and other topics:

Reliable Prosperity
EcoTrust



Fundamental Needs

In the midst of unprecedented wealth throughout the bioregion, there are still rural and urban pockets of poverty, hunger, sub-standard housing, and poor health-care.

The long-term cross-cultural studies of economist Manfred Max-Neef suggest that fundamental needs fall into nine universal categories: Subsistence Rights, Security, affection, Access to Knowledge, Civic Society, idleness, Beauty and Play, identity, and freedom. Reliable Prosperity is structured to meet these needs for all people.

Reliable Prosperity

This site consists of short essays, called patterns, which form a hierarchy that starts here. We also list each pattern in alphabetical order within the Reliable Prosperity Index.

When the health of ecosystems and communities is not integrated into economic activities, all three suffer. In turn, economic dependence on destructive activities creates apparent conflicts between work, nature, and community. How can we create an economy that effectively meets human needs while regenerating natural systems? An economy which grows organically — and fills new niches — by working with nature and enriching human capacities?

In a world of reliable prosperity, Capital arrangements of all kinds are gradually redesigned so that they restore — rather than deplete — Nature and Society. This will create extraordinary opportunities for those who foresee and drive these changes. The Fundamental Needs of people

This coastal estuary in Prince William Sound, Alaska is part of the coastal temperate rainforest stretching from Big Sur to Kodiak Island.

Bioregional Economies

Globalization is creating economic insecurity and increasing the gap between rich and poor. At the same time, it is undermining Cultural Diversity and turning complex ecosystems into streams of standardized

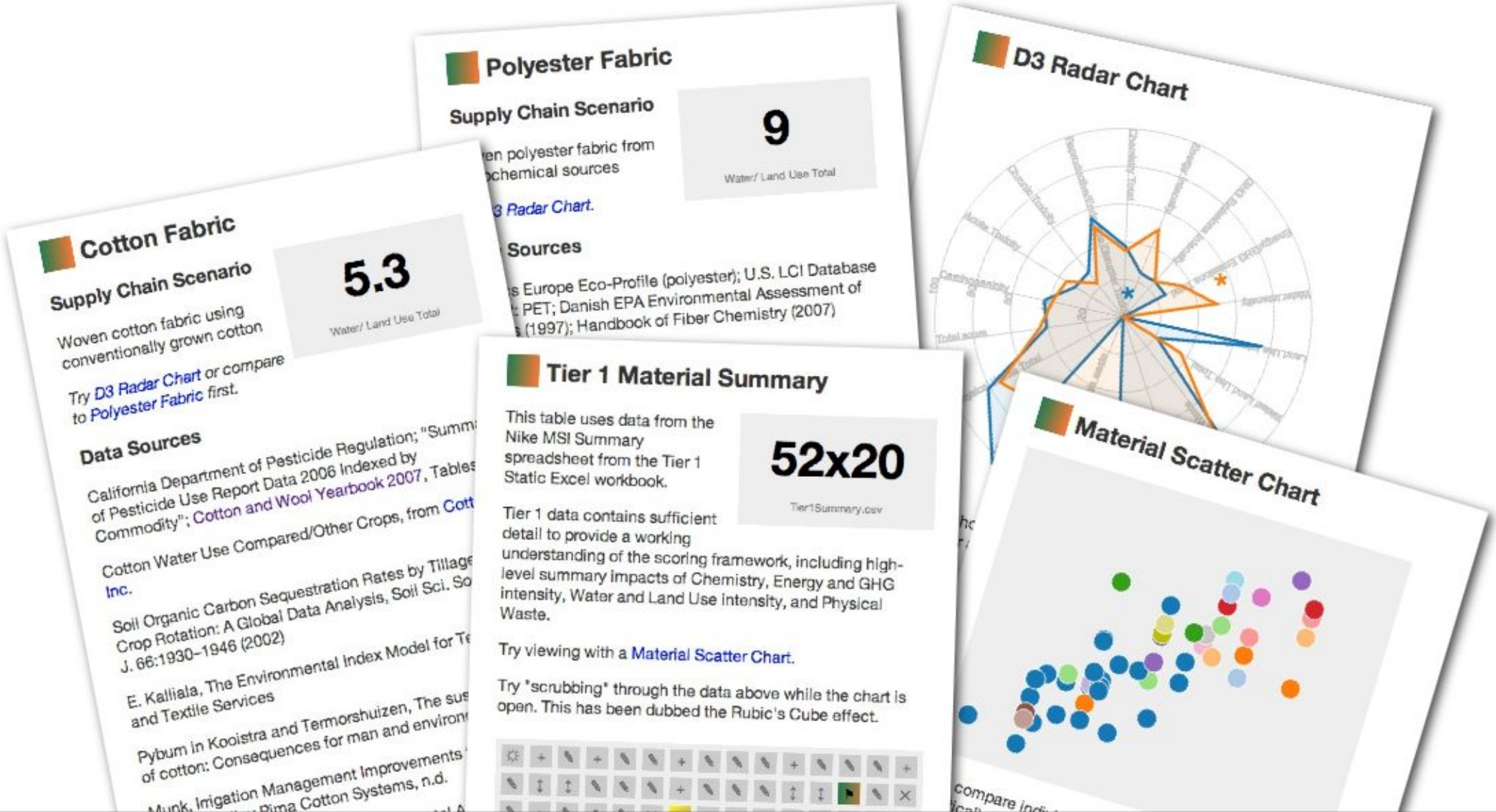
A farmer's market in downtown Portland.

Compact Towns and Cities

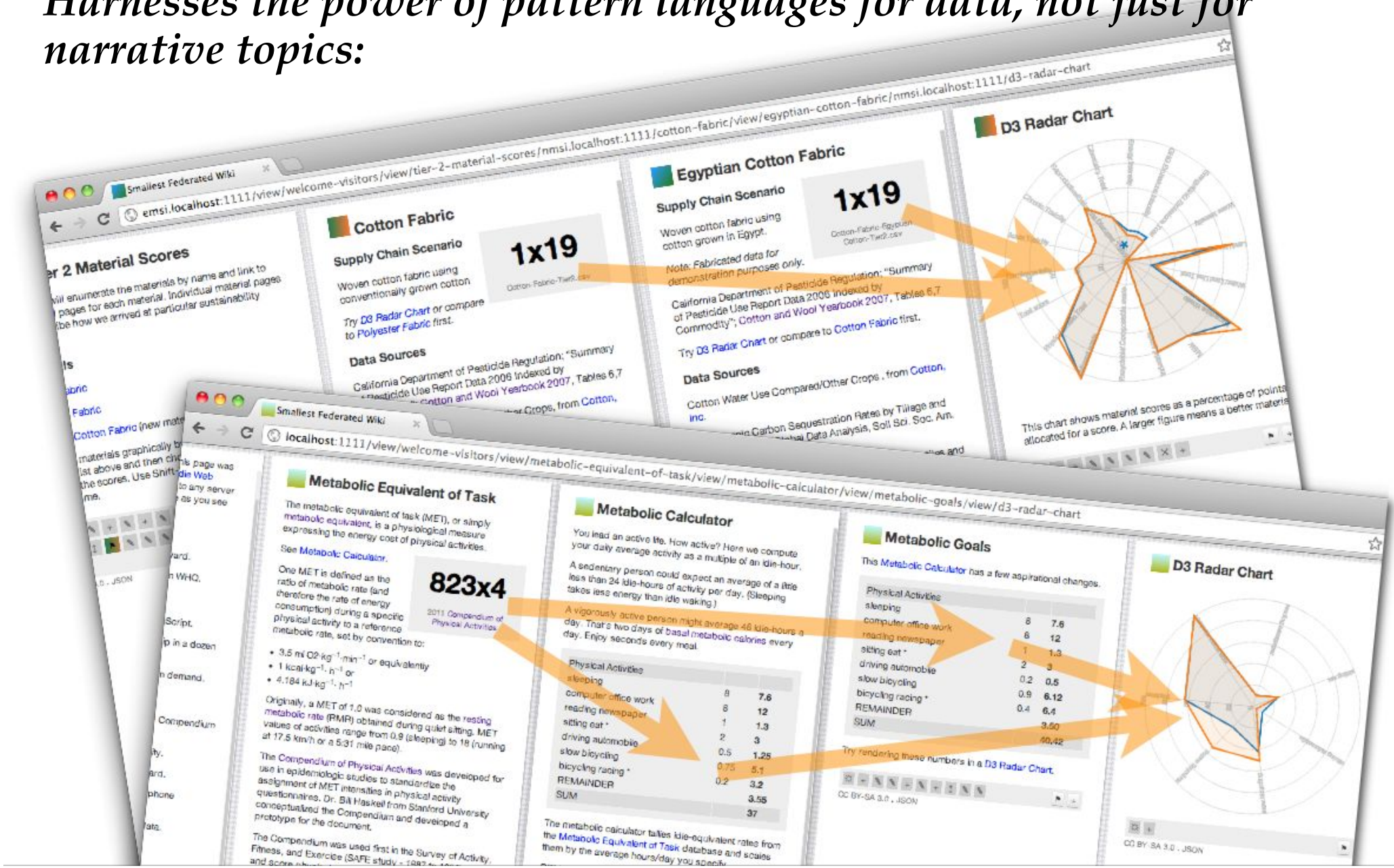
As cities and towns sprawl into the countryside, it becomes more expensive and less equitable to provide services to outlying suburbs. Congestion increases, farmland is lost,

View of Portland from Vista Bridge.

Third step: create the capacity to handle data and metric calculations, e.g. for sustainability criteria:



Harnesses the power of pattern languages for data, not just for narrative topics:



Data flows according to grammatical rules

Fourth step: return to the built environment, and to the ability to model metrics:

Build Tomorrow Mehaffy

Readiness Diagnostic

Upward Hyperlinks: Regional Plan.

Problem: Different sites have different levels of readiness for development, requiring different tools.

Not all sites are created equal

Discussion: In some sites will simply not b development for a n require specialized an analysis of these branching set of if- customized tools f

The Diagnostic pr Diagnostic Test. in the sub-patter the modeling.

Therefore: Whe implementation identify key iss essential for p and Neighborh

Note: No trac

Town Center

Upward Hyperlinks: Urban Center, Regional Plan. Be sure to use the Readiness Diagnostic before siting a Town Center.

Problem: Just as a neighborhood needs a center, groups of neighborhoods (usually about 4, depending on size) need a larger center, providing walkable access to services providing daily needs.

Discussion: People need a coordinated set of resources within walking distance of their homes. Studies show that walking distance is about 1/4 mile, and in certain conditions,

Town Centers bring many essential services within daily access.

3,000

Persons in This Model (Click to Recalibrate)

Accessory Live Works

Upward Hyperlinks: Town Center, Urban Center, Good Neighborhood

Problem: Many people want to conduct businesses from home, hborhoods can e activity of usinesses -- if ured carefully.

Living over the store -- at the edge of a single-family lot

ve Works provide ay to reduce small business vide needed eighborhood. the on place ng is at the ng house -- such as in the fron ard,or alley. This can be done if codes are revised ses, and to provide the minimal setbacks ire.

3

Persons in is Model (Click to R alibrate)

the ccessory live ode changes, artCode.

s such as

+$5

Incremental Tax Income Per Capita Per Year

Mixed Use Building

Upward Hyperlinks: Urban Center, Town Center, Neighborhood Center.

xed use buildings lly demanding and pensive, making petitive. Yet they t advantages too.

Mixed-use buildings pose many challenges.

mong the many mixed use occupancy separation" between uses can t expense. Some commercial uses, such produce cooking odors and/or noises that . Residents can also create problems that s.

, there are s for mixed can make or example, "20% Rule" ial to 20% tage. The can be slow and complex, resulting in risk (especially in suburban iliar with mixed-use buildings).

50

Persons in This Model (Default - Click to Recalibrate)

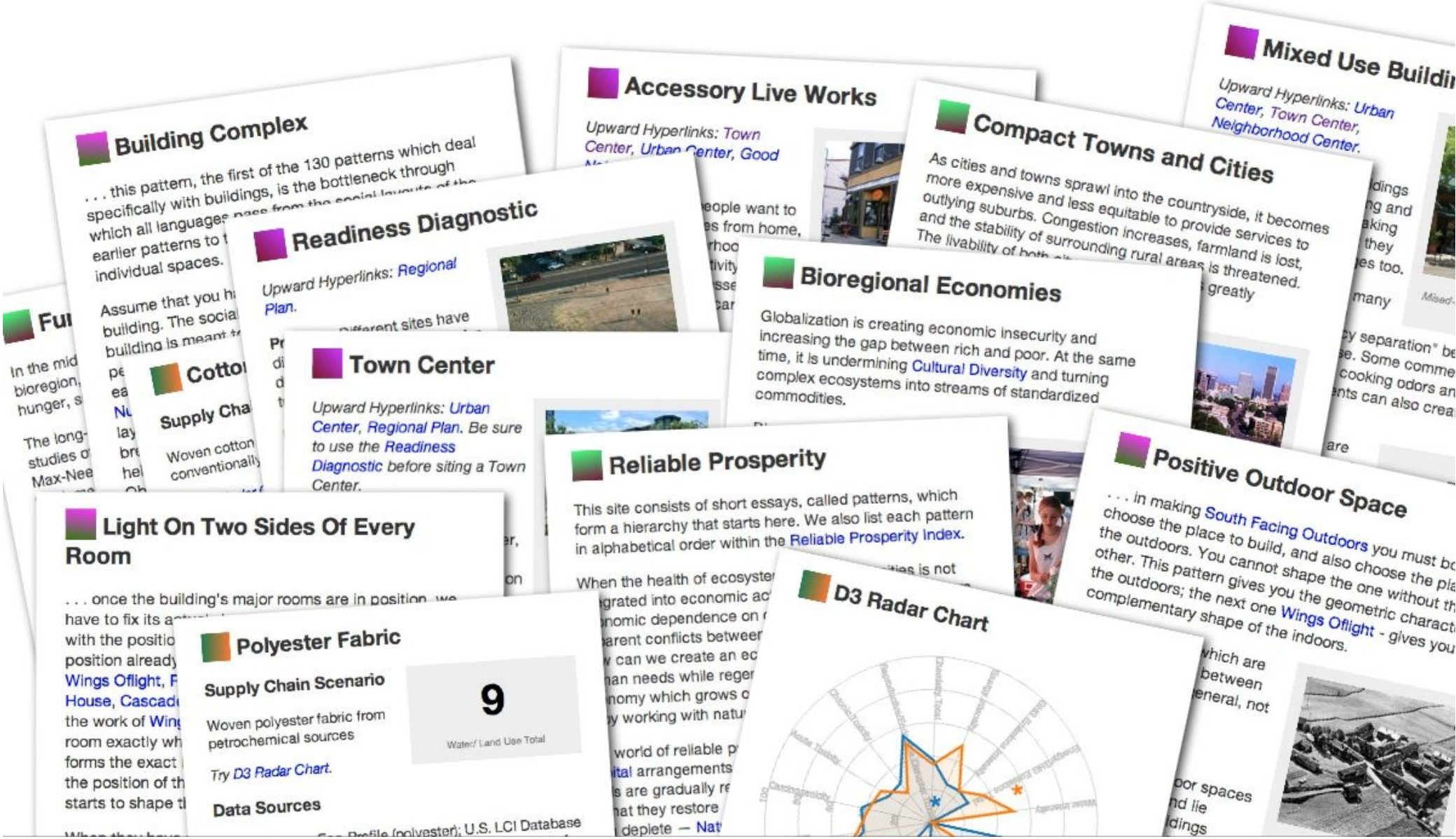
adiness the mixed use e a Pre- lify the nt

$16

(Default) Tax Income

The "words" are not "nouns" but "pronouns"

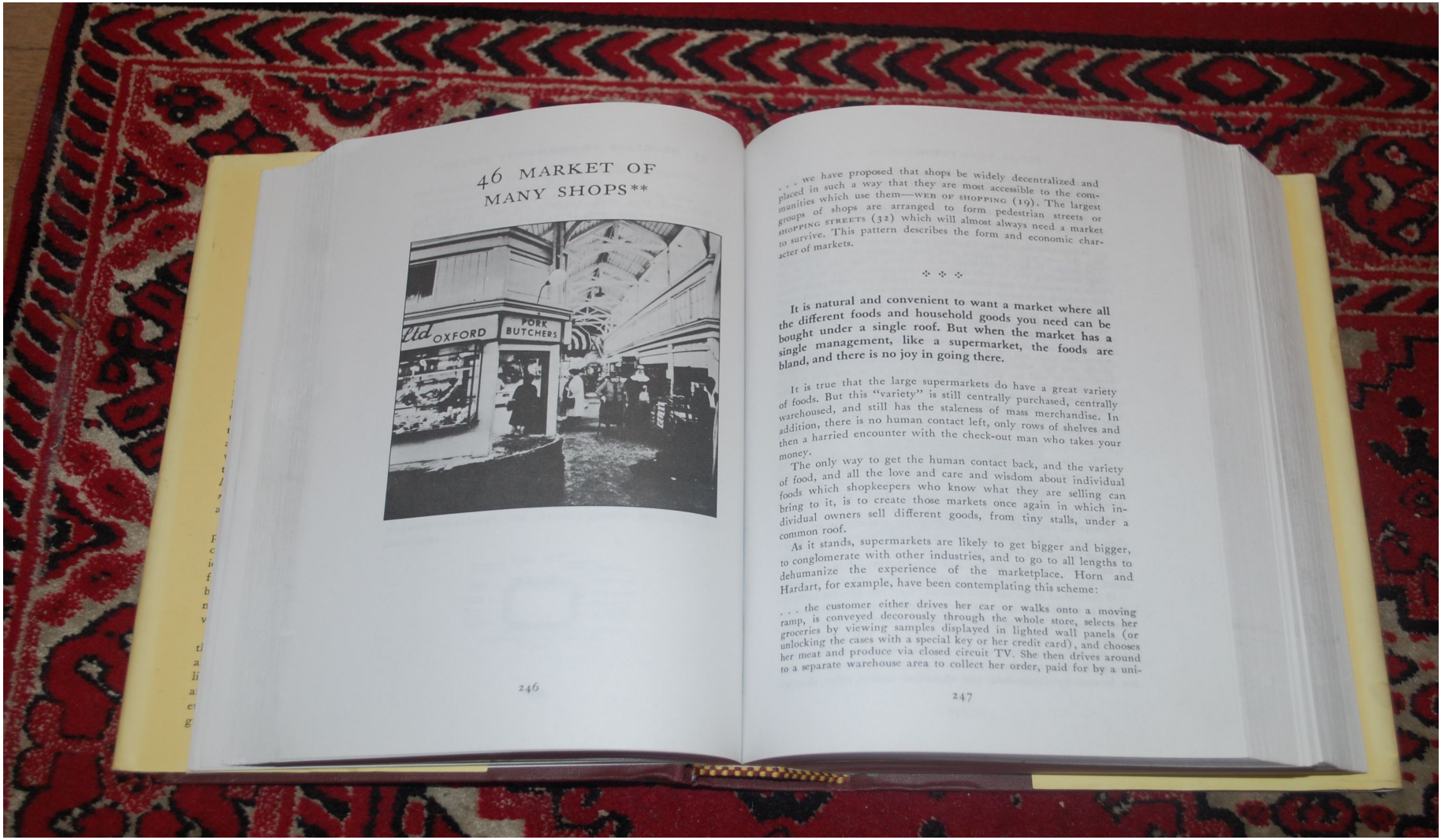
Fifth step: design a repository system in which any pattern could in principle be linked up with any other pattern, within a complex system or "toolkit" made to order (with many kinds of tools):



Infinite "sentences" are possible...

The need for more specific "Project Pattern Languages"

(That can be exported and shared later)



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As it stands, supermarkets are likely to get bigger and bigger, to conglomerate with other industries, and to go to all lengths to dehumanize the experience of the marketplace. Horn and Hardart, for example, have been contemplating this scheme:

. . . the customer either drives her car or walks onto a moving ramp, is conveyed decorously through the whole store, selects her groceries by viewing samples displayed in lighted wall panels (or unlocking the cases with a special key or her credit card), and chooses her meat and produce via closed circuit TV. She then drives around to a separate warehouse area to collect her order, paid for by a uni-

Bicycle System Pattern Language

atterns.fed.wiki.org/view/welcome-visitors/view/bike-greenway/view/median-cuts/view/intersection-art

Bike Greenway

Upward Hyperlinks: Transportation System, Bike Network

Bike Greenway

Problem: Many streets are simply too busy and dangerous to accommodate bikes. Yet nearby streets, designed for slower and quieter traffic, are often very suitable for bikes. Such streets can be integrated into a convenient bike network that forms a *Bike Greenway*.

Discussion: One method for reducing potential friction between cyclists and motorized vehicles is to provide "wide kerb", or "nearside", lanes (UK terminology) or "wide outside through lane", (U.S. terminology). These extra wide lanes increase the probability that motorists pass cyclists at a safe distance without having to change lanes.[26] This is held to be particularly important on routes with a high proportion of wide vehicles such as buses or heavy goods vehicles (HGVs). More...

SPECIFICATIONS...

Therefore: When planning your neighborhood or city bike system, include Bike Greenways on secondary through streets.

Downward Hyperlinks: Where Bike Greenways pass busy streets, consider making Median Cuts to allow bikes to pass more easily. Where Bike Greenways enter into low-

Median Cuts

Upward Hyperlinks: Bike Greenway, Transportation System

A Median Cut on a street in Portland, Oregon

Problem: Bikes need to cross fast streets, often where there are no signals. But they need temporary refuge within a median space. A median cut will allow this.

Discussion: One method for reducing potential friction between cyclists and motorized vehicles is to provide "wide kerb", or "nearside", lanes (UK terminology) or "wide outside through lane", (U.S. terminology). These extra wide lanes increase the probability that motorists pass cyclists at a safe distance without having to change lanes. More...

SPECIFICATIONS...

Therefore: When a Bike Greenway crosses a busy street, create a median as a refuge, and create a Median Cut for bikes as well as a separate one for pedestrians - the Pedestrian Median Cut.

42"

Typical width of median
(Mouse over for more values)

Downward Hyperlinks: At low-speed neighborhood intersections, consider adding Intersection Art. Consult the MUTCD manual for Median Signage. Consult the AASHTO standard for [Median Design Standards].

Intersection Art

Upward Hyperlinks: Bike Greenway, Transportation System, Median Cuts

Intersection art in Portland, OR

Problem: In low-density areas, intersections should prompt drivers and bike riders to slow down and mix with pedestrians. These areas also provide a place for interaction and community activity.

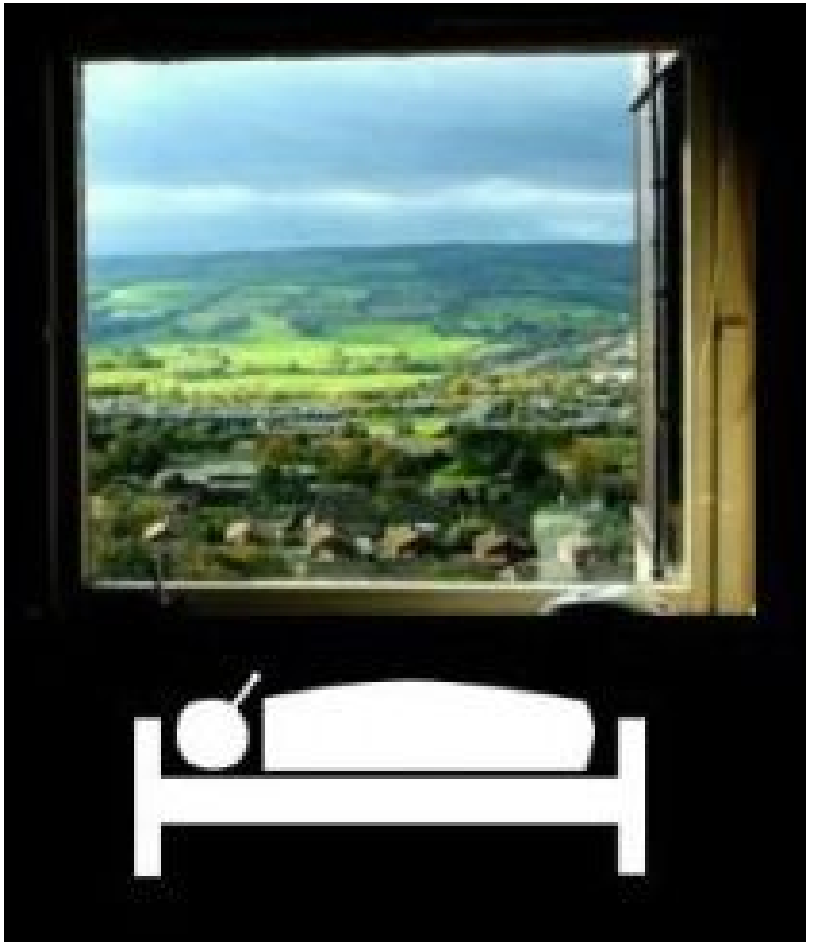
Discussion: One method for reducing potential friction between cyclists and motorized vehicles is to provide "wide kerb", or "nearside", lanes (UK terminology) or "wide outside through lane", (U.S. terminology). These extra wide lanes increase the probability that motorists pass cyclists at a safe distance without having to change lanes. More...

SPECIFICATIONS...

Therefore: When a Bike Greenway enters a low-speed intersection in a residential area, consider whether Intersection Art would be appropriate. If so, use durable, non-toxic paint. Create a participatory planning and painting event. Use non-toxic paint.

Downward Hyperlinks: Information on paint types is available at Street Paint. Libraries of other designs are available at Intersection Art Examples.

Biophilia Pattern Language



bestpractices.fed.wiki.org/view/welcome-visitors/view/healing-garden/view/single-bed-rooms/view/view-to-nature

Welcome Visitors

lcome to the Smallest Federated Wiki for the **Best ctices in Hospital Design** project. This site allows to see, apply, revise and add to best practice terns in design of hospital patient environments. You'll the collaborative and real-time power of Wiki, along extensive links to peer-reviewed research.

u can try the site out with three demonstration terns: Healing Garden, Single Bed Rooms, and View Nature. Give it a test drive!

he patterns form a connected network or "pattern guage," which helps you to put them together into an ual design - your own "Project Pattern Language." ttern languages were developed by the architect ristopher Alexander and his colleagues.

s approach also relies upon an approach to design own as **"Evidence-Based Design"**. EBD is a field of dy that emphasizes the importance of using credible a in order to influence the design process. The proach has become popular in Healthcare hitecture in an effort to improve patient and staff well- ng, patient healing process, stress reduction and ety. Evidence-based design is a relatively new field of dy which borrows terminology and ideas from several ciplines including Environmental Psychology, hitecture, Neuroscience and Behavioral Economics.

se patterns not only include guidelines, they contain s to peer-reviewed literature that helps to verify the dence for the validity of the pattern. Because this is a i-based system, if new information arrives, the pattern be altered, or even deleted altogether. In this way, information grows more useful and accurate over e, and mistakes and inaccuracies can get corrected.

Healing Garden

Upward Hyperlinks: Legible Layout, Hallways looking onto Gardens

Garden elements include water, paths, layers of vegetation

Problem: People can be confined to hospitals for many days. There is a deep need to feel that one is outside and experiencing nature -- yet patients may not be able to actually leave the confines of the hospital.

Discussion: Research has been done showing the therapeutic benefits of gardens. Roger Ulrich, a professor and director of the Center for Health Systems and Design at Texas A & M University, found that viewing natural scenes or elements fosters stress recovery by evoking positive feelings, reducing negative emotions, effectively holding attention / interest, and blocking or reducing stressful thoughts. More...

DATA FILES: HGDATA1, HGDATA2

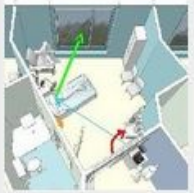
Citations

Therefore: When planning a hospital, include at least one Healing Garden. Make sure it is close enough for all mobile patients to be able to visit regularly. Make it fully accessible, non-toxic and and dementia-friendly.

Downward Hyperlinks: Healing Garden Elements, Single-Bed Rooms, View to Nature

Single Bed Rooms

Upward Hyperlinks: Hallways Looking onto Gardens, Healing Garden



Make sure the single-bed room has a good view and provisions for visitors

Problem: More than one bed per room has been shown conclusively to be associated with increased spread of infections diseases. Yet a single bed room can also be isolating and lonely.

Discussion: With hospital-acquired infections claiming more American lives each year than AIDS, breast cancer or automobile accidents, it seems the very facilities built to heal us have themselves become dangerous places. Two million patients each year suffer from a hospital-acquired infection, the federal Centers for Disease Control and Prevention say, and nearly 100,000 of them die as a result. Architects believe that doesn't have to be the case. More...

DATA FILES: SBR18, SBR20

Citations

Therefore: With few exceptions, plan to include only single-bed rooms. But assure that they have good views out to both hallways and the outside. Provide couch-style seating that allows family members to visit and sleep over.

Downward Hyperlinks: View to Nature, Sleeping Couch

View to Nature

Upward Hyperlinks: Healing Garden, Single-Bed Rooms

A view to nature can result in measurable improvements in health outcomes

Problem: Research has shown that the inability to look out over natural scenes makes us more ill.

Discussion: Research by Ulrich (1984) showed surgical patients with views of nature had shorter post-operative stays, fewer negative comments from nurses, took less pain medication and experienced fewer minor post-operative complications than those with a view of a brick wall. More...

DATA FILES: VtN23, VtN18

Citations

Therefore: Make sure that each room has a view to a natural scene: green vegetation, water, sunlight. If the building is in an urban setting, create a courtyard garden, or use small window atria.

Downward Hyperlinks: Healing Garden, Biophilic Elements

Ctrl or use:

Neighborhood Wiki Pattern Language

Smallest Federated Wiki

buildtomorrow.fed.wiki.org/view/welcome-visitors/view/readiness-diagnostic/view/neighborhood-renaissance-center/view/community-design-wiki/view/pre-approved-plans

Readiness Diagnostic

Upward Hyperlinks: Regional Plan.

Not all sites are created equal!

Problem: Different sites have different levels of readiness for development, requiring different tools.

Discussion: In some cases, sites will simply not be ready for development for a number of years, and even then they may require specialized tools. The Readiness Diagnostic provides an analysis of these requirements. A series of tests provide a branching set of if-then actions, leading to a set of customized tools for each site.

The Diagnostic process is completed in the sub-pattern Diagnostic Test. After you have completed entering the data in the sub-pattern, you can return to this pattern to continue the modeling.

Therefore: When preparing a development plan, or an implementation of an existing plan, use the diagnostic tool to identify key issues and opportunities. The diagnostic tool is essential for **place patterns** like Urban Center, Town Center and Neighborhood Center. You may also decide that the first step is to create a Neighborhood Renaissance Center.

Note: No tracking metrics are associated with this pattern.

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Neighborhood Renaissance Center

Upward Hyperlinks: Readiness Diagnostic.

Neighborhood Renaissance Center brings together ideas and solutions

Problem: The principal coordination needed of city services comes down to coordination within localized places. This is at once the most difficult kind of coordination, and the most necessary.

Discussion: The scale of the neighborhood is the most important when it comes to many of the activities we engage in within cities and towns -- especially those that relate to the building and modifying of the neighborhood itself. Individuals need many resources to build and modify their homes and businesses in a way that complements the neighborhood structure. In some cases they simply need to be able to enforce planning requirements and code limitations. But they need more than limitations: they need positive guidance.

A more complete discussion of this issue can be found at http://www.tectics.com/NRCs.htm.

Therefore To develop the social and physical capital of a neighborhood more fully, establish a **Neighborhood Renaissance Center** in a convenient location in the neighborhood. Provide a Design Library of Pre-Approved Plans, Project Pattern Languages and Technical Guidelines. Create a Community Design Wiki that allows people to build and exchange information.

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Community Design Wiki

Upward Hyperlinks: Neighborhood Renaissance Center.

Wiki GIS page

Problem: People need to be able to share information, and grow the body of information they share as they improve it. This information needs to be displayed geographically.

Discussion: People need to be able to exchange information about planned projects, links to resources, and technical information, coordinated to a geographic display of the neighborhood. In this way, people can see patterns forming, and participate in the further development of those patterns.

Therefore: Create a Geographic Information System, designed as a Wiki, that provides information and guidance on specific topics of rebuilding, such as financing, program requirements, code requirements and so on. Provide the ability to include modular elements of information that the user can collect for their own project. The information can then be easily plugged into the user's own project pattern language, which can then better reflect the requirements and interactions for their own specific project.

Include links to Pre-Approved Plans, Neighborhood Pattern Language, and Home Pattern Language.

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Pre-Approved Plans

Upward Hyperlinks: Neighborhood Renaissance Center, Design Library.

Pre-Approved Plans assure that residents can quickly and cost-effectively approve compatible plans.

Problem: One of the biggest problems for building structures that are compatible with a local neighborhood is the expense and delay of the permitting process -- particularly when it involves customized plans.

Discussion: People need access to plans that are compatible with an existing neighborhood, but that are not cookie-cutter plans. These plans can be adjusted to meet user needs, and to take on distinctive features so as to avoid an oppressive sameness. But they can also be pre-approved by the City plans examiners, and by the stakeholders of the community.

Therefore: Work with the City Planning and Building departments to create a library of pre-approved plans of the kinds of buildings that residents would like to have in their neighborhood. Include modular elements that can be added and subtracted to make the plans easy to modify to meet needs. Provide a Financing Information Guide to help owners to secure financing for their project. Consider hiring a Barefoot Architect to make small modifications to the plans to better fit their needs. Provide Pattern Books to guide owners and builders in the details of their plans.

origin

Community Diagnostic Pattern Language

Inbox (1) - michael.mehaffy | Smallest Federated Wiki

buildtomorrow.fed.wiki.org/view/welcome-visitors/view/feeling-map-diagnostic/view/feeling-map-tool/view/feeling-map-display

Welcome Visitors

Welcome to the Smallest Federated Wiki for the **Envision Tomorrow Carbon Modeling** project.

This project offers a "toolkit" of proven resources for creating livable, prosperous neighborhoods, cities, suburbs and towns. Each tool is designed to "plug and play" with the other tools, forming a coordinated toolkit that is powerful but easy to use.

This module has several notable features:

- It tracks **performance metrics** for variables like cost, savings, tax cost, resource use, and greenhouse gas emissions. As you work with several tools in combination, you can see how these metrics are likely to perform, and to change based on your choices. In this way, Build Tomorrow serves as a **predictive model** of these metrics.

- It uses an advanced **wiki** format, which means that the information and resources can grow and become more accurate and useful. People who develop new tools, or new ways of using existing tools to achieve better results, can share that information, and others can thereby build more useful toolkits. Significant local improvements can also be uploaded to the main system, making it progressively smarter too. (This kind of improvement process is based on the Github open-source model of Linus Torvalds.)

- It uses a **pattern language** format, which means the tools can interface with each other as elements of "object-oriented design." In plain language, the tools work together to help you to make a design that is a better "fit" with your unique set of problems. (This system is in widespread use today, especially within computer software.)

- It is designed to form a module within the **Envision Tomorrow** system, an open-source scenario-modeling tool developed by Fregonese and Associates, and now in development at the University of Utah. It will allow those using Envision Tomorrow to go beyond scenario

Feeling Map Diagnostic

Upward Hyperlinks:
Readiness Diagnostic

A Feeling Map "cluster map" showing different patterns of evaluation by color

Problem: Qualitative characteristics play a huge but often under-appreciated role in our lives. They are so important that if we don't account for them, a project is not likely to be successful. But our methods for doing so are crude and quantitative.

Discussion: The technology of our age has historically been much better at managing quantitative factors than qualitative ones. To handle qualitative factors, we usually rely upon "genius artists" to come and provide aesthetic characteristics, almost as a kind of cloak over the quantitatively determined parts. (We put an exotic "styled" body over the "guts" of the car, for example.)

Occasionally we are better at integrating these two factors -- but too rarely. The problem is especially acute when dealing with designs with multiple sub-parts that need to "go together" in a more organic way. Parts of neighborhoods and cities are very good examples. How can we do this?

The "feeling map" is what is known as a "consensus methodology" -- a way of combining many smaller qualitative evaluations into a larger, more reliable diagnostic map. Such maps can be used

Therefore: When beginning a project, always go through a qualitative diagnostic, and use a *feeling map* to identify the areas to be repaired, improved or preserved.

Downward Hyperlinks: Use the Feeling Map Tool to work with a group to get measurements. Use the Feeling Map Processor to compile the results.

Feeling Map Tool

To use this tool, drag your project map into the GPS-activated window below, and set the correct scale:

Click HERE

Control Panel

Then have others on your team load this tool onto their handheld, and **use the buttons below** to mark their evaluations as they navigate the project area.

Feeling Map Display

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Feeling Map Display

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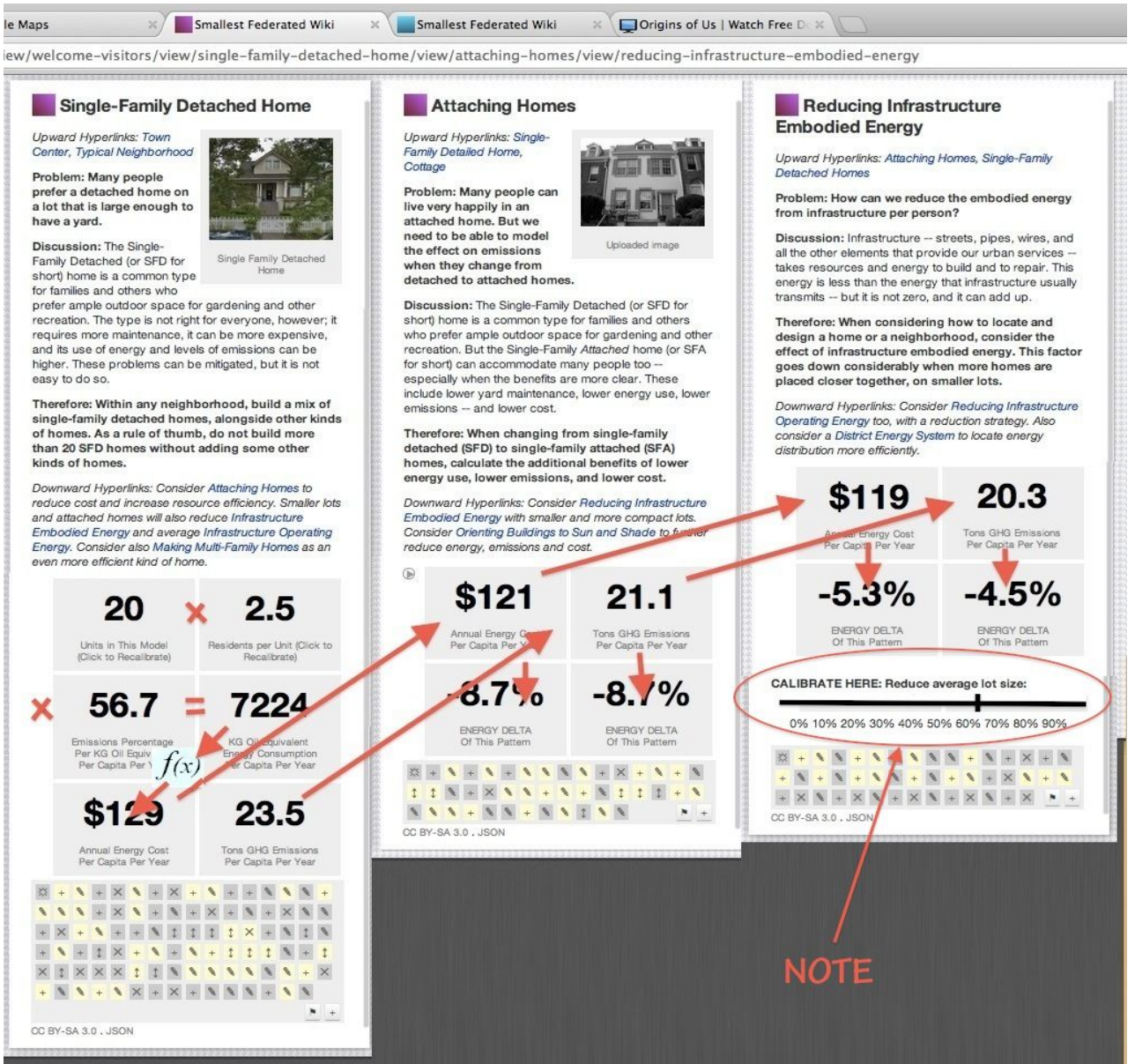
Carbon Modeling Pattern Language



Carbon Modeling Pattern Language

Welcome Visitors

newer, older

Welcome to the Smallest Federated Wiki for the **WikiPLACE Carbon Modeling** project.

This module has several notable features:

- It tracks **performance metrics** for variables like cost, savings, tax cost, resource use, and greenhouse gas emissions. As you work with several tools in combination, you can see how these metrics are likely to perform, and to change based on your choices. In this way, Build Tomorrow serves as a **predictive model** of these metrics.

- It uses an advanced **wiki** format, which means that the information and resources can grow and become more accurate and useful. People who develop new tools, or new ways of using existing tools to achieve better results, can share that information, and others can thereby build more useful toolkits. Significant local improvements can also be uploaded to the main system, making it progressively smarter too. (This kind of improvement process is based on the Github open-source model of Linus Torvalds.)

- It uses a **pattern language** format, which means the tools can interface with each other as elements of "object-oriented design." In plain language, the tools work together to help you to make a design that is a better "fit" with your unique set of problems. (This system is in widespread use today, especially within computer software.)

- It is designed to form a module within the **Envision Tomorrow** system, an open-source scenario-modeling tool developed by Fregonese and Associates, and now in development at the University of Utah. It will allow those using Envision Tomorrow to go beyond scenario planning, and develop concrete strategies for implementation.

- Perhaps most uniquely, it combines patterns of **place** with patterns of **implementation process**, such as economic and regulatory tools. A "place pattern" such as a Town Center might be combined with a pattern for an urban design code, and another pattern for a Tax-Increment Financing system to build the Town Center.

To see how this works, you can explore our demo beginning with the pattern Town Center. Or to begin at the level of planning and preparation, start with the pattern Readiness Diagnostic.

You can also view a demo of our energy and greenhouse gas modeling patterns, starting with the pattern Single-Family Detached Home. Try it!

Lastly, try our Feeling Map Diagnostic pattern

This project is now in development, and we

Residential Neighborhood

older

PLACE PATTERN for a neighborhood of homes

This is the **Place Pattern** for a neighborhood of homes. It establishes the characteristics of the homes within a residential neighborhood, and it allows you to see how changes are likely to affect its performance in a number of ways. These measurements are called *metrics*.

(NOTE: In the final version there will likely be several sections below folds, and GHG emissions will be one - also tax revenue and other externalities.)

GREENHOUSE GAS EMISSIONS

How will the neighborhood likely perform on GHG emissions per person? To predict this, we start with a "baseline" of emissions per person. The number we have below, the average for the USA, is from the US Energy Information Agency website . NOTE: You can change this number if you have a more accurate one for your locality (this is called *local calibration*).

18 MtCO2e per Person per Year

Now we set the number of persons per unit, and the required (or target) number of units. Go ahead and put in your own numbers, if you have them. But don't change "Persons" -- that will calculate for you the total number of persons living in your neighborhood.

2.5 Persons per Unit
100 Required Units
250 Persons

So here is the total of greenhouse gas emissions per person in your neighborhood:

250 Persons
18 MtCO2e per Person per Year
4500 Total MtCO2e per Year

Now, how would this number change if you modified the mix of housing types? To allocate them, click on the desired types below:

Single Family Residences

Attached Residences

NOTE: To work with more than one type at the same time, hold down the "shift" key and click.

Single Family Residences

older

Single Family Residences are desired by many people

Many people want to live in residences surrounded by yards and gardens, and not touching other homes. Larger families with children especially find these homes desirable. These isolated structures are separated by lot boundaries with no shared services beyond the street.

GREENHOUSE GAS EMISSIONS

Single family residences tend to increase the level of greenhouse gas emissions per person. (But as we will see, there are other ways to lower it too, even with single family residences.)

To recap, the current baseline of GHG emissions per person is:

18 MtCO2e per Person per Year

Here you can change the allocation of single family residences in your neighborhood:

2.5 Persons per Unit
50 Allocated Units
125 Persons in Single Family Residences

Now you have the number of persons living in single family residences. (You can change this if you want -- but it will override the number you had in the beginning.)

50 Allocated Units
50 Total Units So Far
100 Required Units

Now you have the number of units you have allocated so far, and the target of "required units". If these don't match, you will need to add or subtract units somewhere.

18 MtCO2e per Person per Year
125 Persons in Single Family Residences
2250 MtCO2e per Year
2250 Total MtCO2e per Year

Now you have the GHG emissions per person in this part of the neighborhood, and the total GHG emissions contributed by this part of the neighborhood.

What else can you do to change the configuration

Attached Residences

older

Many people love the convenience of attached homes

Many people do not want to care for large yards or pay the expense of a large lot. They prefer attached homes -- structures that share at least one wall with adjacent structures, and typically share sanitary and storm sewer services. Couples without children or with only one or two children, and those whose children are grown, often prefer this kind of home, especially if it is in a walkable neighborhood.

GREENHOUSE GAS EMISSIONS

Attached residences tend to have lower emissions than single family (detached) residences, because their shared walls are more energy efficient. In addition, the yards tend to be smaller, requiring less water and other resources.

First, we apply a *predictive delta* to the baseline of GHG emissions per person. This number is an average of the difference that is predicted by empirical research [citation needed].

18 MtCO2e per Person per Year
0.9 Factor
16.2 MtCO2e per Person per Year *

Now we change the allocation of attached residences in the neighborhood:

2.5 Persons per Unit
30 Allocated Units
75 Persons in Attached Residences

Now you have the number of persons living in single family residences. (You can change this if you want -- but it will override the number you had in the beginning.)

30 Allocated Units
80 Total Units So Far *
100 Required Units

Now you have the number of units you have allocated so far, and the target of "required units". If these don't match, you will need to add or subtract units somewhere.

16.2 MtCO2e per Person per Year
75 Persons in Attached Residences
1215 MtCO2e per Year *
3465 Total MtCO2e per Year *

Compact Neighborhood

older

Many people love to live in compact, walkable neighborhoods

One way to make a neighborhood more efficient -- and even more enjoyable to live in -- is to reduce the amount of land used by residences. That will improve energy efficiency, resource use, and cost. It will also allow people to walk more easily, and see their neighbors.

GREENHOUSE GAS EMISSIONS

Homes in more compact neighborhoods tend to have lower emissions than those in other neighborhoods, because the yards are smaller, requiring less water and other resources. People also tend to drive less, and drive shorter distances.

First, we take a baseline of density, an average of many cities in the USA, 8 homes per acre.

8 Standard Density

Then we specify a factor to increase the density (as a baseline, 1.2, or 25% more dense). This number is applied to a *function* (a factor that adjusts the result) representing difference that is predicted by empirical research [citation needed].

1.2 Neighborhood Density Increase
8 Standard Density
9.6 Standard Density *
? FUNCTION *
0.9 Reduced Density Factor

We then apply this *predictive delta* to the baseline of GHG emissions per person.

0.9 Reduced Density Factor
16.2 MtCO2e per Person per Year
14.58 Total MtCO2e per Person per Year

Now you have the factor that can be applied to the total GHG emissions to get the reduction. To get that calculation (and all the other results of your choices), go to "Neighborhood Scale Performance."

Neighborhood Scale Performance

Tax Revenue Pattern Language

Municipality Return on Investment Calculator

Tax Return Modeler

This tool enables you to calculate the tax return on a proposed building project, and compare it to long-term maintenance costs and other externalities.

FTo start, we'll enter the size of the project along with the annual property tax paid. Then you'll see what the return per acre is:

221000 Total Property Tax
34 Total Acres
6500 Property Tax per Acre

Next, enter the total expected retail taxes for the project. Then you will also see the retail taxes per acre.

1615000 Total Sales Tax
34 Total Acres
47500 Sales Tax per Acre

Next, enter the total number of jobs. Again, you will see displayed the jobs per acre.

200 Total Jobs
34 Total Acres
5.88 Total Jobs per Acre

Now, here is where you can begin to see the cost-effectiveness of the project over time. First, the total income per acre:

6500 Property Tax per Acre
47500 Sales Tax per Acre
54000 Total Income per Acre

So what is your return on the public expenditure per acre? Below is a standard cost factor for all the public infrastructure maintenance, operating cost, and other "externalities" - abbreviated here

Comparison Project 1

Again, enter the project size and annual property tax paid, to get the yield per acre:

126800 Total Property Tax
0.2 Total Acres
634000 Property Tax per Acre *

Retail taxes:

16720 Total Sales Tax
0.2 Total Acres
83600 Sales Tax per Acre *

And total number of jobs:

15 Total Jobs
0.2 Total Acres
75 Total Jobs per Acre *

Now the total return after externality costs, and return per acre. (Enter a new externality cost per acre if you have it.)

634000 Property Tax per Acre
83600 Sales Tax per Acre
717600 Total Income per Acre *

And the return on public investment:

717600 Total Income per Acre
3000 Annual EC per Acre
239.2 Return on Public Investment *

Comparison Project 2

Again, enter the project size and annual property tax paid, to get the yield per acre:

126800 Total Property Tax
1 Total Acres
126800 Property Tax per Acre *

Retail taxes:

16720 Total Sales Tax
1 Total Acres
16720 Sales Tax per Acre *

And total number of jobs:

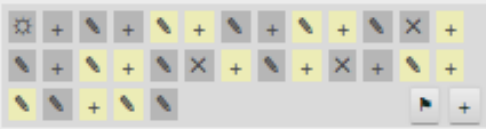
15 Total Jobs
1 Total Acres
15 Total Jobs per Acre *

Now the total return after externality costs, and return per acre. (Enter a new externality cost per acre if you have it.)

126800 Property Tax per Acre
16720 Sales Tax per Acre
143520 Total Income per Acre *

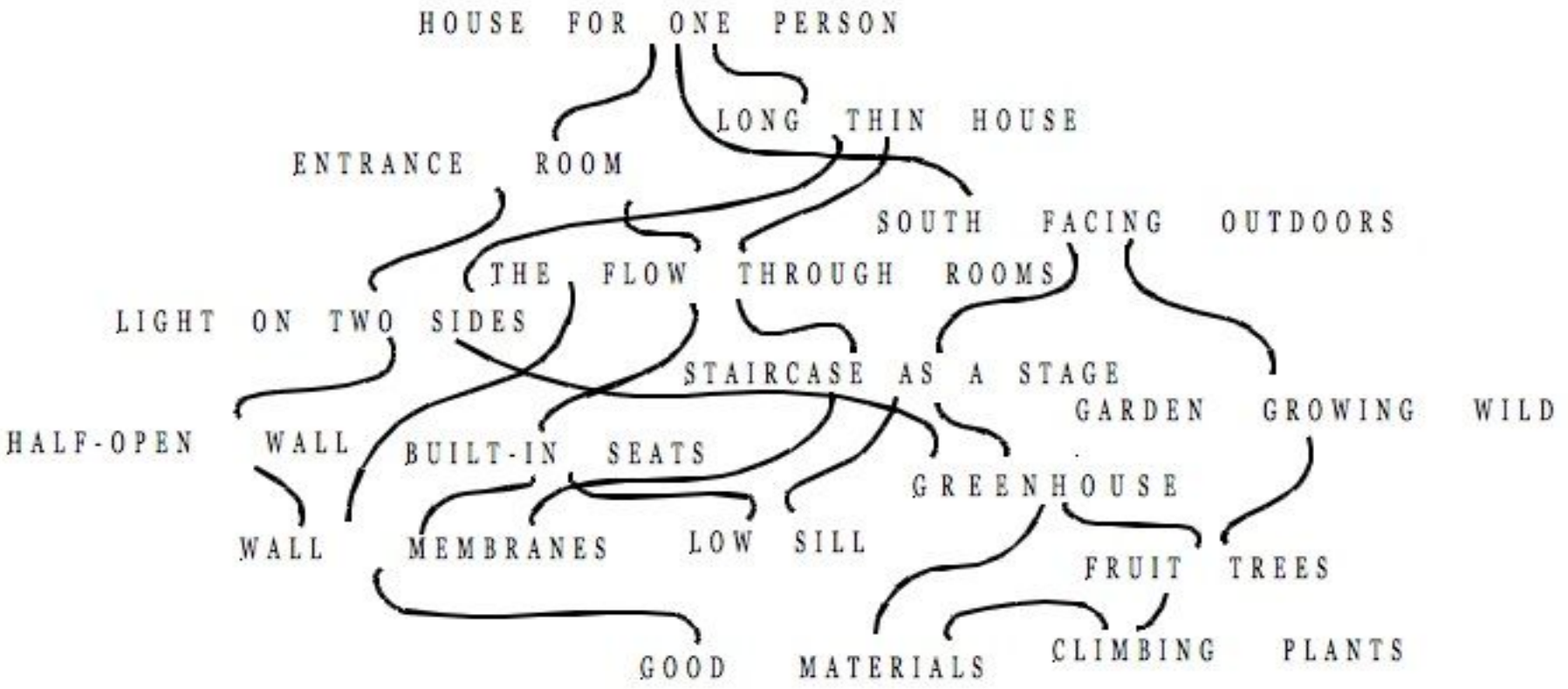
And the return on public investment:

143520 Total Income per Acre
3000 Annual EC per Acre
47.84 Return on Public Investment *



Network of Relationships

"We need a web way of thinking." - Jane Jacobs



Network of Relationships

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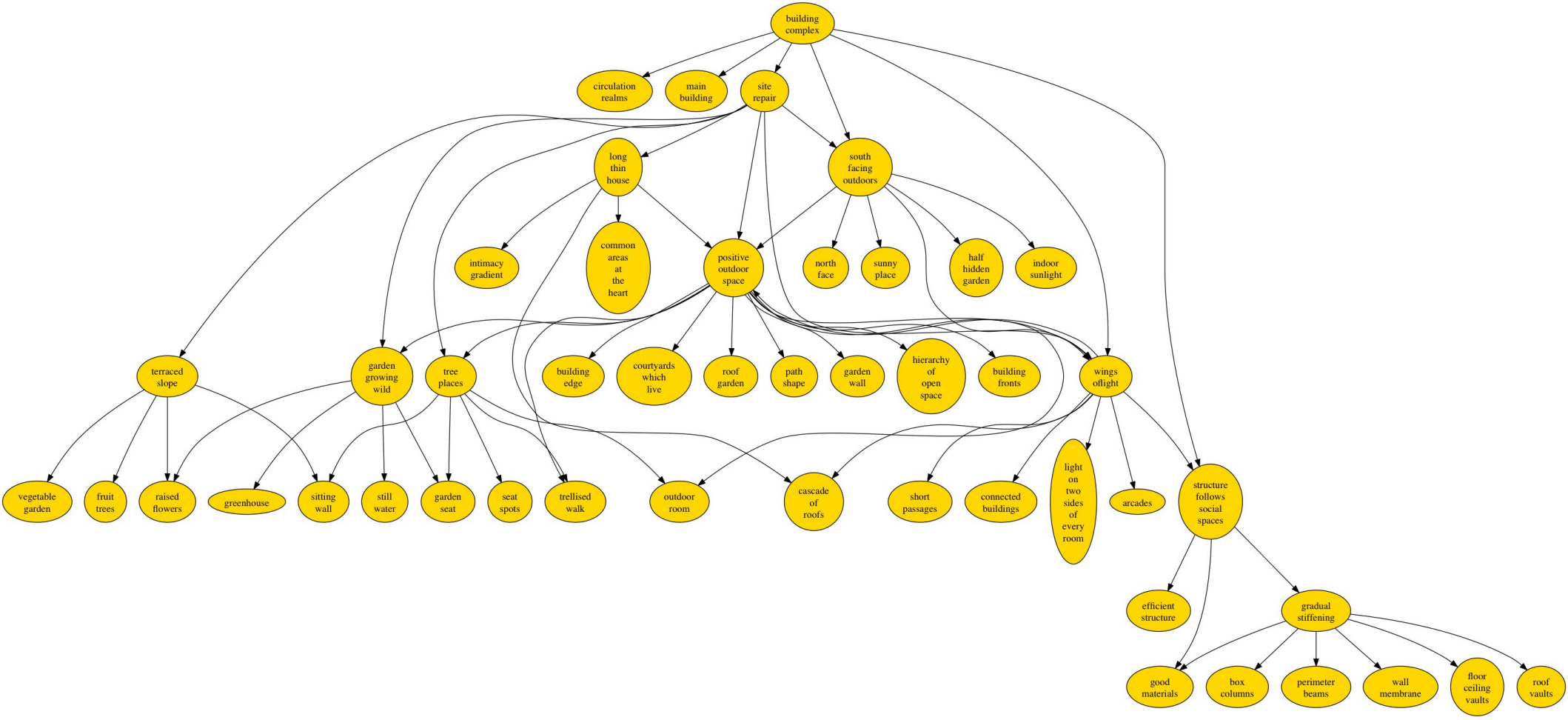

We need a web way of thinking...

and ACTING!

The mission of Sustasis is to provide useful new tools to that end.

-Thank you.