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Biodiversity



A Challenge
for Development
Research
and Policy



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Knotted ropes, rings, lattices and lace: Retrofitting biodiversity into the cultural landscape

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The title of this lecture refers to the forms or patterns that we, as artists, have proposed or used to reintroduce biodiversity to places where nothing was left or to make connections between those special places where a biodiverse landscape still exists. These forms were developed out of considerable experience in recognizing existing or constructing new patterns. It was Dr. Wilhelm Barthlott who suggested that we might be extending the notion of saving hot spots by creating these new patterns and thus recontextualized our work in terms of ecological theory and invited us to speak.

THE LATTICE

For example, The Serpentine Lattice, a work on the death of the North American temperate coastal rain forest, addresses the clear cutting of about 55,000 square miles. This clear cutting not only destroyed most of the once enormous and singular forest containing some of the oldest and largest and most endangered trees in the world, but, concomitantly, seriously disturbed watercourses that were measured in the tens of thousands of linear miles. The text and images of the Serpentine Lattice, in addition to presenting a concept for restoration, make totally clear the brutality, the violence, the ignorance, the mindless, single purpose, self-interest involved in the creating of a new cultural landscape at this scale. Until recent times this was not so obvious, as it happened more slowly, bit by bit, over millennia.

The Serpentine Lattice began as a museum installation with interacting text and image. There is a two and a half meter by ten meter slide presentation with fifty-five sets of panoramic images, slowly dissolving from one to the other, revealing the destruction of the Pacific North West temperate rain forest. This conifer forest until relatively recently covered the Pacific coast from San Francisco Bay in California up through Oregon, Washington and British Columbia to Yakutat Bay in Alaska. The clear cutting modified soil chemistry and altered climate and made an approximately 2,000 mile long corridor, creating about 55,000 square miles of disturbed terrain. The installation, in addition, contains a two and a half meter by

ten meter hand drawn map of the affected area, texts and drawings and photography.

We hold that every place is telling the story of its own becoming, which is another way of saying that it is continually creating its own history and we join that conversation of place. However, that conversation can only be joined effectively by invitation. In 1992, invited to Oregon by Reed College to develop an exhibition, as we usually do in exploration of place, we flew over the area in a small plane. The *Serpentine Lattice* developed as a response to that trip and three questions we posed as a result.

The questions were:

1. Can it be that everybody here permitted the clear cutting of 95% of the North American coastal temperate rain forest, seriously accelerating the rate of destruction over the past 25 years?
The answer was obviously 'Yes'.
2. What are the principal ecologists trying to do about this?
They were, in the main, working to save the few last areas of old growth.
3. And finally the unanswered question of who is looking after the 55,000 square miles that have been cut?

The first question was transformed into the following commentary:

"Now there is enough new information about
And enough old wisdom around
For anybody who thinks about these things
To know that the death of a great forest
is a global tragedy."

After reflection on how we, as artists, might respond to destruction at this scale, we made the following arguments, presented here and distilled from a rather dense poetic text.

1. It is necessary to tune the response to the size of the event being addressed. If industry, which is after all a cultural invention, has removed this much forest, disturbed this many small drain basins, killed the life in this much topsoil and stressed the life in the rest, is any form of remedial action available? Can cultural invention find the way to make restoration at this same huge scale for an area in which forest has been removed, drain basins disturbed, and the life in the soil endangered or destroyed? If culture cannot, then the resulting enormous erosion, interspersed with chance succession ecologies and tree farms, does not look like a happy outcome. Certainly it presently seems as if market forces can not or will not provide a satisfactory resolution.
2. After an event of this scale, the destruction of almost the entire rain forest, a new kind of response is required. Thus an eco-security system is proposed, not unlike the social security system, wherein a percentage of the gross national product (which is made largely at the cost of the gross national eco-system) is

released to restore the environment. One percent of the gross national product, in 1992 terms, would amount to about 57 billion dollars. This could be spent annually, on the country as a whole, for restoration. This would create the first regenerative environmental feedback loop at continental scale. For, if one element of culture as a whole, in this case industry, is permitted to consume irreplaceable resources at this scale, what elements in culture can establish limits? What elements of culture can play a restorative role?

3. For instance, assuming an eco-security system, a cultural entity could buy or otherwise acquire, a swathe a mile or more wide along the ridge line from Southern Alaska to Northern California - from Yakutat Bay to San Francisco Bay. Given that much of this ridge land can never be returned to the original forest, nor even to tree farming, it has little value. Also, much of it is already in the public domain, so that the expense of acquiring this land would not be not exorbitant. Far less, say, than a four lane interstate highway.

"We
 being grateful
 for the invitation to join this perilous conversation
 began seeing an act of restitution.
 You seeing a serpentine
 I seeing a lattice
 We beginning to image North-south continuities
 From Yakutat Bay
 To San Francisco.
 Continuities that would bespeak
 The eco-poetics of the whole."

4. Thereafter, one could begin the rehabilitation of the multitudes of drain basins in the area, restoring the streams, and permitting forest to return where possible, although due to the erosion of the topsoil, there may be severe limitations as to what can grow where. Thereafter, regenerating topsoil where possible, an altered, more ecological type of forest farming could interchange with areas that would be left to succession, alternating the operations of cultural activity with ecological succession and establishing the operations of culture as figures within a biodiverse field.

"Then
 the gross national ecosystem
 could take its place
 privileged appropriately
 as the field within which
 the political systems
 social systems
 and
 business systems
 that comprise
 our eco-cultural entity
 can exist."

The title, The Serpentine Lattice, can be read literally, as a form or a pattern, a description of the lattice-like figure that emerges when the ridge line and the coastline are taken as the figuratively "parallel" boundaries to the land, and the watersheds between them become the "rungs".

"Imagine the serpentine form
of the crest of the coastal mountains.
Imagine the serpentine form of the Pacific coast.
Imagine some of the rivers
really watershed ensembles
extending from crest to coast
connecting the serpentines
as nearly leaf shaped rungs
or cross members of the Lattice."

The title, The Serpentine Lattice can also be read metaphorically, as:

"Where you said a lattice
And I said a serpentine
And you said, "Network the watersheds".
And I said, "A game of Go."

All the works that are presented here are visions that set out to be self-fulfilling prophecies. Most are also practical and doable, and several of them are presently being enacted on the ground. The Serpentine Lattice has been exhibited many times and exists in a German translation as well as the original English. It was designed, as are all of our works to, at the least, influence the conversation of place and to expand the rather limited ideas and vocabulary of possibilities seen all around us in regard to restoration.

Most interesting, however, for ourselves as artists was the pattern that emerged or was created as we looked at the map. The pattern had certain properties, once it was recognized. It revealed the magnitude of the problem. It suggested a reclamation form at a scale never before put on the table, which had both ecological and cultural values. Thus, once the questions were posed and the scale determined, the pattern actually emerged from a perception of the salient topographical features - ridges, coastlines and the lines formed by rivers, grouped in little leaf- like drain basins.

MOSAIC

The next work to be discussed, the meadow on the roof of the Kunst-und Ausstellungshalle der Bundesrepublik Deutschland, entitled Future Garden, Part I, The Endangered Meadows of Europe, is the most complex, complete and condensed of our meadow works. It began with an invitation from the Kunst-und Ausstellungshalle to consider the open space on the roof. It took form after a discussion about meadows. We imagined the loss of the mosaic of meadow lands

across Europe and set out to do a work that addressed the consequences of that loss. To do this, an extended narrative, taking the form of a series of stories about meadows, was constructed. As art, the installation operates as representational sculpture as well as a continuously changing, living, color field that covers about 4,000 square meters on the center of the roof. The roof space thus is transformed into a field upon which a complex drama is enacted. The drama begins with the decision to save a 400 year old meadow from the Eifel, transplanting it to the roof instead of letting it be torn up and replaced by a housing project. This decision sets the stage. Thereafter, sections of other endangered meadows, a wet meadow, a dry meadow and a stone meadow, are combined to make a diverse ensemble. Conversations between the artists and various botanists and ecologists, meadow masters as it were, fictionalized in a series of texts in both German and English are set in wooden housings in a fence structure, bespeaking the history and cultural function of meadows. Photographic images, printed on tile, of meadows from other parts of Europe reflect the texts and confront the living meadow. Certain fencing structures hold story and image and also function as seats. They all together confront and co-join, presenting this drama which unfolds when walking or promenading the meadow perimeter. Given its proximity to the Bonn seat of government, the site was politically appropriate.

As artists, we have tended to be interested in discovering the unique within the commonplace. The ecological narrative is used to give voice to a unique element of the European cultural landscape. We understand that the meadow lands of Europe are a recent phenomena from an ecological point of view. They have developed over a number of centuries as a result of forest clearing, and are maintained in their present form by the grazing of livestock and/or the annual cutting of hay. However, they can also be perceived as a kind of agricultural model for a spontaneous, although unconscious, collaboration between humans and nature. The cutting and grazing has set the stage for a meadow ecosystem in Europe of considerable complexity and stability, one of the most successful collaborative and sustainable ventures between our species and the rest of the ecosystem. This collaboration and its history are of great interest to us.

Text XV

First one and then another then many
asked what we meant by this new metaphor.
The meadow is a teacher for the future and a model.

You said
The meadow represents an old wisdom.
It is humble and unassuming.
Yet it is a vast cultural landscape
a sensual and pleasing many purposed landscape
constructed over millennia
an aesthetic that is no longer being remembered
an information ground that is rapidly being lost.

And I said
Imagine a new forest
constructed intentionally over time
with the meadow as a model.
So that this new forest
like the meadow
will be a cultural construction
and will supply food for people and livestock
and wood and whatever
as well as cleansing waters and air.

And this newly constructed biodiverse life web
will be useful for many species
for the amphibian the reptile the bird
the insect
and the life in the soil.

And it is in this way
one of us said
that the meadow becomes a model for the future.

And the other said
In its present state
dense with information,
the meadows bespeaks the possibility
of constructing a multi species collaboration
with ourselves and all others involved.

And we said
It is in this sense
first in one way
then another
that the meadow is teacher and model and prophet.

....

In fact
I imagine monoculture Europe
reconstructing itself in total
over time
and the cultural landscape is transformed
so that human activity becomes a figure
within a biodiverse field
and the meadow continues
taking its place
within a future eco-space
for which
it had once been the model.

At the same time as biodiversity was disappearing from many European Meadows due to overcutting, the question of restoration at a vast scale was being confronted in areas of the east of Germany and in the Czech Republic and in Poland that were the sites of giant pit mines.

Now, just as the meadow has been a repeated theme in our work, so have the open pit mines of the Black Triangle. We were invited by the Cultural Foundation of the Free State of Saxony and the Cultural Program of the Siemens Corporation to travel to the borders of Poland, the Czech Republic and Germany to look at the brown coal open pit mines with the idea of seeing how artists might respond to that environment. This was known terrain for us, having been concerned with such ideas and worked with such spaces at the Academy in Prague and at Bauhaus Dessau. We were yet again struck by the size and the number of these vast excavations, situated both close to each other and close to the borders of the three countries, the bleak, nightmarish landscape with its deep pits of scoured earth, the clanging of coal cars on the moving belts, the mega-machines towering, eating the earth, has haunted us. But, above all, we were struck by the absence of any comprehensive vision for closure of these mines which thus appeared to be done mine by mine. We began looking at this excavation fragmented terrain searching for a grouping that wanted to or needed to or could become one place.

Such a grouping emerged for us south of Leipzig in the vast open pit mining operations that had happened and were still happening there.

THE LACE

The Shape of Turned Earth: A Brown Coal Park for Südraum Leipzig

The work was done at the joint invitation of the Kultur Stiftung of Siemens AG and the Kulturstiftung des Freistaats Sachsen. Although it has been exhibited several times, it is still more a sketch than a finished work, consisting of about eight images and texts.

"I began imaging a park that would take its shape and meaning from "turned earth".

You began saying that the shape of the park would be the shape of the brown coal that lay under the land and was, is or will be extracted.

I said that this park would function as memorial.

You said this park would function as reclamation and a new way of recreating the cultural landscape.

*I said that **The Shape of Brown Coal: A Park for the Area South of Leipzig**, would address ecological problems.*

You said there will be serious economic problems to be addressed.

I said there will be formidable political issues.

You said there will be issues of human need.

I said there will be issues of human greed.

You said and produce a regional identity.

Clearly it was the moment of an epiphany."

Confronted by the moonscape, crater scape, vast machinery, large smoke stacks, dirty sky landscape of the brown coal region of South Leipzig, the single most salient feature to us was the pattern of turned earth. By mapping this earth, an amazing iconic baroque shape of about 300 kilometers was produced. Internally there existed 30 square kilometers of infrastructure, 50 square kilometers of excavation that would become lakes, 35 square kilometers of farmland and 170 square kilometers of land belonging to the mining companies. Manifestly, extreme liberty had been taken with this land, even more brutal than the construction of the cultural landscape that was formerly the Pacific Northwest temperate rain forest. Manifestly, extreme liberty must again be taken with the remains of the land, but liberty of a far more gentle kind.

One of the requests we had received when talking with the people and the planners of the area had been to restore the landscape so that it became whole again. Once the area south of Leipzig had been a lake district, a holiday area of some beauty. There had been many little towns and hamlets, at least 60 of them, that had been situated above this or that vein of coal.

"Then you said again
The life web is most diverse at the boundaries
Between ecotypes
And Witznitz and its neighborhood are both metaphor
And model
For a poetry of the whole.

I said
As the water level rises
All excavations will become lakes.
Therefore a lake region is inevitable.

You said
About 145 kilometers or more
Belong to the mining agency and are public lands
And can if people are willing become available.

Then you said
If the earth is neither poisoned nor too rich
Ecosystems will respond to disturbances
By moving rapidly across those surfaces
As at Mount Saint Helen's or Tagebau Bochwitz
And this is as inevitable as the rising of waters.

And I said
The shape of turned earth becomes an icon
In the cultural landscape
When boundary conditions are made
Clear available and useful.

Thereafter
It was not difficult to see how
The catastrophic event that transformed these lands
Could flip into its reverse
Where the randomness of a chaotic state
Becomes reorganized and transformed.

For
If and when the waters rise in the excavations
Even though variously polluted
And much of the public lands now held
By the mining agency
And presently not farmed
Are permitted to become succession forest and wetlands
With areas of meadow.

And
All waters and wetlands and forests
Are connected to each other.
And the propensity of nature
To rapidly cover disturbed earths
Is not interrupted
Then
a new cultural landscape can come into being
Where
Succession ensembles of birch and poplar and aspen
By every roadside
Can become the seed source
for other disturbed earths.

And
The available fragments of undisturbed earth
Can become the source
For the succession
Of original oak and hornbeam and beech triads
That formed the historic overstory.

And
 As available public lands reforest themselves
 Beginning their natural work of sequestering carbon
 An image emerges of a transformation
 That is literally a reversal of ground
 Where
 The cultural activities
 Of existing farming
 And existing towns
 And industries and infrastructure
 Collectively become the figures
 In a biodiverse lace like field
 Setting the stage for
 A renewed eco-cultural landscape.
 That enhances the quality of life
 For all the communities that are here
 or will come here."

Reviewing the final image which suggested a new cultural landscape at scale was possible here, the emerging salient feature was a pattern, lace like in nature, with culture acting as a figure within a biodiverse field.

THE KNOTTED ROPE

But what about hotspot regions? They appear to still exist in middle and eastern Europe although not at the size of the remnants of the great Amazon Basin or parts of North America and Australia. The one which we are most familiar with is a long lived cultural landscape, presently consisting of a flood plain, an oak forest, small villages and farms. The area was once the no-man's land between the Austro-Hungarian and Ottoman empires and so remained relatively untouched for hundred's of years. It still exists in a 280 square kilometer site along the Sava River, about 30 kilometers down river from Zagreb. We were brought there in 1988 by Dr. Hartmut Ern, a botanist who had been the Research Director of the Berlin Botanical Gardens. He had looked at our previous work and thought we might do something that could help to enable the making of this remarkable place into a nature reserve.

The place, surrounded by industrial farming, we perceived as an island that would soon be pressed by the farming methods that surrounded it, a place under attack, as it were, by Industrial Agriculture. To preserve it from simplification and death by isolation, we thought to connect it to all the other small areas of relatively natural growth from wetland to forest to field that existed up and down the river. The pattern suggested making the entire aue of the Sava River a nature reserve. The work was called Atempause für den Save Fluss. We proposed that it was not yet too late to save the region around the Sava River, which although disturbed,

was still relatively unstressed. There were a few industries creating serious pollution, but if cleaned up, existing wetlands extended and new ones created, old oxbows restored as temporary reservoirs, off-stream storage used for flood control, with the possible inclusion of the fishponds along the banks, an image of a knotted rope emerged. In it, the flood plain emerged as the rope and all the ecologically provident areas, including sections of old forest, became the knots. Hence, the knotted ropes of the title.

The river itself interested us profoundly. We saw the river as an information processing system that was being asked to process its own degradation, which became a second guiding metaphor. We saw the river being forced to create a new history for itself - and the history was potentially quite negative.

The river is asked to process new information
 when it hits the alluvial flood plain
 and the information is mechanical.
 A new shape has been constructed for the river
 by the construction of levees and dams
 so that the waters are permitted to rise and fall
 but not to spread.
 And the topology for a giant farming system is created thereby.
 For the river it is the shape of catastrophe.

The river is asked to process new information
 when it hits the alluvial floodplain
 and the information is biological.
 A change of state has been constructed for the river
 by the disappearance of the life that once pervaded it
 which depended upon the periodic spread
 and withdrawal of waters
 and although an act of compensation has been made
 through the creation of a nature reserve -
 for the river it is the state of catastrophe.

The river is asked to process new information
 when it hits the alluvial floodplain
 and the information is chemical
 and the information is toxic
 and
 where the information is most toxic
 by an unexpected congruence of circumstances
 and an unexpected confluence of waters
 there is an intersection with the nature reserve.

The pattern of nature reserve, forest, fish pond and meadow dotting the Sava aue, held together by land and water was attractive to many, particularly in the Croatian Government. Even the World Bank got interested in cleaning up some areas of the river. But then came the war.

THE RING

As artists, we have long been disturbed that many of the attempts made by ourselves and others, to enhance and preserve biodiversity and/or cultural diversity appear to run into a stone wall. The wall appears to be made up of systems of belief - of belief in an all powerful system of economics called the "free market" and of belief in the individual's lack of empowerment in the face of effects of this international corporate "free market". Overwhelmed by the scale and ubiquitous nature of some of its effects, good ideas are proposed, yet few of them are enacted.

Put simply, we have come to believe that, through their actions and literature, international corporate cultures announce that they perceive themselves as having intrinsic value. Conversely, the culture of place, the ecology of place or even the economic uniqueness of place is often treated as having, in the main, little or no intrinsic value. Thus, in our present context of a world dominated by an economically driven corporate culture, anything any group, any existing culture, any eco-system, any historically determined farming system, any and all long term relatively stable cultural or ecological entities, may become the object of exploitation. Indeed, with rare exception, any corporate entity is vulnerable to the predation of any other. There are exceptions, of course, and the economic value of being good corporate citizens is spreading. None the less, the exploitation, being for the most part economically driven, can devalue or lead to the termination of the entity exploited. Are we looking at a runaway feedback loop?

We believe that new and complex eco-cultural forms at scale can be brought into being that can help to reverse this trend, at least at the local level, and lead to re-empowerment. These forms need to be both stable and sustainable. We believe we may have found one such form, we have tentatively named it an eco-cultural *stability*.

Many comments at this recent biodiversity conference highlighted these problems in the context of the difficulties of maintaining bio-diversity in the face of growing marketplace activity and increasing population. They feel stymied by the problem that arises when scientists' informed opinions are ignored by political processes. This precisely underlines part of the issue. The distress expressed by our colleagues in the biological sciences resonates with the distress expressed by our colleagues in almost all other disciplines at the various universities we have recently been in contact with. Aside from the occasional monetary value of a new idea, or of works of art, anything but mass market culture and new technologies has been virtually marginalized.

Opposition to the primacy of the marketplace, in regard to the economic effects of the Euro, is of course, coming to pass. For instance, first there were the highly publicized workers' strikes in Germany and France. Now there are the results of the elections in Britain and France. As of this writing, many Frenchmen still see

themselves as living in a cultural island, needing defense against the forces of the international, or more particularly the European common market, which they perceive as attacking their farming methods and gustatory preferences on one side, and their historic intellectual and linguistic styles and preferences on the other. The consumption of 95% of the North American Pacific Coast Rain Forest showed how benefit flowed from the region in massive disproportion to benefit returned. It is the same with forests of the Amazon Basin. These are other poignant and immediate examples. The ongoing reductions of the social contract in both the governmental and industrial safety nets in most of the western cultures in order to meet the standards of the common monetary system is still another.

In 1994, we were asked to address one stressed system, in practice and on the ground - the imminent probable destruction of a stable long term cultural landscape. The invitation came from the Cultural Council of South Holland. The request was to give definition to the great Green Heart of Holland and make evident its value, so that it might be preserved. The Green Heart, essentially the 900 to 1,200 square kilometer farming area and open space, dotted with small villages, around which the cities of Amsterdam, Rotterdam, Haarlem, Den Haag, Dordrecht, Utrecht, et. al., are located. This ring of cities is called the Randstad. The problem the area faced was economic. And the problem the area faced was ecological. And the problem the area faced was cultural. And the problem the area faced was development.

The issues were quite straightforward. Demographic studies indicated that 600,000 plus houses with relevant infrastructures would be needed in the area over the next fifteen years or so. We did the addition. The need for 600,000 houses and relevant support systems would cause an economic engine or force of perhaps 120 billion dollars to come into being. There was despair among many planners and politicians and large sections of the educated public, if, as was then expected, market forces unmediated determined how these moneys were to be spent. It seemed obvious that the developers would opt for the cheapest land which offered the greatest profit and this land would obviously be the Green Heart. This meant fragmenting the green center. The "green lungs" of the heavily populated cities would be further stressed with increased traffic and pollution. The historic Dutch dike/sloot/farm/small village life-style would be threatened as massive development moneys flowed in and then as much of the profit flowed out, out of the country into international global development coffers. Moreover, many feared a new city and new infrastructure with diverse suburbs would be built in the green center known as the Green Heart, to compete with the remaining cities of the Randstad, to the benefit of few and the disadvantage of many. Urban sprawl would become rampant.

This was the basis of the fear among many planners and politicians that Holland faced the risk of loss of its overall quality of life. Of course, there were others who saw great gain in developing the Green Heart and Los Angelizing the Randstad. This was roughly the state of the discourse when we engaged it.

Confronting this, in early 1995, we invented an array of propositions and forms that we call "cultural icons at scale" and expressed them in a work we called A Vision For the Green Heart of Holland. The installation consisted physically of two 4 m² maps of Holland, one printed in reverse, five 2 meter² drawn images, seven texts, a 7 meter in diameter aerial photograph printed on tile on the floor so that all could see their homes in relationship to the concepts presented, an eight minute video element and a slide presentation. The maps were all reworked. The work of art was produced as an exhibition in the town of Gouda, which opened to a discourse in the town hall by politicians. It was also translated into catalog form with text both in English and Dutch that discussed the issues and it appeared again as a large poster containing text and icons distributed to over 3,000 planners and politicians in Holland. An extensive public debate over the issues involved followed in the various media. (See the Dutch section of the original catalog as translated into English at the back) After a period of time most of the concepts embedded within "The Green Heart Vision" have worked their way into the public planning process.

"The Green Heart Vision" a set of word/image relationships, expresses the following elements.

1. The Green Heart is defined by the construction of a Biodiversity Ring as an external border approximately 140 kilometers long and about 2 kilometers wide.
2. The principal city boundaries at the perimeter of the Green Heart: Rotterdam, Delft, Den Haag, Haarlem, Amsterdam, Utrecht, et. al., collectively known as the Randstad, are separated, defined by long, ribbon like, public parks, approximately two kilometers wide and averaging 12 kilometers long.
3. All boundaries have clear existence and explicit uses. Additionally, all boundaries co-join, becoming a new eco-social, eco-political, eco-economic, eco-aesthetic form that we initially called A Cultural Icon. (A sun sign emerging from the map of lowland Holland).
4. Both the Green Heart and the Randstad are expressed imagistically and poetically as one place, a reciprocating figure-ground relationship, a yin-yang totality. In contradistinction to normal mapping operations, the biodiversity argument is wedded to structure here.

The icon made immediately apprehendable the fact that there was more than sufficient open land for development between the ring cities of the Randstad, without needing to infringe on the Green Heart. Neither was there a need to infringe on the vast proposed new park system in order to construct the 600,000 houses said to be necessary. (People had been sold the belief, manifestly untrue as the work demonstrates, that the Green Heart was the last possible available land for development.)

However, this new vision, could only be made possible on the ground if an external force, such as the government, were to legislate extending the present infrastructure of the ring cities to serve the new construction. And, conversely, if

this external force were to legislate that only minimum growth would be permitted in the newly defined Green Heart, and that tax money lost would be replaced by some kind of government subsidy. (This, we have been informed, has since been agreed upon.)

Thus, the market forces would be given a clear sign that the lands available and the rules for use have been biased in favor of the perimeter; concomitantly, the Green Heart becomes unavailable for massive development. And, as should be clear, the amount of money spent would be approximately the same, although the infrastructure would be constructed differently. And, insofar as the money spent would be spread throughout the great circle of the perimeter, more small and medium sized businesses could make this money and, therefore, more money would be fed back into the local economic communities and less would flow directly into the global market. Thus the local communities are given the opportunity to build as slowly or as quickly as they wish in response to the rate of population growth. Finally, part of the work of the sustainability icons is to keep the parts from destroying the whole in a sort of auto-cannibalism as well as to keep outside forces from exploiting the whole to its own disadvantage.

There are five beliefs that guided the conceptual development of this work:

1. Ecosystems require temporal continuity and topographical contiguity in space and time to survive and develop the complexity to continue and evolve their potentialities. These needs can vary from a puddle to a 100,000 square kilometers.
2. Most cultural groups and entities that have developed identities over time require framing by rather knowable boundaries in space and/or mind and a feeling of constancy to continue and evolve.
3. Many planning systems, political systems and economic systems as they have developed in contemporary western culture fail to respect the needs of ecosystems for these continuities and fragment them.
4. Many planning systems, political systems and economic systems fail to sufficiently respect the need of cultures for framing or clarified boundary conditions, often making them continuous or letting them become continuous by permitting urban sprawl.
5. The observations made in 3 and 4 are not necessary conditions.

ON A STABILITY

We tentatively call this form we have invented a stability. This has been an idea nascent in our own works for many years. It appears to resonate, at least in our minds, with Prigogine's notion of dissipative structures far from stability. The lens that helped us envision this was the discourse on a new synthesis of these ideas presented by Fritjof Capra in his book, *The Web of Life*.

In discourse with the linguist and cognitive scientist, George Lakoff, we came up with the notion of a stability.

Reviewing Green Heart Vision we envision a stability as an emergent form in the cultural landscape. "It may require the continual (ongoing) embodiment of its systems pattern of organization." This concept is reflected in the Green Heart Vision, which is a mapping of the pattern within which the various Green Heart icons are representations of the initial elements that we suggest may become self-sustaining and self-regenerating feedback loops.

The following conditions apply:

1. A stability will only emerge when resources are available to meet a collectively perceived crisis in the environment. In fact, such a region formation may generate new resources or may make unrecognized resources visible.
2. A stability will only develop when the culture or cultures involved, however different, are sufficiently in tune or in agreement that well-being, economically, environmentally or culturally, is endangered and it is clear something needs to be done.
3. A stability will only develop when a coherent simply stated vision is put on the table of what it is, why it needs to be, and the consequences of it not happening. The vision itself must have certain properties
 - A. It must emerge from and be supported by a culturally credible source.
 - B. The values expressed in the vision must be perceived as advantageous on many levels and the perceived disadvantages manageable.
 - C. It must be free of self interest and able to undergo public scrutiny and comment and be modified within the context of its structure.
 - D. It cannot emerge exclusively from the internal operation of the culture itself.
 - E. It must clearly address issues at the scale they exist and the proposed transformation must be visible, (i.e. cognizable) to or by all who so desire.
 - F. The scale must be large enough to tolerate ambiguity, stress and dissonance without negating the pattern.
 - G. It must have the creativity or new invention visible.
 - H. It must be only minimally critical in nature.
 - I. It requires a situation that is exhibition like, permitting space and time for a non-linear experience of the iconic array to take place, with a linear text reading as a second response.
 - J. The presentation form, the iconic array, must be designed to bring rapid understanding of extremely complex issues. This permits a community of interest to form within a time frame as expressed in the "Urgency of the Moment".

On the Urgency of the Moment

Looking at the map of Holland.
Seeing it as the expression of a moment
in 1,200 years of contested history
about who will command the land
and why and how.

Seeing it as a metaphor
for yet another contest
as to who will shape the future
of this physical terrain
understood to be the Randstad
and the Green Heart.

Where in a ten year moment
less than one percent of the time
of its whole history as a civilization
the people on this ground
must construct a response
in physical terms
to intense population pressure
coupled to an expansion committed
economic engine in such a way
that these two self-reproducing forces
mutually energizing and interrelated
will consume
much of these lands available
in the Green Heart
which do not have specific ecological
or historical or other civic designation
and unless or until
a new direction is set in place
an alternative consensus agreed upon
by governmental and economic
and civic institutions
on limiting growth.

For
in the absence of
such an alternate consensus
clearly expressed on the ground
the outcome for the Green Heart
the Randstad
and the lowlands of Holland
appears to be
unfortunate in the extreme
mostly unnecessary
but mostly inevitable.

These very preliminary notions are based on hindsight, observations and analysis of the Green Heart Vision, which itself is based on ideas implicit in earlier works. The Green Heart Vision is explicitly referred to, as it appears in the main to be in the process of happening. As a result of this analysis, we have come to the tentative conclusion that the creation of a stability is a viable concept that in diverse contexts can be seen as wanting to happen. The potential properties of a stability are, in an eco-cultural context, the protection of large scale local environments and cultures, while at the same time directing, or in some way controlling the direction of market forces and growth. We suspect that, should an array of such stability regions come into being, they would automatically affect the market, moving it towards respecting cultural diversity, economic diversity and ecological continuities.

We use the dissipative structure observation and foundation of the work of Ilya Prigogine metaphorically, but not literally, i.e., a metaphor evokes identification - one is the other, although never completely the other. None-the-less, the Green Heart icon brought to mind the concept embedded in Prigogine's model of a whirlpool. As long as the energies of a certain type flowed through the system, acting as feedback loops, the system had constancy in space and time, even though the form was far from equilibrium. We first used his example as a metaphorical lens to see if there were physical and metaphysical congruences between his work and our own. After all, the Green Heart iconic array is a singular form that, should it be enacted on the ground, would be held in stability by the forces of law, economics, culture and belief, as well as by environmental elements. It is a form born of high social, economic, environmental and political stresses. It is a form that can fall back into environmental norms if the forces holding it in stability are removed or fade away, that is to say it has the appearance of a stable form far from equilibrium.

For us, the presentation of these ideas requires a compressed language structure tuned to a many layered iconic image. Therefore, the visual compression of the icon and the information compression of the form "story-metaphor-parable" afforded by the poetic process together act as vision carriers. While the information in each is richly connotative and layered, placed in each other's presence icon and text form an experience that is richer in meaning and affect than either separately. The whole is more than the sum of its parts and the experience offered by the whole operates in space and time as in an exhibition where all images can be scanned almost simultaneously and are grasped in a non-linear, all at once experience and thereafter sequentially and by grouping and regrouping.

We suggest that a "sustainability icon", if understood by many and enacted on the ground, makes manifest a process of continual co-creation, co-evolution as it were. For us the question is, "Can a visionary work of art, The Green Heart Icon, be also thought of as an emergent self-organizing pattern initially generated as a survival response by a well-defined social organism, Holland itself, to a perceived

extreme threat? Further, can it set the terms for retrofitting biodiversity into a rather heavily stressed cultural landscape and thereafter can such biodiversity co-evolve, protect and be protected by the diverse cultural elements with which it shares the terrain?"

Finally, an element rarely considered, is the need to develop a new aesthetic based on relinquishing control and accepting and valuing the chance arrangements produced by the processes of succession. As this essay makes manifest, we see both cultural diversity and biodiversity as having intrinsic value. We see both forms of diversity as the yin/yang of a new cultural landscape well past the middle of its formation. We have come to believe that the quality of survival in the largest sense has become a matter of precisely how the co-evolution of these forms of diversity proceeds.

NOTES

1. We tentatively define a stability as a new eco-cultural pattern emerging in a region that could help to resolve or reverse the loss of cultural diversity and biological diversity. A stability depends upon creation of complex forms that establish new boundary conditions and economic and ecological opportunities. While the region is in the process of compensating for that which may have been lost, it also must contain sufficient feedback loops to protect it from future loss of coherence under political and economic pressures.
2. We define icon in its original and complex sense. For instance, a carefully constructed religious icon, one of St. Francis, showing him wearing the dress of the clergy and in relationship to animals, has an aesthetic of its own, an explicit narrative, referential to the bible. Moreover, a far more complex narrative is referred to within which the biblical narrative is nested. The whole icon carries within it codes of behavior which are suggestive as to how one might conduct a life. For the St. Francis icon, a written narrative beyond the title is not necessary. It is presumed sufficiently well known. A sustainability icon has many of these same qualities compressed within it; however, a brief text must be supplied as the narrative cannot be presumed to be known.

The eight principal sustainability icons in the Green Heart Vision establish the limits to growth on the ground, but within these limits all elements can remain dynamic. Exactly how and how much can only be touched on in these brief comments. Sustainability in The Green Heart Vision is the outcome of enacting the stability on the ground. Its form is expressed in the eight icons. The Green Heart Sustainability Icons repeat the same specific shape but with vastly different content. The space is flexible, having only the requirement of continuity of surface area.
3. There is an ongoing discussion as to the minimum space needed for ecosystemic survival, which differs vastly for primary producers and predators, but since even the very simplest of food chains require both, it is the space for the survival of predators that must be the determinant.