EDUCATION FOR GEODESIGN

Carl Steinitz

THE PEOPLE OF THE PLACE

DESIGN PROFESSIONS

GEOGRAPHIC SCIENCES

INFORMATION TECHNOLOGIES

GEODESIGN CHANGES GEOGRAPHY BY DESIGN
Designing a scenario-based study of alternative futures is an art...
it requires judgement

It is not a science... although it depends on science
There are no perfect formulae... but there are methods
There is no universal "tool-kit"... but these are "tools"
you cannot copy an example... but you can gain experience
Steinitz, C., Education for Geodesign, (powerpoint) IGC 2020
Steinitz, C., Trends and Influences and Their Implications for Education in Geodesign, 2014
Steinitz, C., Theories and Methods of Landscape Planning: Syllabus Schedule
Steinitz, C., Theories and Methods of Landscape Planning: Assignment
Steinitz, C., Theories and Methods of Landscape Planning: A Framework for Case Studies
Steinitz, C., Theories and Methods of Landscape Planning: Index to Selected Readings
The generic problem:

How do we organize and conduct the very beginning and strategic stages of designing for longer-term change in a large, multi-system, multi-client and contentious context …..where our goal is concurrence and agreement?

This is very frequently the normal situation for important studies and projects. This is where geodesign excels!
It is clear that for serious societal and environmental issues, designing for change cannot be a solitary activity. Rather, it is inevitably a collaborative endeavor, with participants from various design professions and geographic sciences, linked by technology from several locations for rapid communication and feedback, and reliant on transparent communication with the people of the place who are also direct participants.

Geodesign will need conductors...globally, thousands of them...and very rapidly.

The vast majority of education in the design professions and the sciences is directed towards training soloists.

Their goal is to master all of the skills and knowledge needed for effective professional and scientific activity – to identify problems or questions, analyze them, form hypotheses and design possible solutions, and see them tested, selected and applied to the satisfaction of self, client, peer and society.

My purpose is not to attack the traditional systems upon which most of our universities base their education. Rather, it is to ask another question – “From where will the conductors come?”

This is where I think a university should be.
EXPRESSION                     ORGANIZATION                     ALLOCATION

THE PEOPLE                     OF THE PLACE

INFORMATION                     TECHNOLOGISTS

DESIGN PROFESSIONS

GEOGRAPHIC SCIENCES

DEMAND-BASED                                                                   SUPPLY-BASED
“OFFENSIVE” STRATEGIES                                                  “DEFENSIVE” STRATEGIES

GEODESIGN

COLLABORATION
THE PEOPLE OF THE PLACE

INFORMATION TECHNOLOGISTS

DESIGN PROFESSIONS

GEOGRAPHIC SCIENCES

DEMAND-BASED "OFFENSIVE" STRATEGIES

SUPPLY-BASED "DEFENSIVE" STRATEGIES

GEODESIGN COLLABORATION

ORGANIZATION

THE PEOPLE OF THE PLACE

EXPRESSION

ALLOCATION
ORGANIZING FOR EDUCATION IN GEODESIGN

PhD

5 Master

4 Bachelor

3 B Sc

2

1 entry

A B C

COLLABORATION IN GEODESIGN
ACADEMIC ASSETS: IDENTIFY THE FACULTY BY SIZES/SCALES OF EXPERIENCE AND ROLES IDENTIFY FACULTY NEEDS
A FRAMEWORK FOR GEODESIGN

ASSESSMENT
- DATA
- KNOWLEDGE
- VALUES

INTERVENTION
- DATA
- KNOWLEDGE
- VALUES

WHAT?
WHERE?
WHEN?

WHY?

HOW?

1. How should the context be described?
2. How does the context operate?
3. Is the current context working well?
4. How might the context be altered?
5. What differences might the changes cause?
6. How should the context be changed?

A FRAMEWORK FOR GEODESIGN

1. How should the context be described?
2. How does the context operate?
3. Is the current context working well?
4. How might the context be altered?
5. What differences might the changes cause?
6. How should the context be changed?

GEODESIGN IS A COLLABORATION

# A GEODESIGN SUPPORT SYSTEM: INTEGRATED TOOLS AND HELPERS

## Semantics: Meaning and Linkages
- **Collaboration**
- **Abstraction**
- **Diagrams**
- **Time**
- **Library**

## Syntax: Parts and Relations
- **Context Base**
- **Objects**
- **Constraints**
- **Configuration**
- **Hyperlinks**

## Dynamics: Behavior and Performance
- **Model Scripts**
- **Versions**
- **Simulation**
- **Dashboard**
- **Methods Coach**

*Stephen Ervin, 2015*

[https://www.youtube.com/watch?v=2LRB1DY4efk](https://www.youtube.com/watch?v=2LRB1DY4efk)
ACADEMIC ASSETS: IDENTIFY COURSES BY MODEL TYPES AND ROLES
IDENTIFY COURSE AND INFORMATION TECHNOLOGY TUTORIAL NEEDS
ACADEMIC ASSETS: IDENTIFY COURSES BY MODEL TYPES AND ROLES
IDENTIFY COURSE AND INFORMATION TECHNOLOGY TUTORIAL NEEDS

- REPRESENTATION MODELS
- PROCESS MODELS
- EVALUATION MODELS
- CHANGE MODELS
- IMPACT MODELS
- DECISION MODELS

STUDIOs 1

STUDIO 2

PhD THESIS
Theories and Methods of Landscape Planning
Instructor: Carl Steinitz
Prerequisites: none
Course Description: This course has three aspects. The first is a series of lectures by Carl Steinitz in which different elements of theories and methods applicable to landscape planning are critically surveyed. Each lecture and its readings include one or more case studies in which that particular aspect of theory or method was central to its success or failure. Second, and seen as a whole, these methods share fundamental operations in the organization, and analysis of spatial data. These are introduced through lectures and via exercises in conjunction with other courses.
Third, each student will replicate and present a landscape analysis from a documented case study using computer-based techniques. A comparison of these case studies provides insights into theories and methods and their shared techniques and also illustrates how they can be adapted to particular landscape planning situations.
GEODESIGN: a new approach to spatial planning

Introducing Geodesign: The Concept

Geodesign

Geodesign by Integrating Design and Geospatial Sciences

Advanced Land-Use Analysis for Regional Geodesign

JoDLA: Journal of Digital Landscape Architecture

ETC.
THEORIES AND METHODS OF LANDSCAPE PLANNING
INDEX TO SELECTED READINGS

1. INTRODUCTION: ‘A HISTORY OF INFLUENTIAL IDEAS’
2. RELIGION AND CULTURE
3. FRAMEWORK FOR LANDSCAPE PLANNING
4. REPRESENTATION MODELS
5. PROCESS
   1. Wetlands
   2. Surface Water Quality and Erosion
   3. Groundwater Quality and Septic Systems
   4. Soils and Agricultural Productivity
   5. Visual Quality
   6. History
   7. Biodiversity
   8. Energy and Microclimate
   9. Cost
   10. Attractiveness to Development
6. PROCESS: INCLUDING DELPHI
7. EVALUATION MODELS
8. PRESENTATION OF EVALUATION MODELS
9. CHANGE MODELS; ESCAPE OF TIGERS
10. CHANGE MODELS; STRATEGIES TOWARDS ALTERNATIVES
11. CHANGE MODELS; EARLY WARNING AND CARRYING CAPACITY
12. CHANGE MODELS; SCALE AND TIME; UNCERTAINTY; ADAPTABILITY
13. IMPACT: EVALUATING CHANGES
14. IMPACT: STRESS AND RECOVERY
15. DECISION: APPLES AND ORANGES
16. CASE STUDIES

(no readings)
A Framework for Case Studies

This framework for case studies is an adaption of the one described in Steinitz, C., “A Framework for Theory…” Landscape Journal, October 1990. The framework seems both “robust” and useful. It is offered as a guideline (but not a requirement) for case study papers.

A) Pre-design
1. Was there a “pre-project” history? What instigated the need or decision to do something?

B) Identifying the Context
1. (Representation) What was the situation?
2. (Process) What needed to be (or was) understood about it?
3. (Evaluation) What was the problem? What was the need?
4. (Change) What were the extent or limits of change that could be considered?
5. (Impact) What were issues of benefit or risk?
6. (Decision) Who was the decision-maker? On what basis would change be made?

C) Designing The Design Method
6, 5, 4, 3, 2, 1 What design methods or approaches were to be employed? By whom?

D) Making the Design
1. (Representation) What were the data? What did the site look like?
2. (Process) What was needed to be understood? Was it?
3. (Evaluation) What, where, and how was it evaluated? Constraints? Opportunities?
4. (Change) What alternatives (if any) were proposed or considered?
5. (Impact) How were they different?
6. (Decisions) Which were rejected? Why? Which were continued? Why?

E) Feedback
If there were problems in design that caused changes, were any parts revised? How?

F) Decision
Which design was chosen? Why was it chosen “as best”? By whom?

G) Implementation
If there were problems in implementation that caused changes, What was changed?

H) Post-design
1. (Representation) What is it like today?
2. (Process) Is it functioning as expected?
A house on a steep slope near a stream with a rare fish

Housing with many children, accidents when crossing street to park
On the Escape of Tigers: An Ecologic Note

William Haddon, Jr., M.D.
President, Insurance Institute for Highway Safety

A major class of ecologic phenomena involves the transfer of energy in such ways and amounts, and at such rapid rates, that inanimate or animate structures are damaged. The harmful interactions with people and property of hurricanes, earthquakes, projectiles, moving vehicles, ionizing radiation, lightning, conflagrations, and the cuts and bruises of daily life illustrate this class.

Ten Strategies for Reducing These Losses

Several strategies, in one mix or another, are available for reducing the human and economic losses that make this class of phenomena of social concern. In their logical sequence, they are as follows:

1. The first strategy is to prevent the marshalling of the form of energy in the first place: preventing the generation of thermal, kinetic, or electrical energy, or ionizing radiation; the manufacture of gunpowder; the concentration of U-235; the build-up of hurricanes, tornadoes, or tectonic stresses; the accumulation of snow where avalanches are possible; the elevating of skiers; the raising of babies above the floor, as to cribs and chairs from which they may fall; the starting and movement of vehicles; and so on, in the richness and variety of ecologic circumstances.

2. The second strategy is to reduce the amount of energy marshalled; reducing the amounts and concentrations of high school chemistry reagents, the size of bombs or firebreakers, the height of divers above swimming pools, or the speed of vehicles.

3. The third strategy is to prevent the release of the energy marshalled; using firebreakers, fire extinguishers, armed crossbows, gunpowder, or electricity; the descent of skiers; the fall of elevators; the jumping of would-be suicides; the undermining of utility, or the escape of tigers. An Old Testament writer illustrated this context in the context both of the architecture of his area and of the moral imperatives of this entire field: "Thou shalt build no new house, thou shalt make no grave for thy roof, that thou mayst not bring the guilt of blood upon thy house, if any one fall from it." (Deuteronomy 22:8). This biblical position, incidentally, is fundamentally at variance with that of those who, by conditioned reflex, regard harmful interactions between man and his environment as paramount to the prevention reforming imperfect man rather than suitably modifying his environment.

4. The fourth strategy is to modify the rate or spatial distribution of release of the energy from its source: slowing the building rate of explosives, reducing the slope of ski trails for beginners, and choosing the reentry speed and trajectory of space capsules. The third strategy is the limiting case of such release reduction, but is identified separately because in the real world it commonly involves substantially different circumstances and techniques.

5. The fifth strategy is to separate, in space or time, the energy being released from the susceptible structure, whether living or inanimate: the evacuation of the Bikini islanders and test personnel, the use of sidewalks and the phasing of pedestrian and vehicular traffic, the elimination of vehicles and their pathways from community areas commonly used by children and adults, the use of lightning rods, and the placing of electric power lines out of reach. This strategy, in a sense also concerned with rate-of-release modification, has as its hallmark the elimination of intersections of energy and susceptible structure—a common and important approach.

6. The very important sixth strategy uses separation in time and space but separation by interposition of a material "barrier," the use of electrical and thermal insulation, shoes, safety glasses, shinguard, helmets, shields, armor plate, torpedo nets, antiballistic missiles, lead aprons, buzz-saw guards, and boxing gloves. Note that some of these "barriers" such as "barriers" and "interposing barriers" and ionizing radiation shields, attenuate or lessen but do not totally block the energy from reaching the structure to be hit. Although also a variety of rate-of-release modification is separately identified because the techniques involved comprise a large, and usually clearly discrete, category.

7. The seventh strategy, into which the sixth blends, is also very important—to modify appropriately the conditions under which the energy is transferred, in diminishing, rounding, and softening corners, edges, and points with which people can, and therefore sooner or later do, come in contact. This strategy is widely overlooked in architecture with many minor and serious injuries the result. It is, however, increasingly reflected in automobile design, and will become mandatory by the general legalization of the energy path and the point or area and characteristics of the structure on which it impinges—whether a BB hits the forehead or the center of the cornea.

One point, however, is of overriding importance: subject to qualifications as noted subsequently, there is no logical reason why the rank order (or priority) of loss-reduction countermeasures generally considered must parallel the sequence, or rank order, of causes contributing to the result of damaged people or property. One can eliminate losses in broken tea cups by packaging them properly (the sixth strategy), even though they be physically exposed, vitiated, dropped, piled on, or otherwise abused. Similarly, a vehicle crash, per se, need not necessitate any injury, nor a hurricane housing damage.

Failure to understand this point in the context of measures to reduce the rate and intensity of exposure to the common statement: "If it’s the driver, why talk about the vehicle." This confuses the rank or sequence of causes, on the one hand, with that of loss-reduction countermeasures—in this case "crash packaging"—on the other.

There are, nonetheless, practical limits in physics, biology, and strategy potentials. One final limit is operable at the boundary between the objectives of the strategies and the likelihood of their application: the injurious impact to man or to other living structure follows, complete elimination of undesirable and resultant injury is often impossible; physical and biological limits usually set an upper boundary. (This is often also true for inanimate structures, for example, tea cups.) When lethal damage has occurred, there is no subsequent grudge to be settled as the strictly secondary salvage of parts is concerned, has no application.

There is another fundamental constraint. Generally speaking, the larger the amounts of energy involved in relation to the resistance to damage of the structures at risk, the earlier in the countermeasure sequence must the "strategy lay". In the ultimate case, that of a potential energy-release of proportions that could not be countered to any satisfactory extent by any known means, the prevention of marshalling or of release, or both, becomes the only approach available. Furthermore, in the end, the intractable issues include both the reduction of release, prevention of marshalling (and dismantling of stockpiles of energy already marshalled) becomes the only essential, strategy to assure that the undesirable and resultant evolution cannot occur.

For Each Strategy an Analogous Opposite

Although the concern here is the reduction of damage produced by energy transfer, it is noteworthy that to each strategy there is an opposite focused on increasing damage. Thus, for example, reduction of the structural damage of the building by reducing its height; reduction of the "impact" in automobile collisions, by increasing the impact forces; reduction of the damage from the blast wave, by increasing the blast pressure; reduction of the possible internal injuries, by increasing the concentration of energy; and so on. All these strategies are ecologically sound, in so far as they are consistent with the general economic and social criteria of the society. To use any strategy as a measure to eliminate pathologic hyperactivity. For example, a maker of motor
1. Prevent the marshaling of the energy
2. Reduce the amount of energy marshaled
3. Prevent the release of the energy
4A. Modify the rate or
4B. spatial distribution of the release of energy
5A. Separate in space or
5B. time the energy being released
6. Separation by interposition of a material barrier
7. Modify appropriately the contact surface
8. Strengthen the structure
9. Detection by generating a signal that a response is required
10. Return to pre-event conditions

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ON COLLABORATION

“No one can whistle a symphony. It takes a whole orchestra to play it.”
    H.E. Luccock

“Many ideas grow better when transplanted into another mind than the one where they sprang up.”
    Oliver Wendell Holmes

“Guard against talking more clearly than you think.”
    anonymous

“The secret is to gang up on the problem, rather than each other.”
    Thomas Stallkamp
ON THEORIES AND MODELS AND FRAMEWORKS

“Put in simplest terms, a theory explains, a model predicts and a framework organizes. A framework can be judged on its reasonableness and its utility, but claims no exclusivity vis-a-vis other frameworks”. 

Amos Rapaport

Theory is when you know everything but nothing works.

Practice is when everything works but no one knows why.

In our lab, theory and practice are combined: nothing works and no one knows why.

via Sarah Steinitz
ON FRAMEWORKS

‘A tragedy of our educational process--including graduate education--is the over-reliance on ‘self discovery’ by students of basic methods.”

   Carl Steinitz, 1967

“The problem is not that we don’t know; rather it is that we can’t organize our questions, search out the answers (most of which exist), remember them and use them. If we could do this, we could then identify the truly missing overviews and parts, and work on these.”

   Carl Steinitz, 1972
ON REPRESENTATION MODELS

“To be conscious that you are ignorant of the facts is a great step to knowledge”
  Benjamin Disraeli

“It is the mark of an instructed mind to rest satisfied with that degree of precision which the nature of the subject admits, and not to seek exactness where only an approximation of the truth is possible.”
  Aristotle

“It is better to be approximately right than to be precisely wrong.”
  John Maynard Keynes

“Be as simple as possible, but not more so.”
  Albert Einstein
ON PROCESS MODELS

“All models are wrong. Some are useful.”

George Box

“1--Guess
2—Compute consequences
3—Compare with nature and experience”

Richard Feynman

“Prediction is difficult, especially about the future.”

Niels Bohr

‘Life can only be understood backward, but it can only be lived forward.”

Soren Kierkegaard
ON EVALUATION MODELS

“The bible tells us of Moses’ encounter with Pharaoh, and that he brought a plague of frogs on the land to humble the wicked oppressors.

Pharaoh, we are told, summoned his magicians and asked for advice. These magicians—and they could have been the engineers (or designers) of those days—responded, ‘That’s not a difficult problem, we too can make frogs;’ and so they did. Seeing their assignment as a professional problem to be solved using the tools of their discipline, they achieved a technical breakthrough—without ever realizing that the last thing they needed was more frogs.”

Rabbi Daniel Shevitz
ON CHANGE MODELS

“Every complex problem has a solution that is simple, neat and wrong.”
H. L. Menken

“When creative genius neglects to ally itself to some public interest it hardly gives birth to wide or perennial influence. Imagination needs a soil in history, tradition, or human institutions, else its random growths are not significant enough and, like trivial melodies, go immediately out of fashion.”
George Santayana
ON IMPACT MODELS

“Not everything which can be counted counts; And many things which cannot be counted, count.”
De Groot

‘I have found that all ugly things are made by those who strive to make something beautiful and that all beautiful things are made by those who strive to make something useful.’
Oscar Wilde
ON DECISION MODELS

“From experience of the past, the present acts prudently, lest it spoil future action.”

Pierre Bersuire, medieval scholar

“We Athenians……take our decisions on policy and submit them to proper discussion: for we do not think there is an incompatibility between words and deeds: the worst thing is to rush into action before the consequences have been properly debated. And this is another point where we differ from other people. We are capable at the same time of taking risks and estimating them beforehand. Others are brave out of ignorance; and when they stop to think, they begin to fear. But the man who can be most truly be accounted brave is he who best knows the meaning of what is sweet in life and what is terrible, and then goes out to meet what is to come.”

Pericles
ACADEMIC ASSETS: IDENTIFY COURSES BY MODEL TYPES AND ROLES
IDENTIFY COURSE AND INFORMATION TECHNOLOGY TUTORIAL NEEDS
I have led and taught collaborative, multidisciplinary, semester-long studios on large and complex (geodesign) problems for more than 40 years at Harvard, and many times with other universities.

The reasons for my teaching in a manner which requires students to work in teams, and frequently in large multidisciplinary teams, are many but normally center upon the scope and complexity of the problem around which the workshop or studio is focused and the need for many individual tasks to be coordinated.

I would like to share with you some of the issues which I raise and some of the techniques which I use to ensure a higher probability of success than failure.

VALUES AND ROLES

“The people do not know, but I do”.

“I am not one of them, I am an artist. I work with the landscape, and my expression is most important”.

“I am not one of them, I am an expert. I’ll educate them while I tell them how to change the landscape”.

“I am not one of them. I am a service-oriented professional. I will ask them how they want to change”.

“I am one of them. We have made the landscape over many generations and I will help them keep it that way”.

DESIGN PROFESSIONS

GEOGRAPHIC SCIENCES
VALUES AND ROLES

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DESIGN PROFESSIONS

GEOGRAPHIC SCIENCES
THE PEOPLE OF THE PLACE

GEOGRAPHICAL CONTEXT

GENIUS LOCI  ECO-REGIONS  GLOBAL

ALL PEOPLE = NO OTHERS  ALL PEOPLE = SOME OTHERS  ALL PEOPLE = ALL OTHERS
WHY DATA ASSESSMENT INTERVENTION DATA KNOWLEDGE VALUES DATA KNOWLEDGE VALUES

ASSESSMENT

DATA

KNOWLEDGE

VALUES

INTERVENTION

DATA

KNOWLEDGE

VALUES

WHAT?

WHERE?

WHEN?

HOW?

WHY?

1. How should the context be described?
2. How does the context operate?
3. Is the current context working well?
4. How might the context be altered?
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UNDERSTAND CONTEXT

PERFORM STUDY

REPRESENTATION MODELS

PROCESS MODELS

EVALUATION MODELS

CHANGE MODELS

IMPACT MODELS

DECISION MODELS

SPECIFY METHODS

CHANGE SCALE

FEEDBACK

NO

YES

MAYBE
GEODESIGN WITH SEVERAL DECISION MODELS AND ONE SCENARIO OF REQUIREMENTS

DECISION MAINLY BY NEGOTIATION

GEODESIGN WITH ONE DECISION MODEL AND SEVERAL SCENARIOS OF REQUIREMENTS

DECISION MAINLY BY ASSESSMENT

DECISION MAINLY BY ASSESSMENT

…1:100……………………….1:5,000……………1:25,000………1:250,000……………………………1:1,000,000………. 
GEODESIGN WITH ONE DECISION MODEL, ASSUMPTIONS AND REQUIREMENTS, TWO MAJOR OPTIONS AND THREE SCENARIOS OF INNOVATION

DECISION MAINLY BY ASSESSMENT AND NEGOTIATION
A WORKFLOW FOR GEODESIGN CHANGE-SYNTHESIS
CHANGE MODEL STRATEGIES: "ways of designing"
CHANGE MODEL STRATEGIES: "ways of designing"

SERIAL “SKETCHING”

SYSTEMS-BASED DIAGRAMS

RULE AND MATHEMATICAL MODELS

ANTICIPATORY
PARTICIPATORY
SEQUENTIAL

CONSTRAINING
COMBINATORIAL
(MIXED)

RULE-BASED
OPTIMIZING
AGENT-BASED
DESIGN PROFESSIONS


DESIGN PROFESSIONS

Patrick Geddes, 1913

Ebenezer Howard and Raymond Unwin, 1898

Feng Shui

Kevin Lynch, *Image of the City*, 1960
Kevin Lynch
*Image of the City*

Richard Forman and Michel Godron
*Landscape Ecology*

- Path
- District
- Edge
- Node
- Landmark
- Corridor
- Patch
- Edge
- Intersection
- Outlier
DIAGRAMS AS A SHARED LANGUAGE

- Hydrologic Cycle
- Radburn
- Central Place Theory
- Feng Shui
- Roman Towns
- Gehry Valley Section
- Landscape Image
- Perspective Rules
- Emerger Howard Garden Cities
- "String of Pearls" (e.g. Potsdam)
- Why New Cities Get Diagonals as They Grow
- Conservation Zoning
- Law of the Indies City Pattern
A BASIS FOR COMMUNICATION AND COLLABORATION
The International Geodesign Collaboration
Changing Geography by Design

Edited by
Thomas Fisher,
Brian Orland,
and Carl Steinitz
Some social rules for collaboration:

If you don’t understand, ask a question.
If you say you’ll do it, do it.
If you can’t do it, ask for help.
If asked for help, give it.
No idea is a bad idea, but not all ideas are equally good.
All ideas are public property.
An idea becomes a good one when adopted by others.
Nothing is worth more than five minutes of discussion.
When in doubt, vote.
A good design is a finished design.
It’s “our” design. I did this part.
ORGANIZING FOR EDUCATION IN GEODESIGN

PhD

5 Master

4 Bachelor

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2

1 entry

A B C

COLLABORATION IN GEODESIGN

THE PEOPLE OF THE PLACE

DESIGN PROFESSIONS

GEOGRAPHIC SCIENCES

INFORMATION TECHNOLOGIES
### LEVELS OF EDUCATION IN GEODESIGN

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<th>LEVEL OF INQUIRY</th>
<th>Professional Entry</th>
<th>Postprofessional</th>
<th>Research Professional</th>
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<td></td>
<td>given problem</td>
<td>select problem</td>
<td>seek problem</td>
</tr>
<tr>
<td>I. Representation Models</td>
<td>introduced basic</td>
<td>specialized in-depth</td>
<td>invented experimental</td>
</tr>
<tr>
<td>II. Process Models</td>
<td>common knowledge “rules of thumb”</td>
<td>researched diagrammatic</td>
<td>empirical replicable</td>
</tr>
<tr>
<td>III. Evaluation Models</td>
<td>as told simple</td>
<td>as experienced prof. judgment</td>
<td>as sought informed</td>
</tr>
<tr>
<td>IV. Change Models</td>
<td>precedent archetypes</td>
<td>experience adaptations</td>
<td>hypothesis innovations</td>
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<tr>
<td>V. Impact Models</td>
<td>case studies reasonable guess</td>
<td>formal models rationale</td>
<td>experiments evidence</td>
</tr>
<tr>
<td>VI. Decision Models</td>
<td>profession + faculty conservative</td>
<td>faculty + mentor speculative</td>
<td>mentor + self theoretical</td>
</tr>
</tbody>
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**Figure 11.1:** Toward a curriculum in geodesign. Source: Carl Steinitz.
GENERAL EDUCATION and UNDERGRADUATE ELECTIVES IN DESIGN AND SCIENCE

Framework

1. FRAMEWORK
2. Representation
3. Context and Content
4. Size and Scale
5. Representation
6. Data Types
7. Data Needs
8. Data Management
9. Processes
10. Complexity
11. Evaluation
12. Delphi
13. Change
14. Escape of Tigers
15. Religion and Culture
16. Concepts
17. Ways of Designing
18. Adaptability
19. Impact
20. Carrying Capacity
21. Decision
22. Presentation
23. Feedback
24. Summary

EACH WITH EXAMPLES AND EXERCISES

TECHNOLOGY TUTORIALS
1, 2. FRAMEWORK
3. Context and Content
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EACH WITH EXAMPLES AND EXERCISES

TECHNOLOGY TUTORIALS
TECHNOLOGY TUTORIALS

1. FRAMEWORK
2. Context and Content
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9. Complexity
10. Evaluation
11. Delphi
12. Change
13. Escape of Tigers
14. Religion and Culture
15. Concepts
16. Ways of Designing
17. Adaptability
18. Impact
19. Carrying Capacity
20. Decision
21. Presentation
22. Feedback
23. Summary

EACH WITH EXAMPLES AND EXERCISES

MASTER OF [----------] in GEODESIGN SEMESTER 2 OR IN YEAR 2
DOCTOR OF PHILOSOPHY in geodesign
ON EDUCATION FOR GEODESIGN
Steinitz, C., Education for Geodesign, (powerpoint) IGC 2020
Steinitz, C., Trends and Influences and Their Implications for Education in Geodesign, 2014
Steinitz, C., Theories and Methods of Landscape Planning: Syllabus Schedule
Steinitz, C., Theories and Methods of Landscape Planning: Assignment
Steinitz, C., Theories and Methods of Landscape Planning: A Framework for Case Studies
Steinitz, C., Theories and Methods of Landscape Planning: Index to Selected Readings
Trends and Influences and Their Implications for Education in Geodesign
Carl Steinitz IGC2020

We are facing three trends nowadays: increased environmental and social risk, ubiquitous information technology, and growing threats to democracy and public participation. These are serious issues of change which are ultimately linked. They cannot be addressed by any single group of people. It is obvious that extensive collaboration is needed, and it is not obvious that our diverse education and practice systems are producing people to do this. We come from different national and academic cultures and we normally speak different languages. Geodesign, with an organizational framework and some simple conventions as we have established in the International Geodesign Collaboration may help.

Changes in university education are required. Most scientists and design professionals believe that students have to know everything in their specialized fields. But that is very different from educating people to lead collaborative teams. The conflict between depth and breadth is not resolved in the universities, and we do not have the institutional prerequisites for cross-disciplinary communication and collaboration. We need to have broad shared knowledge, shared assumptions, and a shared language. We need to teach and practice several ways of conducting geodesign. We need to organize faculties in a more collaborative way and based on the types, sizes and scales of the “problems” which are being studied. Teaching in geodesign should be carried out at bachelor degree, master degree, and PhD degree levels. We need four kinds of courses. The most important is history, the history of case studies which worked and which did not work. Secondly, we need courses organized by model type not by content type, because the ways of thinking in model types are more important than content which varies geographically. Thirdly, we need to recognize that technology changes rapidly, and it should be on a tutorial basis. Finally, we need practical studies with project-oriented learning. And the projects should be run by students because they are the ones who need experience in organization and management.

The most radical thing we need is a redefinition of what university is. Universities certainly need depth of research, teaching and application. These are essential. However, they also need breadth and collaboration to address the world’s most serious issues. This will take years to achieve globally, but it is absolutely central for the future of global education and for success in the application of geodesign.