

## GREENHOUSE BRITAIN

David Haley. Ecological Artist. Manchester Metropolitan University

### SUMMARY

We believe that the cultural landscape is largely formed by the dominant cultures of a place. "It is formed by a sometimes conflicted, sometimes consensual discourse or narrative from an array of stories, observations and intentions, first spoken by people of these dominant cultures and thereafter enacted on the ground. To our view, such a story has certain fluidity about it, and may change directions for any number of reasons. This work, *Greenhouse Britain*, is designed literally to express what the rising of waters would mean to the landscape of the island. It takes the 3 positions of defense, withdrawal and then defense, withdrawal to the high grounds.

We suggest that the existing plans for greenhouse emissions control will be insufficient to keep temperature rise at 2° or less. In fact, we believe that the tipping point is past. In this context, the rising ocean becomes a form determinant. By "form determinant", we mean, the rising ocean will determine many of the new forms that culture, industry and many other elements of civilization will have to take. There is another piece of this picture that we wish to give voice to. That is up until this present rising of the world oceans, the creators of Western civilization have held and enacted the belief that all limitations in the physical world, particularly in the ecological world are there to be used and overcome. We think that the rising ocean is an opportunity for transformation, but it is exactly the reverse of a new frontier to overcome from civilization's perspective. Now, from the ocean's perspective, its boundary is perhaps a continuing, evolving transforming new frontier. Therefore, assuming a rapid rise of waters, even for a modest 5 meters in 100 years, there are apparently no models of precedence, no information, design, nor planning on the table, with the exception of ocean defenses and typical development models, albeit more energy efficient ones. It is the intention of this exhibition to begin generating the thinking, the design, perhaps the new belief structure, perhaps even indicating new economic structures that may be required for the democratic dispersal of support for an upward-moving population within the context of a gradually shrinking landmass.

We as strangers believe that Britain is at the intersection of 3 histories. There is the history of empire, its beginnings, its growth, its high point at the Industrial Revolution and its contraction from the 1930s to the 1970s to its present consensual relationship to so many of its former, now independent, colonies. While, part-by-part, we imagine this contraction can be seen as stressful, seen as a continuum, we as strangers perceive this withdrawal, this re-forming of self, as it were, as graceful. It is in this sense that we believe that deeply imbedded in the zeitgeist of the country is the knowledge or understanding of how to yield terrain.

The second history is imbedded in the astonishing, for us, national response to the threat of invasion by the Nazis. We both remember, as children, the news stories and Churchill's speeches on the radio, which did, in fact, unify and mobilize the country (and to some degree, our country as well). We see a partial metaphor here. We do not see the world oceans as attacking the isle of Britain, but we do see the need for the country to mobilize with the same integrity, vitality, cooperation, depth of purpose and "all-in-it-togetherness" that typified the war years and the reconstruction thereafter. We note that this insight has been recently expressed by others.

The third history that we see is one that this proposed work of art seeks to co-join with. It is the new history that is coming into being in a 30-year to 100-year Now with a growing understanding of the urgency imbedded in this 30-year moment.

### SUMARIO

Creemos que el paisaje cultural está en gran parte formado por las culturas dominantes de un lugar. "Está formado por a veces desde el conflicto, a veces desde el discurso del consenso y la narración de una serie de historias, observaciones e intenciones, de las que habla el pueblo de estas culturas dominantes, y posteriormente promulgadas sobre el terreno. A nuestro juicio, esta historia tiene cierta fluidez sobre él, y puede cambiar de dirección por cualquier número de razones. Este trabajo, "Invernadero Bretaña", está diseñado para expresar literalmente lo que el aumento del nivel del agua significaría para el paisaje de la isla. Sugerimos que los planes existentes para el control de las emisiones de efecto invernadero será insuficiente para mantener la temperatura a 2 ° o menos. De hecho, creemos que el punto de inflexión ha pasado. En este contexto, el aumento de los océanos se convierte en una forma determinante. Por "forma determinante", queremos significar que el aumento de los océanos determinará muchas de las nuevas formas que la cultura, la industria y muchos otros elementos de la civilización tendrán que tomar.

Hay otra pieza de esta imagen que queremos manifestar. Hasta que se presente el aumento de los océanos del mundo, los creadores de la civilización occidental han celebrado y promulgado la creencia de que todas las limitaciones en el mundo físico, en particular en el mundo ecológico está allí para ser utilizado y superado. Creemos que el aumento de los océanos es una oportunidad para el cambio, pero es exactamente el reverso de una nueva frontera para superar la perspectiva de la civilización. Ahora, desde la perspectiva del océano, su límite es tal vez una: la evolución de la transformación de una nueva frontera.

Por lo tanto, en el supuesto de un aumento rápido de las aguas, incluso a unos modestos 5 metros en 100 años, según todo indica, no existen modelos precedentes, no hay información, ni diseño, ni planificación con la excepción de los océanos y defensas típicas modelos de desarrollo, aunque energía más eficientes. Es intención de esta exposición comenzar a generar la reflexión, el diseño, tal vez la nueva estructura de creencias, tal vez indicando las nuevas estructuras económicas que puedan ser necesarios para el apoyo democrático de la dispersión de un creciente movimiento de población en el contexto de una gradual disminución de superficie.

Extrañados, creemos que Gran Bretaña está en la intersección de 3 historias. Existe la historia del imperio, sus comienzos, su crecimiento, su punto más alto en la Revolución Industrial y su contracción de la década de 1930 a la década de 1970 a su actual relación consensual a muchos de sus ex, ahora independientes, las colonias. Si bien, parte por parte, nos imaginamos esta contracción considerándola como estresante, visto como un continuum, como extraños que perciben esta retirada, esta re-constitución de sí mismo, por así decirlo, como buena. Es en este sentido que creemos que profundamente incrustada en el espíritu del país está el conocimiento o la comprensión de cómo el avanza el terreno.

La segunda historia está incrustada en la asombrosa, para nosotros, respuesta nacional a la amenaza de invasión por los nazis. Recordar, como los niños, que ambos, las noticias y los discursos de Churchill en la radio, que, de hecho, unificaron y movilizaron el país (y en cierta medida, nuestro país también). Vemos aquí una metáfora parcial. No vemos los océanos del mundo atacando la isla de Gran Bretaña, pero sí vemos la necesidad de que el país pueda movilizar con la misma integridad, vitalidad, cooperación, profundidad de los objetivos y “todo-en-la-unión” que caracterizaron los años de la guerra y la reconstrucción posterior. Tomamos nota de que esta idea ha sido expresada por otros.

La tercera historia que veremos es el proyecto de una obra de arte que tiene por objeto co-unirse con él. Es la nueva historia que acontecerá de 30 a 100 años a partir de ahora con una creciente comprensión de la urgencia incrustada en este momento a 30 años.

## 1) Lea Valley text

### **Where it can be seen that it is possible and desirable to abandon a short sighted plan for the benefit of a larger whole (very tentative)**

#### Losing Ground, Gaining Wisdom

For instance  
looking at the Lea Valley watershed  
more or less at the request  
of people at Gunpowder Park  
it was not difficult  
to go in the minds eye  
downriver on the Thames  
a bit  
and see the Gateway planning  
for a multitude of housing  
understanding that what might be built  
from those plans  
would be underwater as the oceans rise  
so we began imagining  
the upward movement of planning

For instance  
Imagine a new form of dispersal of people  
money and resources  
where  
development becomes associated with  
the generation of biodiverse habitat  
so that the one does not subsume the  
other  
as is now the case  
Imagine that this development  
new and ecologically provident  
is spread across  
the open areas in the Lea Valley  
to the north of the Lea River  
Imagine that village forms were designed  
to live and be  
in a forest surround  
with a bio-diverse edge  
and every village form  
became a figure  
in a biodiverse forest field  
enacting a new paradigm

where contemporary resettlement  
restated the benefits  
inherent in  
an historic form  
and the work of the forest  
was to sequester carbon  
in large amounts  
and the work of the forest  
was to regenerate the earth  
as a carbon sink  
and the work of the forest  
recreated subsoil ecosystems  
and the work of the forest  
was to reestablish the earth  
as a sponge  
thereby enhancing  
both the well being of the earth itself  
and the water system of London as a  
whole

Then the (ask Bignell about numbers)  
houses expected to be  
built here over the next twenty years  
really a (ask Bignell) pound economic  
engine

And so you and I  
with the help of architects and  
designers  
began work on two maps at once—  
the one which we called the  
catastrophe  
which gave the power  
mostly unmediated  
to the market place forces—  
and the other  
a new form of building and planning  
which is based on the development

of that which we call the Eco-Urban Edge  
 which becomes the margin  
 between the village form  
 and the forest field.

## 2) On the Defence of Bristol

Required is text to be placed on the video image. Text can't be written until more information comes about what the video will be like.

**Where it can be seen that each place is unique and each act of defence requires its own envisioning and creativity**

Text can only be formed after images come from Bignell, but the text strategy is 8-10 statements that appear in the video at appropriate times.

## 3) On The Upward Movement of People

A Bio-diversity Ring for the Pennines

### TEXT I

#### On The Upward Movement of People

We are standing at the Liverpool dock  
 imagining the waters rising  
 first 5, then 10, then 15 meters  
 thinking about  
 the upward movement of people  
 and talking about how that  
 might happen gracefully.  
 Deciding to  
 replace the term "development"  
 with the term "settlement."  
 For us  
 it is a metaphorical flip  
 an aide to thinking  
 and thereafter to designing  
 The differences between  
 settlement  
 and development.  
 They are profound.  
 We agree  
 that the term "settlement"  
 has embedded in it  
 the idea of habitat for ourselves  
 and of niches  
 for other living creatures  
 Then you said or I said  
 the metaphorical shift  
 between development design  
 and settlement design  
 becomes visible  
 at its simplest level

in selecting  
 an appropriate site  
 and then  
 tuning settlement  
 to the carrying capacity of the terrain

So we  
 with a small group of people began  
 looking for a site above Liverpool  
 where human habitation  
 might be designed  
 as an interactive figure  
 within a bio-diverse field.  
 Our small group discovered  
 a place in the Pennines  
 with 16 watersheds running from  
 the dark peak moorlands  
 in the east  
 through a topographically diverse  
 and ecologically diverse  
 landscape  
 with sloping hills.  
 These moved gently  
 towards the lower Mersey basin  
 Beginning at perhaps 350 metres and  
 ending at perhaps 250 metres.  
 Then somebody said  
 "I know this place

It's really many places  
It has  
Blanken bog peatlands.  
It has upland moorland and pastureland  
with semi-natural woodland  
and plantations  
including wet and dry meadows  
And some urban and rural gardens.  
Then  
of course  
stone wall ecosystems.  
Walking in the terrain  
finding aquatic ecosystems  
and upland streams  
riparian habitat  
little dew ponds  
and lakeside  
and streamside ecosystems.”  
We measured this terrain  
and shaped it.  
finding that its boundary included 71

square kilometers and about 4500  
people living in Hayfield  
or dispersed nearby  
This place appeared to us  
a quintessentially Pennine place  
**And thus  
we began a process  
of thinking  
exploring  
and designing  
what we came to think of  
as a new Pennine configuration  
a new form  
in the British landscape mosaic**

**(341 words)  
(98 lines)  
(1.5 minute silent read)**

## **TEXT 2**

Beginning this process  
We became for a while  
4 groups.  
One  
thinking about  
carbon-sequestration

and a second group  
which took on the task  
of imagining  
an open canopy forest  
and meadowland

Then a third group  
imagined what a village might look like  
Posing the question  
“what might they do  
that others had not done?”

And a fourth group  
began the process of  
envisioning this place  
as a whole system  
that was replicable  
around the Pennines.  
In fact, a new form  
in the British landscape mosaic.

And together

we began a consideration  
of what one  
might harvest from the land  
and how such a harvest  
could preserve  
the system.  
And in the process  
we began to imagine  
a self-nourishing  
self-preserving  
system.

**Text 3****A Pennine Village**

Which Respects the life  
within the earth  
upon which it stands

It is known how to build  
energy efficient walls in a house  
It is known how to build  
energy efficient windows  
and doors and roofs  
and heating systems  
and waste-disposal systems.  
And by extension  
it is known  
how to build energy efficient houses  
and skyscrapers

It is known  
how to draw energy from the sun  
but not so efficiently  
and energy from the wind  
and the ocean waves  
but not so efficiently  
and heat from the earth.  
All of these elements  
have been individually acted upon  
or are being acted upon  
and being improved  
and re-improved  
or may yet simply be  
dreamed artifacts  
in people's minds.

However  
It is not so well known  
or at least  
not so thought about in depth  
nor acted upon vigorously  
how to connect  
a house  
a street  
a village  
and a water purification system  
to the earth  
in such a way  
that the flow of waters  
below the earth's surface  
are uninterrupted.  
And it is not known  
the distribution of trees  
that would be required  
to enhance the percolation  
of waters  
that run from hard surfaces

and enable  
the ability of earth  
to purify water  
in a way that is uninterrupted.  
Above all  
it is not known  
how to create forms  
on the earth  
that respect the life-web  
within the earth itself  
and leave it minimally interrupted.  
So we have begun  
a consideration  
but by no means  
finished that consideration  
about how a Pennine village  
might interface  
with the Earth  
Thus all foundations  
of structures  
big and small

and all roads and pathways  
and all service enterprises  
such as  
electric  
and water purification systems  
and waste storage systems  
sit on the earth  
connect with the earth  
and penetrate the earth  
in a way  
that the waters  
that flow through the earth  
and eco-systems  
that have evolved there  
and matured there  
may continue to be  
felicitous to all.

## Text 4

### On Carbon

Understanding this Pennine place  
to be  
71 square km or 7,100 hectare  
the power  
of the passive sequestration of carbon  
here  
became obvious.  
When the choice was made  
to conceive an open-canopy forest  
that was 40% forested, 2840 hectare  
and 60% meadowland, 4260 hectare.  
Since meadows sequester  
1 tonne of carbon per year  
and forests sequester 2 tonnes per year  
This new landscape  
would pull  
about 10,000 tonnes of carbon  
from the air every year.

With about 4,000 people  
living here now  
and imagining a village  
of another 4,000 people coming  
and moving upward  
understanding  
that the domestic carbon footprint  
of each person is 3 tonnes per year  
then  
an open-canopy forest grassland  
of the kind we are imagining  
could passively sequester  
about 45%  
of each of the 8,000 person's  
carbon footprint.  
So some of us  
began thinking  
about how those living here  
might remove and sequester  
55% of the carbon they use  
so that it could be used no more

## Text 5

### On The Meadows

Given the terrain  
the way in which the sun falls  
the watersheds distribute themselves  
the forest shapes itself  
a great diversity of grasslands  
wants to happen  
with neutral and wet grasslands  
with species-rich pastures  
harvested by many birds  
the gray partridge  
skylark, waders, red shanks  
and others  
there were hay-meadows  
again species-rich attractive  
to a rich array of invertebrates  
including butterflies  
such as  
the meadow brown  
and the common blue  
and there were the heathlands  
both wet and dry  
with heather  
and cross-leaved heath  
and research was done  
about who might live on the meadows.

And the Welsh Black cattle  
were selected  
for hardiness, adaptability, longevity  
and fertility  
And the Highland Scots breed  
although ornery  
survive well  
and like the Welsh Black  
reproduce  
and live off the land  
and eat what other cattle pass by.  
And we chose the European Bison  
the Wisant  
which, as the others,  
also lives well off the land  
liking open areas within forests  
the red deer would come  
and the mountain hare would come  
as would those who hunt them  
and assuming  
that the total area  
of 70 square km  
could handle about 1200 head  
in 3 different herds  
the question of management emerged  
with simple ideas

“the harvest will preserve the system”  
 “the different herd cultures  
 will be respected”  
 made clear a management system  
 needs to be invented  
 more from hunter/gatherer behaviours  
 than mono-cultural behaviours  
 that is to say  
 we imagine this system to become  
 a place  
 where species are dispersed  
 and harvested throughout  
 wherein transaction between the parts

is precisely the opposite  
 of the mono-cultural productivity  
 that dominates  
 almost all behaviour  
 where food production is concerned  
 and where land management  
 as a whole  
 is concerned  
 and wondered  
 if such a bold experiment  
 might be an almost natural outcome  
 in response to  
 the rising of waters

## Text 6

### On The Forests

so others of us  
 began to think about  
 what this open-canopy forest  
 could in fact become  
 it is a place where  
 fragments of old secession  
 upland Oak, Ashwood  
 and wet woodland  
 mainly Alder  
 Cottonwood and Willow  
 and ancient plantations  
 mainly  
 scots pine, norwegian spruce  
 and the odd broadleaf plantation  
 of beech  
 and sycamore  
 and our thinking centred  
 around harvesting  
 with apples, pears  
 plum and cherry trees

planted at the boundaries  
 and gooseberries and redberries  
 especially in the gaps  
 between oaklands  
 again with the idea  
 that time  
 was a form-determinant  
 with yearly harvests  
 of fruits  
 hundred-year harvests  
 of softwoods  
 and several hundred-year harvests  
 of hardwoods  
 always harvesting  
 with the idea that  
 the act of harvesting  
 itself  
 became a contributor  
 to bio-diversity of the whole

## Text 7

### On the Pennine Ring

Finally  
 thinking about big numbers  
 finding that the Pennine Ring  
 had the lowest population  
 and the greatest open space  
 on the island  
 we began to think about it  
 as a whole place

with a length of 215 km  
 with the area  
 of the High Pennines  
 over 300 metres  
 equaling 4,820 km  
 and the area  
 of a 5 km downward perimeter  
 equaling 5,660 square km

so we did the obvious  
and imagined repeating our model  
around this ring  
80 times  
with theme and variations  
adding 4,000 people  
on this 3,660 square km  
each 70 square km shape  
and so we discovered  
that 320,000 newpeople  
might live  
and to some extent work  
in a harmonious  
park-like  
savannah-like  
bio-diverse  
food-producing  
open-canopy forest  
which by its very nature

dramatically reduced  
the carbon footprint of all  
and everybody living there  
then thinking  
about still bigger numbers  
as the oceans rise 5 metres  
about 2.2 million people  
will be displaced  
and 10,000 square km of land  
covered  
and in this circumstance  
this Pennine Ring  
becomes an invitation to  
15% of these people displaced  
to move into  
a new world  
a world that is marvelous

#### 4) the Model

##### Text in the first minute as the map takes its form on the model

It is an island  
covering about 243000 sq km  
and about 60,400,000 people live there  
It has about 3600 running km of motorways  
and a little over 17,000 km of railway  
and the farmed lands cover about 4,340,000  
hectares  
while about 12,850,000 hectares are in  
pasturage  
66 places are officially designated as cities  
while the small towns and villages number  
about \_\_\_\_\_  
universities number about 169  
and jails number about 175  
and there are only 388 hospital beds per  
100,000 people  
There are \_\_\_\_\_ miles of river  
There are \_\_\_\_\_ libraries  
The many thousands of years of its complex  
history  
speaks in the many languages of  
diverse cultures  
and myths

**HH**  
**And for this island**  
which is a much-loved place  
**NH**  
The news is not good  
and is getting worse  
**HH**

For instance  
the Greenland Ice Shelf  
is breaking up  
much more rapidly  
than anyone thought  
and this alone can cause an ocean rise  
of up to 7 metres in 300 years or less

**On the model**

*The first two metre rise happens*

*and a storm surge happens following it  
slowly, taking the same time as⇒  
as the storm surge is happening  
the voices say*

*NH*

Will it be enough

*HH*

as the most extreme model suggests  
to halt the juggernaut of the ocean  
if carbon use is stopped  
almost all at once  
almost all over  
in the next 10 years

*The waters rise to the 4 metre mark  
on the model  
then the 4 metre surge*

*NH*

*The news is not good  
and it's getting worse*

*HH*

animals are on the run  
plants are migrating  
if the temperatures on the average  
rise 2 degrees  
If this,  
then  
one scenario predicts  
Europe, Asia, America and the Amazon  
will lose 30% of their forests

*NH*

Will it be enough  
to slow this temperature rise  
*HH*  
if the CO2  
from all the coal burning plants  
presently existing  
and the hundreds of new ones  
that China will build  
were to be captured and sequestered  
Other models suggest  
there is a 20 year window to do this

*The ocean rises to the 6 metre mark  
The ocean surge happens  
The fade-in takes the same time as  
NH/HH reading*

*NH*

*The news is not good  
and it's getting worse*

*HH*

botanists studying the Western Siberian  
permafrost  
have seen once frozen peat bogs  
in Siberia  
bigger than France and Germany  
combined

begin to boil furiously  
as methane bubbles to the surface  
they thought this to be 100,000 tonnes  
a day  
which means a warming  
greater than that caused by  
America's production of CO2

*NH*  
will it be enough

to construct  
a global consensus  
to withdraw from the carbon world  
entirely?  
*British Voice*  
Some models say  
we have a 30-50 year window to do so

*NH*  
would it be enough?  
*HH*  
to begin now  
a transglobal discourse in which  
the Global Domestic Output  
is discussed  
agreeing all efforts be directed to commit  
1% of the Global Domestic Product  
to the reduction of the carbon surge  
to near zero  
in order to reduce  
the ocean rise?

*NH*  
after all

*NH*  
However  
some models predict  
an ocean rise of only 1 metre  
or less  
in a hundred years  
which  
by all accounts  
is manageable  
Despite this  
*The news is not good  
and it's getting worse*  
*HH*  
after all  
the historic record  
indicates that  
when the CO2 level raised about 15%  
which appears almost inevitable today  
and when the global temperature  
was at least two degrees warmer  
than today  
the sea level  
was 5 metres higher  
However with a 5 degree rise  
in temperature  
the sea level

was 25 metres higher!!

*NH*  
if some of the modeling is correct  
and the sea level rises slowly  
massive ice sheets will be

softened and weakened over time  
 Intuition suggests  
 this will take centuries  
 but one historical record shows  
 that when ice sheets began to collapse  
 the waters rose  
 about a metre every 20 years  
 for centuries

*HH*

would it be enough  
 to declare world peace  
 even to enforce world peace  
 so that all the monies now spent

that operate in the forests  
 and the oceans  
 while leaving  
 ancient carbon stored  
 as coal and oil  
 in their present inactive states

***As the final text is read  
 the oceans withdraw to the  
 4 metre mark***

and in this state of indeterminacy  
 in this state of knowing and not knowing

in warlike behaviour  
 would be directed toward  
 de-carbonizing the world as a whole  
 There may be time enough  
 as a few models suggest  
 there could be  
 less than a metre rise  
 per century

*NH*

*The news is not good  
 and it's getting worse*

*HH*

the world ocean  
 as a place that absorbs carbon  
 is suffering from feedback  
 as more carbon dissolves in seawater  
 and forms carbonic acid  
 so that  
 the acidity of the ocean increases  
 at a rate that is 100 times faster  
 than any time in the past million years  
 and when the ocean becomes so saturated  
 it can no longer absorb CO<sub>2</sub>  
 in meaningful amounts  
 the outcomes are, biologically, not fortunate

*NH*

would it be enough  
 to transcend economic thinking  
 and begin creating  
 a domain  
 of ecological thinking  
 that regenerates  
 the great carbon-sequestering  
 world systems

from one perspective  
nothing is enough  
from another  
anything might be enough  
so yes  
it would be enough  
to construct  
an ecologically framed  
global consensus  
to withdraw  
from the carbon world  
by all means possible

yes  
it would be enough  
to enable world peace  
so that military monies  
might be redirected  
toward de-carbonizing  
the world

yes  
it would be enough  
if CO2 were to be captured  
or sequestered from  
all the present coal-burning plants  
and those that will be built

yes  
it would be enough  
if 1% of the Global Domestic Product  
were dedicated  
to zeroing out  
the carbon surge  
as an answer to  
ocean rise

After all  
the rising of oceans  
has also been  
in good part  
the outcome of everybody's work  
Thus there is  
an odd type of rhyming  
between the collective output  
of society  
and the sequestering of  
a small percentage  
of its yearly product  
to act as the feedback  
to society's response  
to the rising of the oceans  
and the responses  
of all systems

to the changes  
that are upon us  
and all remedies  
all together  
known and to be known  
enacted  
would be enough

*NH*  
Finally understanding  
that the news  
is neither good nor bad  
it is simply that great differences are  
upon us  
that great changes are upon us as a  
culture  
and great changes are  
upon all planetary life systems  
and the news is about how we meet  
these changes  
and are transformed by them  
or  
in turn  
transform them

**British Voice**  
The waters rise twelve metres  
the storm surge expresses itself  
on the ground  
at fourteen metres  
*(the voice continues)*  
the waters rise twelve metres  
the storm surge expresses itself  
on the ground  
at fourteen metres  
*(the voice says)*  
are we looking into  
a thousand year future  
far beyond our capability  
to rethink present systems  
of governance and production?

*British Voice*  
Looking at the eight metre rise

at least 5,200,000 people  
would be displaced  
and 26,200 km of land  
would be under the sea

The ocean rises to 8m  
*then surges*  
*the surge withdraws*  
*the ocean rises to 10m*  
*the water surges*  
*on the model*

### **HH**

Looking at the six meter rise  
looking at  
the shape of the storm surge  
it does not seem  
that so much can be protected  
while the economic urgency  
appears outrageous

looking at  
the shape of the storm surge  
Wondering  
if this event would be  
so many years in the future  
that planning and thinking  
and acting in the now  
against such an eventuality  
was impossible

Looking at the ten metre rise  
looking at the shape of the  
storm surge  
Wondering the same thing  
Although  
at a 10 metre rise

### *British Voice*

if  
the yearly gross domestic product  
is 2.3 trillion dollars  
(CIA estimates)  
and  
1 percent  
of this domestic production  
would be 23 billion dollars  
then  
after 20 years,  
about 460 billion dollars  
could be sequestered  
Which would be sufficient to support  
the first upward movement of people  
and the upward movement of  
infrastructure  
and then  
for every 20 years thereafter  
another movement of people  
upward  
could occur

### **British voice**

Looking at the four meter rise  
Looking at  
the shape of the storm surge  
we examined  
what a 5 metre ocean rise  
might mean  
and we were looking at  
about a 10,000 square km loss  
of land

with about 2,200,000 people  
displaced  
And somebody said

“Where will the money  
to help fix all of this come from?”  
“What new forms  
of organization do we need?”

***The storm surge does not change while  
reading***

***A British Voice says***

Looking at the first two meter rise  
looking at the storm surge  
thinking about protection  
thinking about where monies  
might come from  
to protect (the land)

Map image begins with rivers, then towns,  
then topography then roads and other  
infrastructure. This takes about 45 seconds,  
the length of time to read the text.

***British Voice***

Looking at the sixteen meter rise  
Looking at the lands covered by the  
storm surges  
we did a study  
that indicated  
31,200 km of land  
would be covered by water  
displacing almost  
8,000,000 people  
who would be  
needing to move upward  
if the waters rose to  
15 metres  
not even considering  
the storm surge