New User-Led Design Processes for Digital Fabrication

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Structure

Customization
- Post-consumption
- Co-Creation

Proposals for user creation

Relate this to current technology activities

Proposal to tools

(Speculative) proposal for activity theory

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Blackburn 1865

BALLADS AND NARRATIVE POEMS BY DANTE GABRIEL ROSSETTI

THE WHITE SHIP.

Henry I. of England. 25th November 1120

I ONLY AND NONE BUT ME CAN THE TALE BE TOLD, THE BUTCHER OF ROUEN, POOR BEROLD.

LANDS ARE SWAYED BY A KING ON A THRONE. 'TWAS A ROYAL TRAIN PUT FORTH TO SEA, YET THE TALE CAN BE TOLD BY NONE BUT ME.

THE SEA HATH NO KING BUT GOD ALONE. KING HENRY HELD IT AS LIFE'S WHOLE GAIN THAT AFTER HIS DEATH HIS SON SHOULD REIGN. 'TWAS SO IN MY YOUTH I HEARD MEN SAY, & MY OLD AGE CALLS IT BACK TO-DAY.

KING HENRY OF ENGLAND'S REALM WAS HE, AND HENRY DUKE OF NORMANDY. THE TIMES HAD CHANGED WHEN ON EITHER COAST "CLERKLY HARRY" WAS ALL HIS BOAST.

Ballads and narrative poems Hammersmith 1893

The Red House 1860

Not all ‘highly decorated Victoriana’

‘for the people and by the people, and a source of pleasure to the maker and the user’

William Morris

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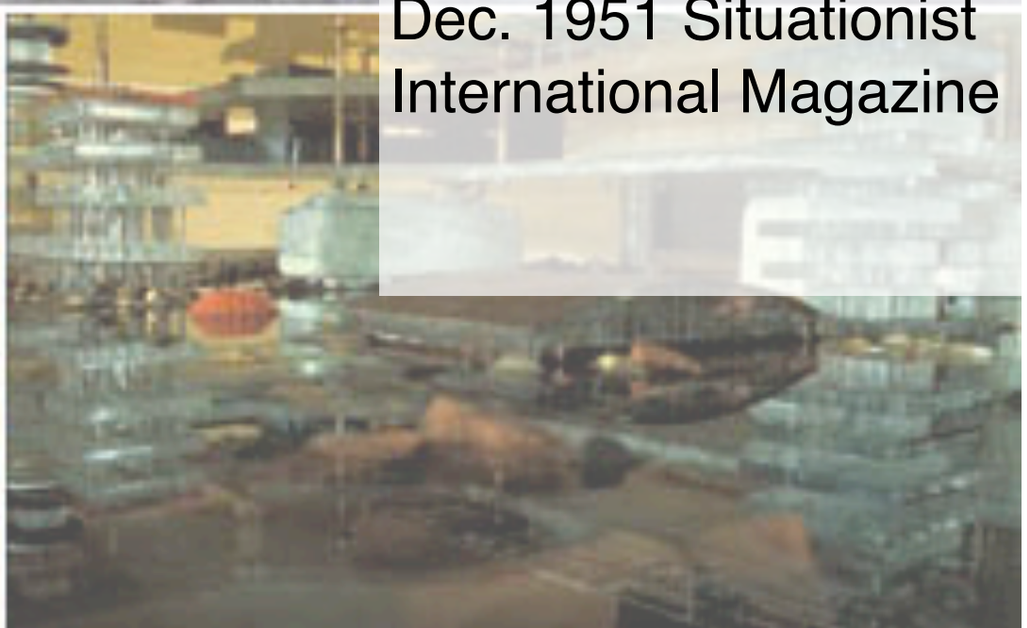
Constant Nieuwenhuis

New Babylon

‘emanacapatory geography’

1951 “another City, another life”
Dec. 1951 Situationist
International Magazine



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(Peter Cook 1964)

Archigram
Self Build Plug in City

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Ettore Sottsass – New Domestic Landscape Modular House (1972)

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Jencks Adhock

Adhocism, with Nathan Silver (1972).

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updated....check it out!

Customatix (2000)

Post-Consumption Customization

- Do Create
- Kessels Kramer and Droog

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The grand narrative has fallen silent. It is now time for lesser tales…they are not moralizing tales nor do they preach universal truthes..they are modest tales that everyone can understand.

Ramakers 2002

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Tool for ~~users~~
(citizens) to create
or complete
products really
outside the control
of the designer

High
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MOS
milkorsugar©

all products you can customize and order online

the custom shopping guide

search

products shipping to: Select country

yourveryown planet?

It is rumoured Al Gore already ordered his: a fully customized planet. And it can be yours, too.

At MilkOrSugar.com you'll find reviews of sites that offer customization of virtually anything you could come up with.

create your own:

Accessories » bag / purse

Personal Louis Vuitton Bag

Team up with famous designer Louis Vitton as you
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www.
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pricing: $970 - $3860
base models: 3
delivery: World wide
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Mass customization
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Music » record

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Beyond Customization
Design facilitated
Citizen-led production

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Beyond Customization
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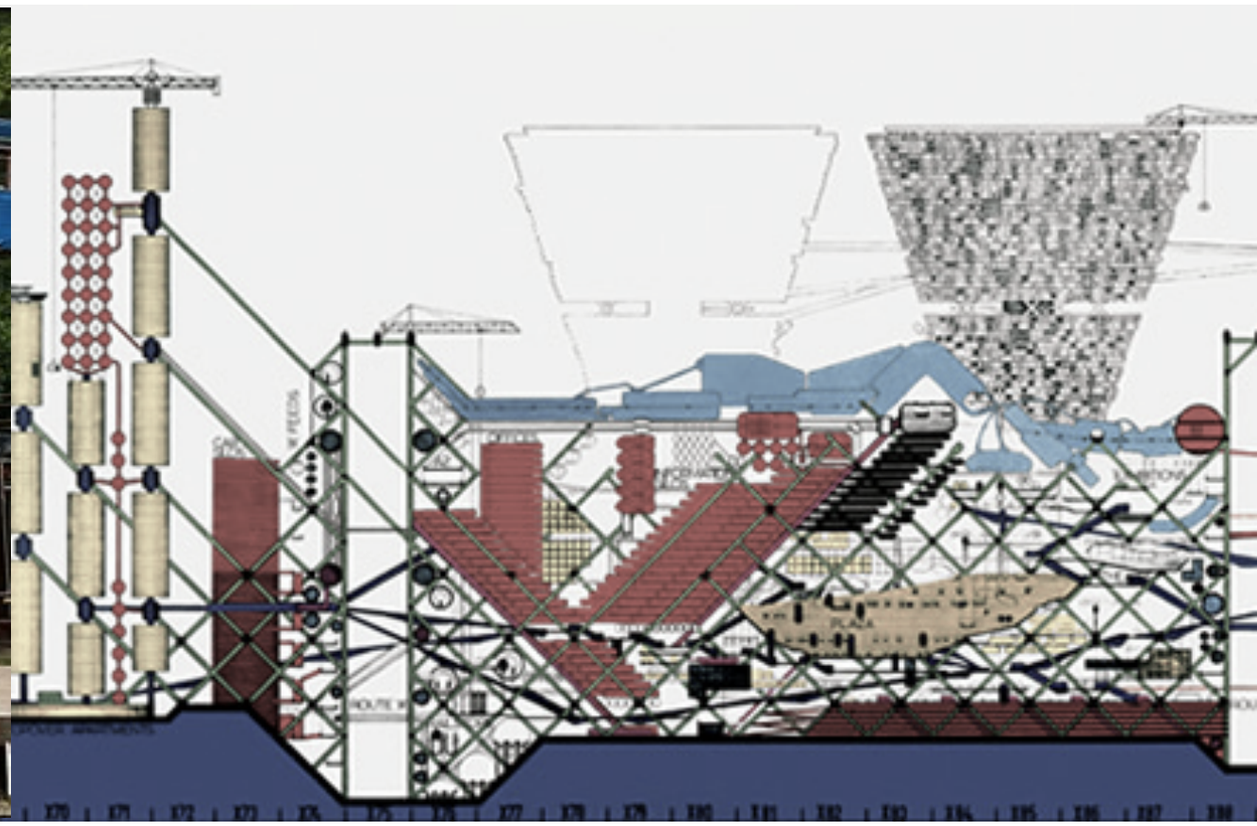


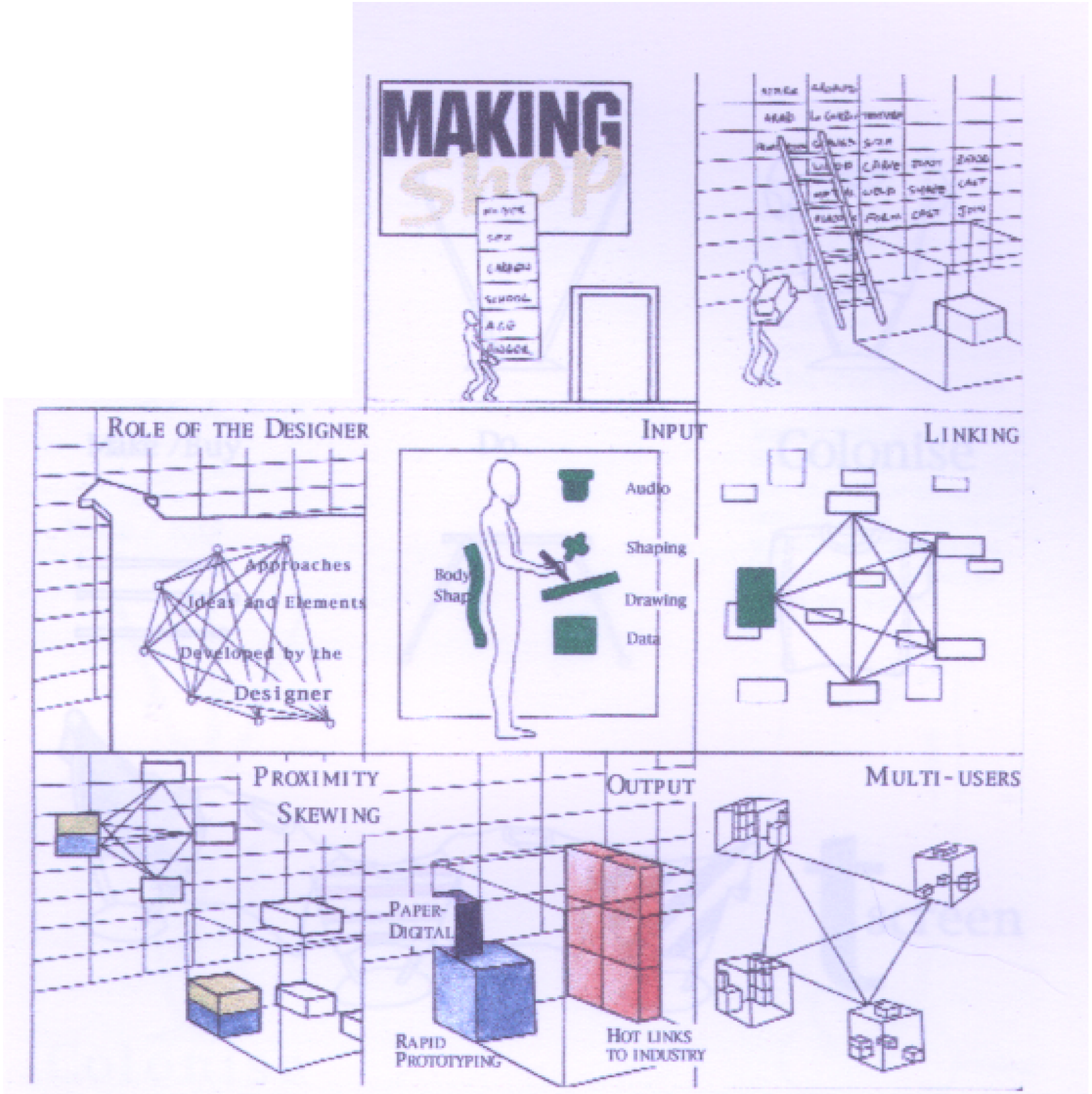
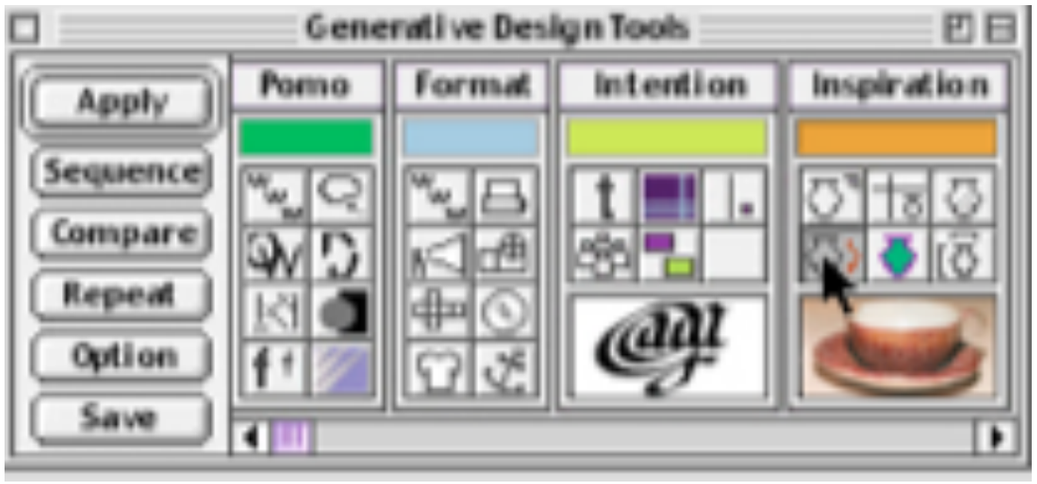
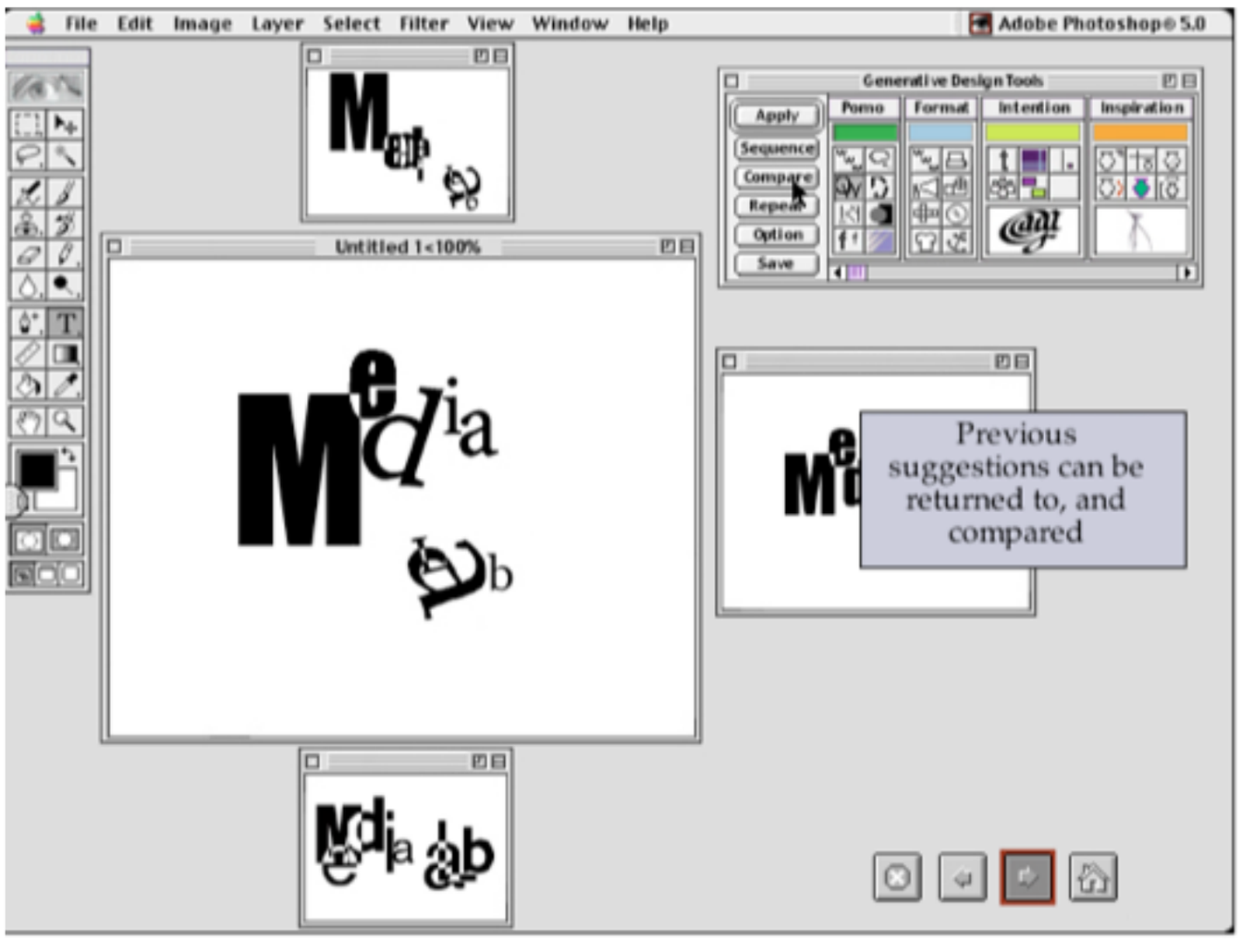


Fig. 4.16 Conceptual Framework



‘Problem solving modules that plug together.



These are used by citizens to create products that are meaningful to them not the designer

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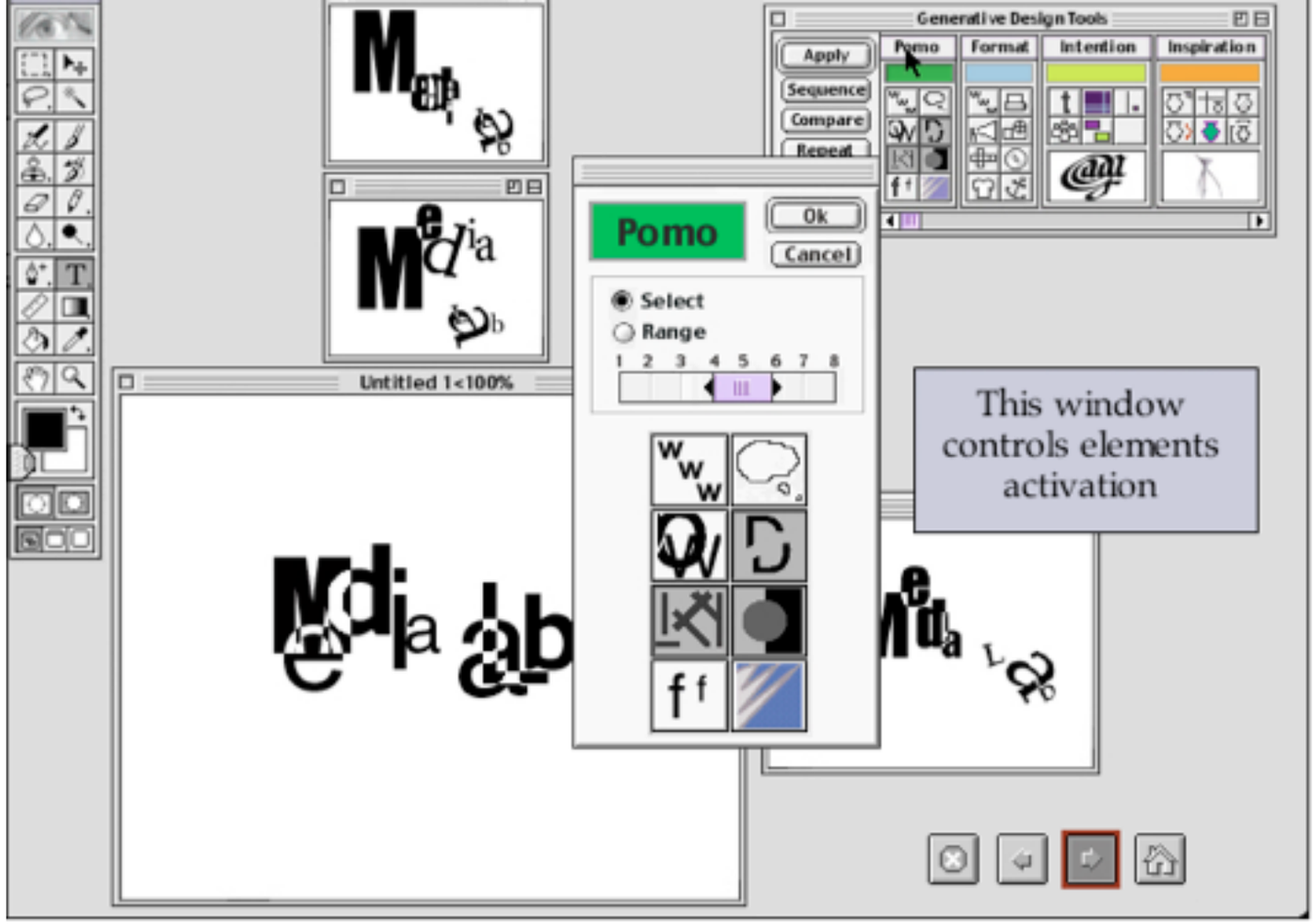
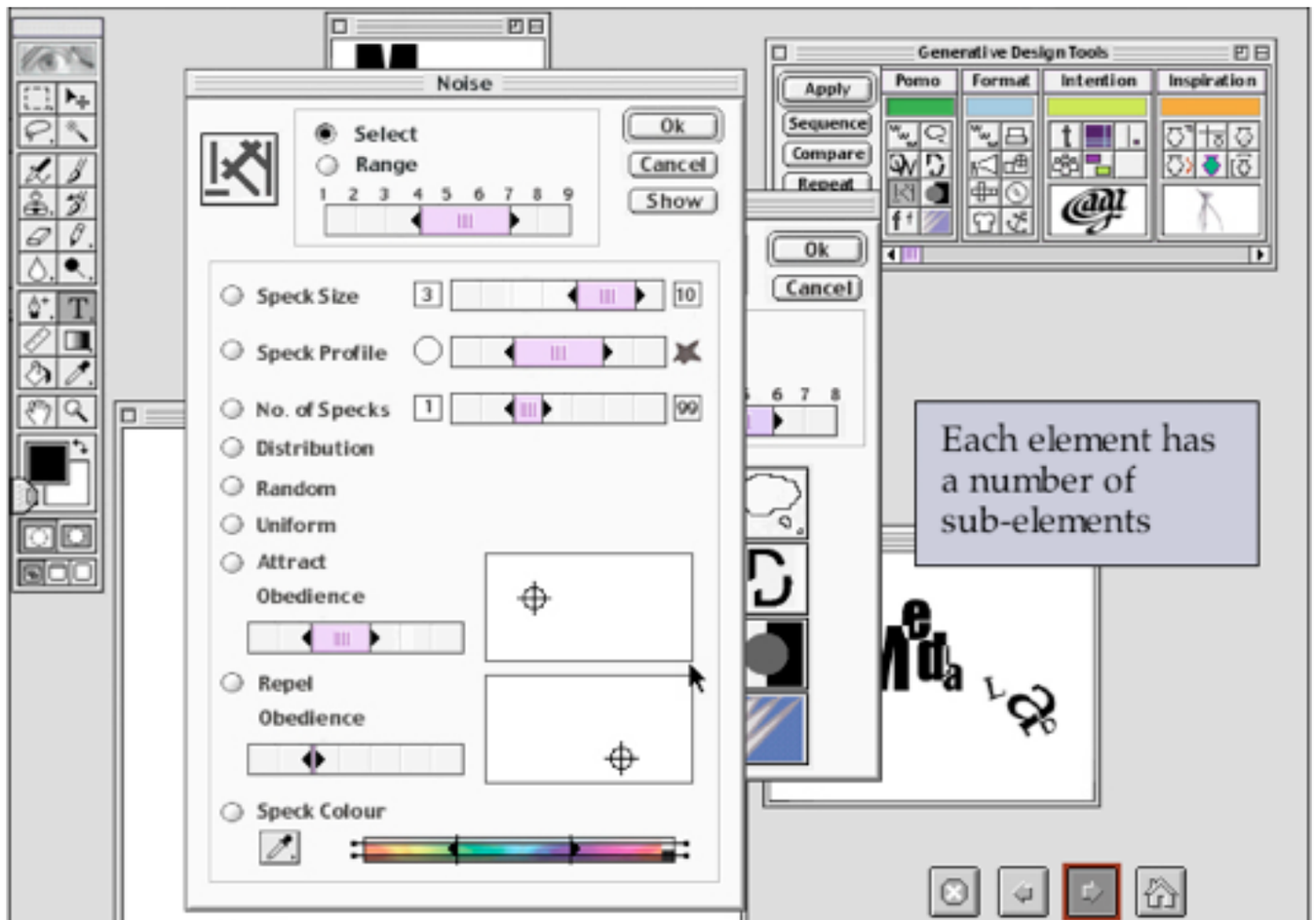
Generative Design Tools, Using the Post-Modern’ (Cruickshank 1999)



Each module would have system would have variable parameters Set by the designer.



Citizens would also be able to make their own modules

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Implications for Design Education

Development of a Methodics approach - a range of design processes as problem solving mechanisms

Gasparski (1993)

Gasparski, W., 1993, 'Design Science and Philosophy: The Praxiological Perspective

Methods used in the workshop (simple version)

- **Aesthetic** – concerned with developing and applying a visual language, a traditional approach for Art and Design students.
- **Theoretical** – using a set of ideas as a guide for the process. There should be a relationship between the ideas being explored and the problem although this does not necessarily have to be a conventional link (e.g. one student related Darwinian evolution theory to the future of printed magazines).
- **Technological** – exploiting the capabilities of a piece of equipment (old or new) and relating it to the project
- **Craft** – exploring the potential of an individual to perform a particular skill and relating that to the topic. This skill is not restricted to a traditional medium; the skill could as easily be Java programming as bookbinding.

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Design Methodolology Matrix

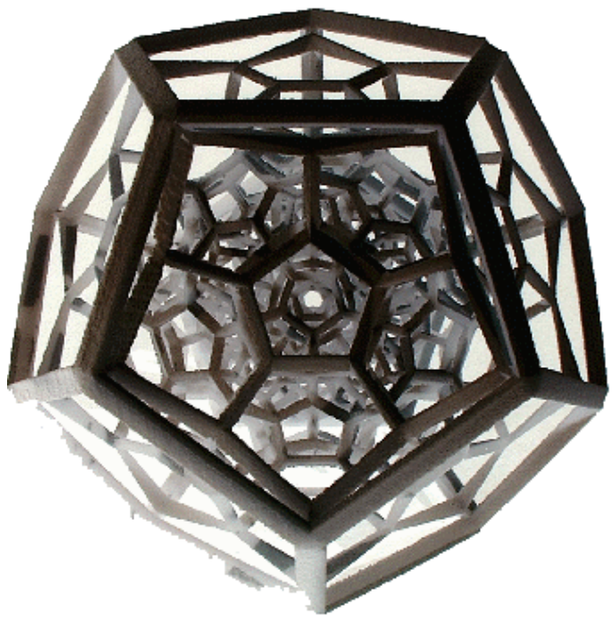
Simplified Process

	Premise	Research	Development	Making	Testing	Explanation	Presentation	Evaluation
Empirical	A clear statement of your idea and how you are going to measure your outcomes	Extensive primary research, statistically sound, well documented and analysed	Extrapolating from the data collected into a set of guiding criteria.	This must finished to a sufficient standard for it to undergo extensive analytical testing	This must be primary in nature and analysed in rigorous manner.	This must be within the empirical context the project was developed in.	An outlining your criteria, aims, objectives and quantifiable conclusions	An extensive investigation and reasoned proof of the conclusions drawn from the project
Craft	How does your idea relate to the craft you are interested in?	What is the process, how does this relate to your premise how can you develop it?	The incorporation of ideas and acquired techniques into an achievable, stated outcome	This must demonstrate a high degree of engagement with both ideas and techniques	Is the technique successful? Does its application communicate your ideas	Demonstrating your mastery of the technique & its relevance to your ideas	The process used the reason for this selection and the premise you have investigated	An extensive investigation and reasoned proof of the conclusions drawn from the project
Technology	How does your idea relate to the technology you	What `tool` are you going to be using, how does	The practical bridging of premise and tools	This must clearly demonstrate the principles of your	Have you un-equivocally demonstrated the	Show the results of your investigating and their elevance to your deas	How your premise has been demonstrated by the technology you have employed	An extensive investigation and reasoned proof of the conclusions drawn from the project
Aesthetic						his must communicate the deas underpinning your esthetic	What premise is this aesthetic trying to communicate?	An extensive investigation and reasoned proof of the conclusions drawn from the project
Theoretical						Demonstrating our whole body f work especially our application of heory	How do theory and practice relate to each other to investigate your premise	An extensive investigation and reasoned proof of the conclusions drawn from the project

Used with around 800 design students over a 6 year period, from Foundation to Masters level – strong anecdotal evidence for success but no empirical evidence

Now is the time to re-evaluate methodics approach to *designing* facilitation

Designing ways to help people make their own stuff.



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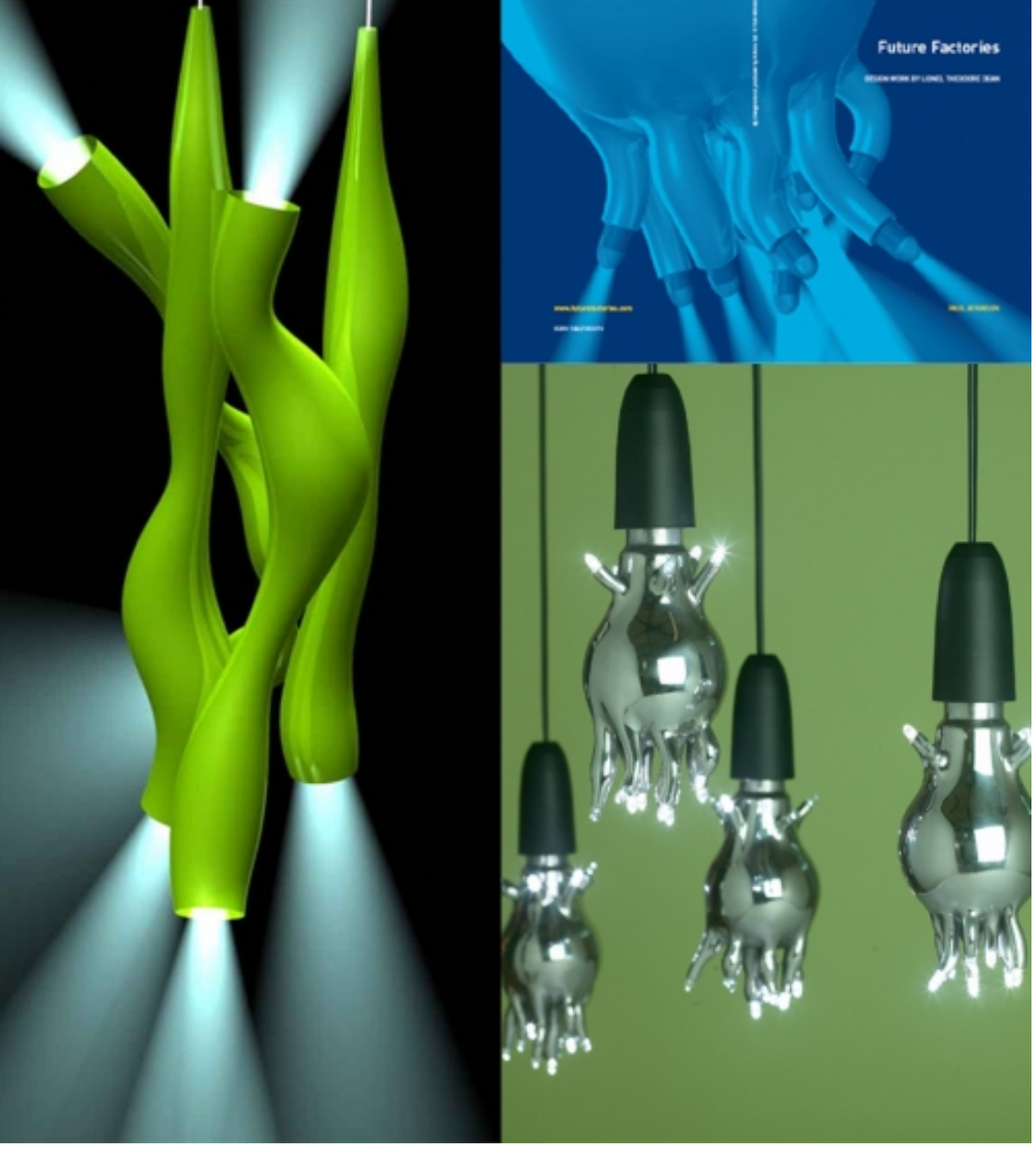

FutureFactories

Atkinson, P (Ed.) Automake and Future Factories, Hub, National Centre for Craft and Design, 2008.

AutoMake

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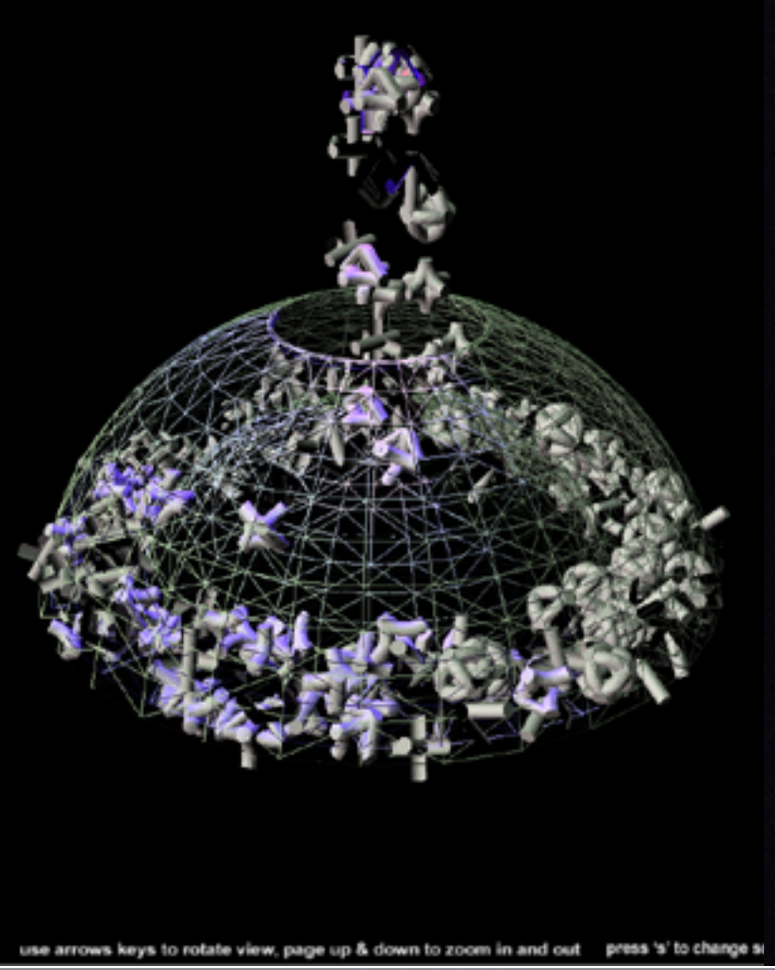
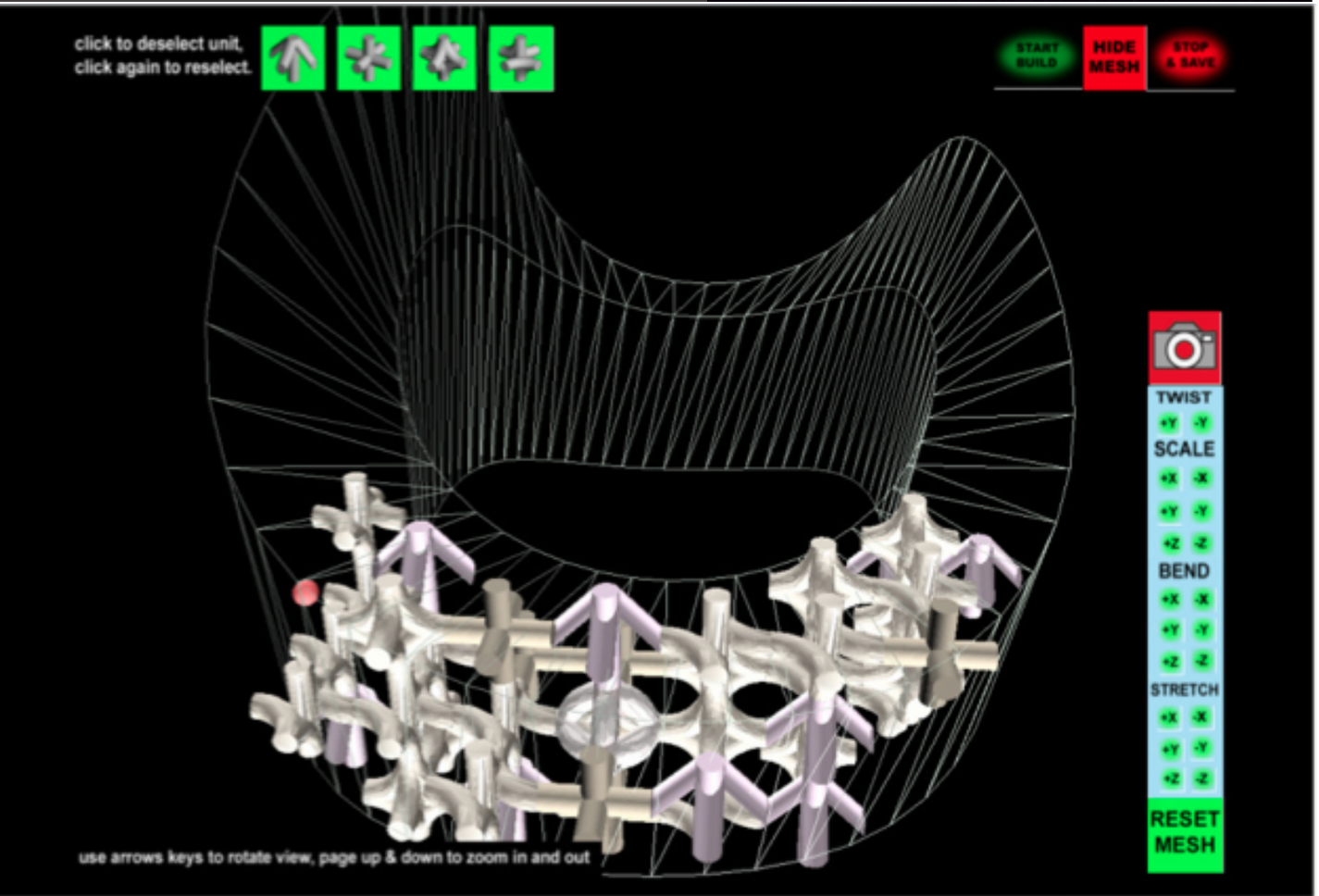


AutoMake



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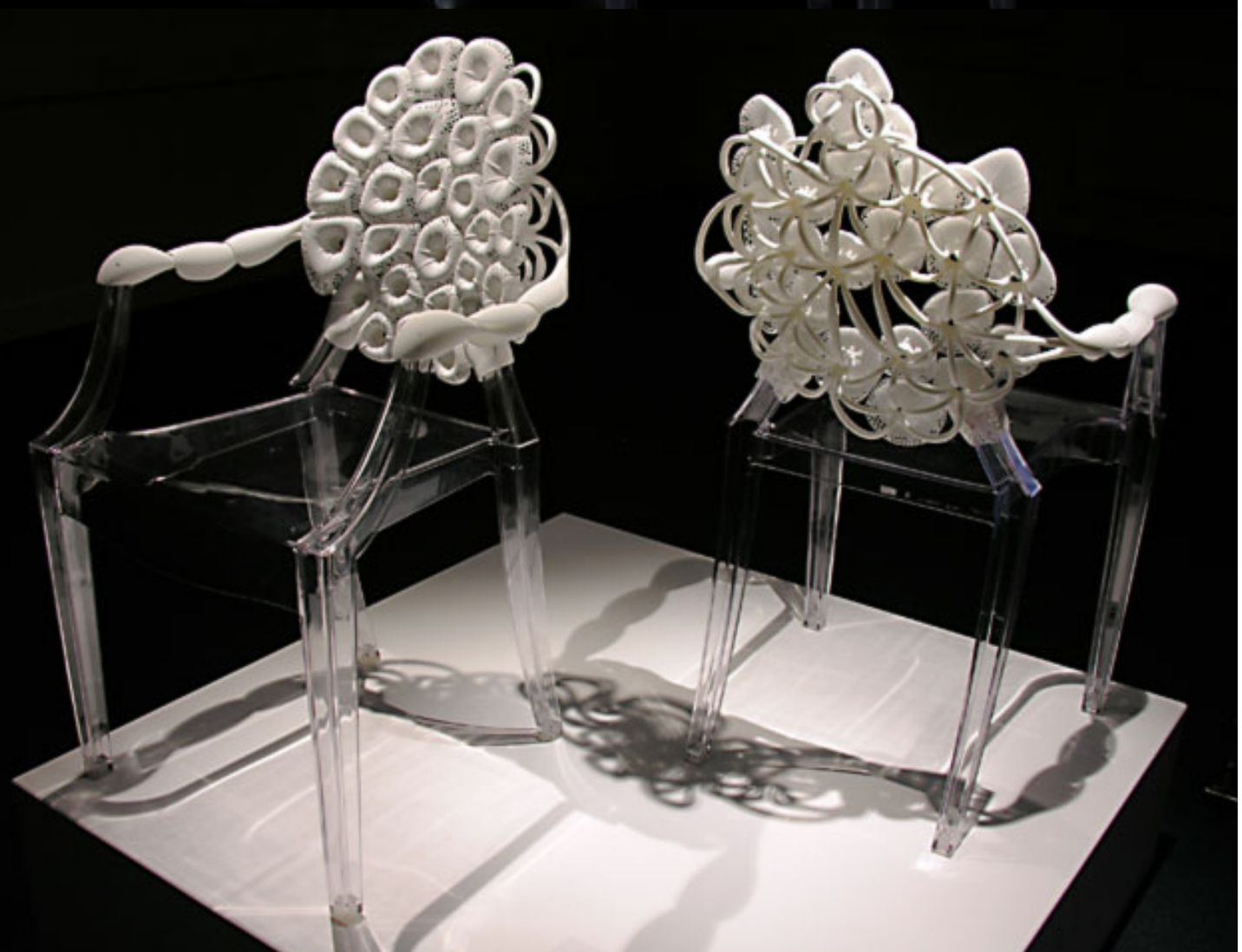

‘Holy Ghost’

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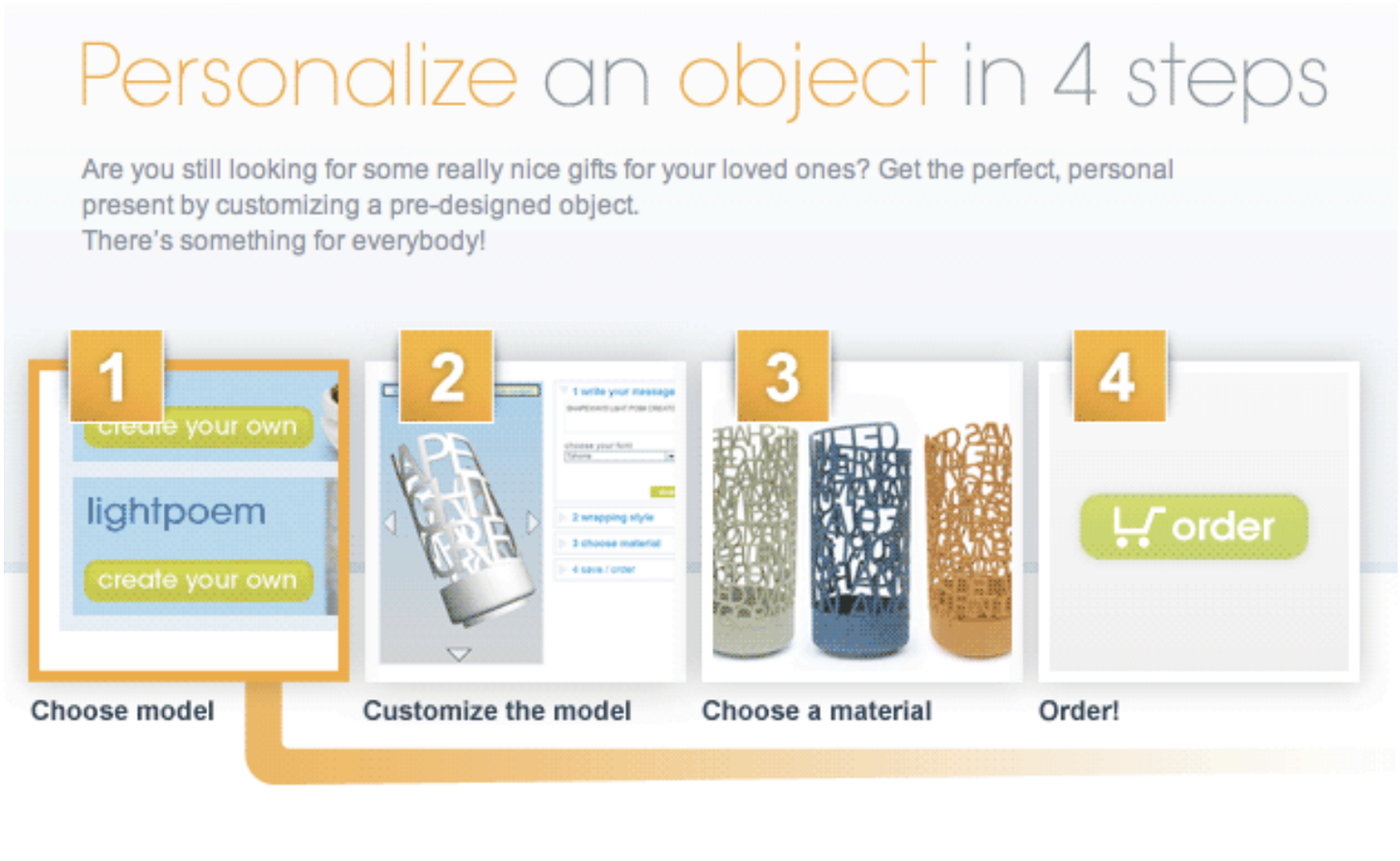
Toolkits for User Innovation



Nervous System

1: diffusion limited aggregation

In this applet we experiment with an algorithm called diffusion limited aggregation or DLA which models dendritic growth. DLA simulates the movement of particles undergoing random motion, and when particles collide they stick. Over time the particles aggregate into organic, branching forms similar to those seen in corals and dendritic crystals.

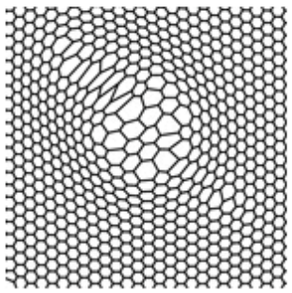
When playing with the applet, you can access various parameters through the control panels and use them to change the overall form of the aggregation.

Designs you create using the applet can be ordered as custom, one of a kind jewelry.

launch the applet

view the source code

2: particle systems



To create the radiolaria line, we used a particle system to simulate a hexagonal mesh of springs. A particle system is a physics simulator which works with point particles and forces. You can do a surprisingly large amount without thinking about rigid bodies. The applet allows you to play with the same system we used to create the radiolaria line and make patterns by distorting the mesh.

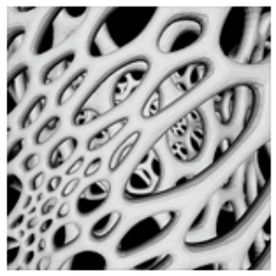
The applet currently has five tools for distorting the mesh. There are tools for creating and deleting attractive and repulsive forces, and there are tools for cutting and healing springs.

Radiolaria are microscopic organisms that exhibit beautiful structures often featuring hexagonal patterns.

See **this video** for a quick tutorial on how to use the applet

launch the applet

3: 3D & Subdivision surfaces



This is the applet we used to create the 3d printed cell cycle pieces. It uses the same technique as the radiolaria applet, but in 3D. It also employs Catmull-Clark subdivision surfaces to make the smoothed shape.

Directions:
Left mouse button - click and drag to rotate the camera
Right mouse button - click and drag to zoom the camera
Middle mouse button - click and drag to pan the camera

Clicking inside of a cell will subdivide it in both the 2D + 3D views

The control panels on the left allow you to modify the basic mesh in many ways. You must click the regenerate button to see the effect of the controls in the mesh structure panel; however all of the other controls will update the mesh immediately.

Using the 2d view may give you a finer level of control of the cellular patterning. The smooth preview view allows you to see the mesh smoothed out as it would be printed.

launch the applet

view the source code

comments or questions?

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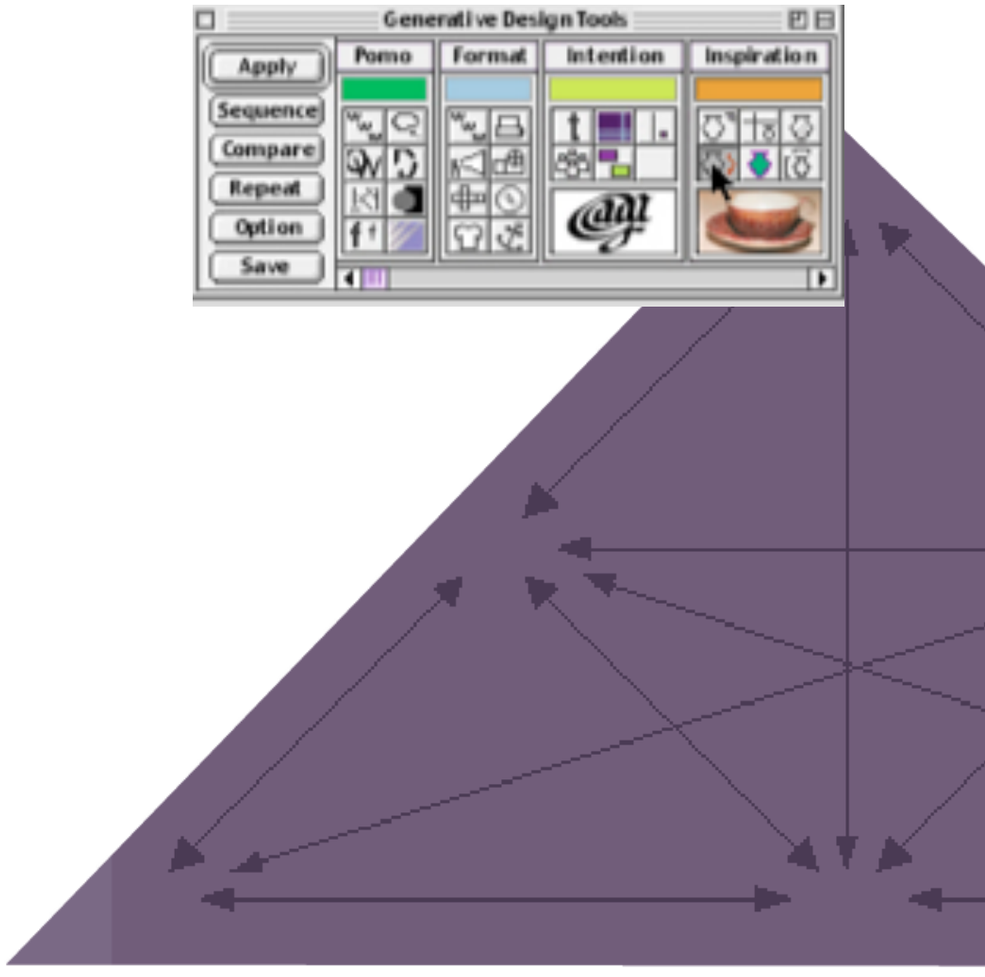
Implications and conclusion

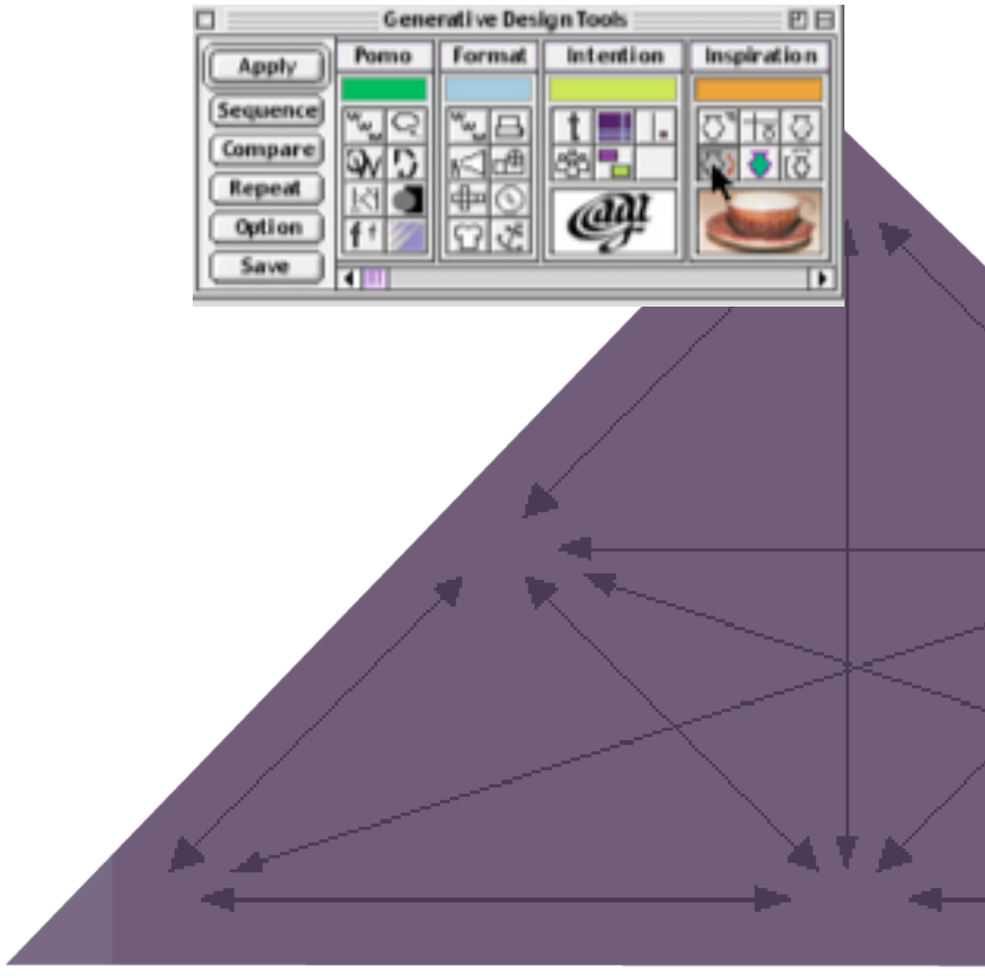
Implications and conclusion: 1

Overarching:
There is a strong, sympathetic (unacknowleged?) resonance between design inspired by post-structuralist and activity theory



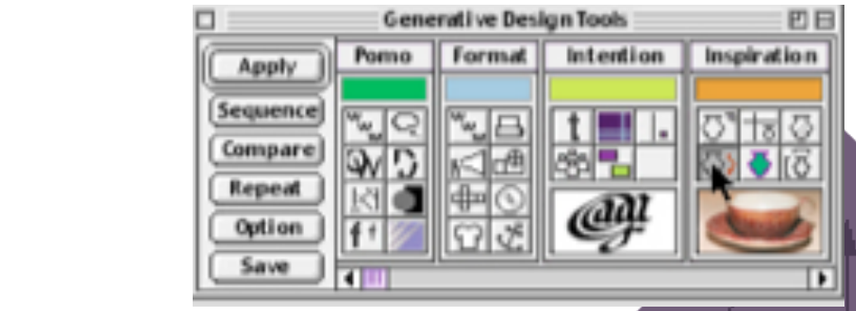
Implications and conclusion: 2

Specific:
There is an urgent need to reappraise the potentials for intervention in emerging personal fabrication processes



Implications and conclusion: 1

Specific:
There is an urgent need to reappraise the potentials for intervention in emerging personal fabrication processes



Activity theory (it seems) is a very significant dimension of analysis

Thank you and questions?

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