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By leaves we live!

‘By leaves we live’: Learning outdoors and preparing for a low carbon future

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What I said I would do ...

This presentation will consider priorities in education and its significance in helping us to understand (and care) that our actions here and now may have an effect in some other place and in the future. Its central feature will be a consideration of ways of teaching about the carbon cycle that have an affective as well as intellectual focus.

Educational priorities – a personal view

Educational priorities

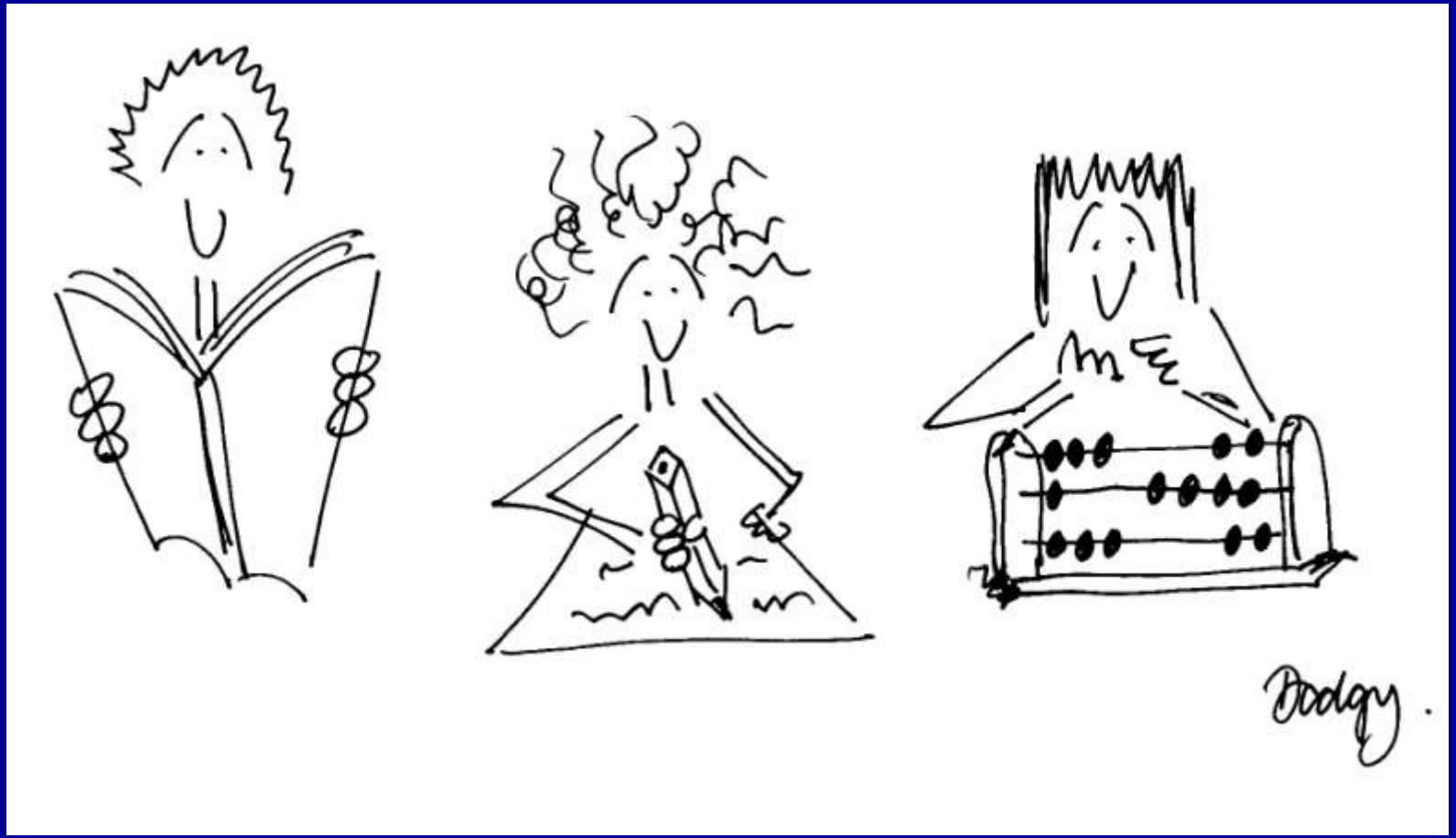
People know *what* they do; frequently they know *why* they do what they do; but what they don't know is what they do *does*.

(Foucault, 1984, p. 95)

Education is a social process. Education is growth. Education is not a preparation for life; education is life itself.

John Dewey (1859-1952)
American philosopher, psychologist and educational reformer

The ‘Three Rs’
Reading, wRiting & aRithmetic



Education *for* life itself … ?

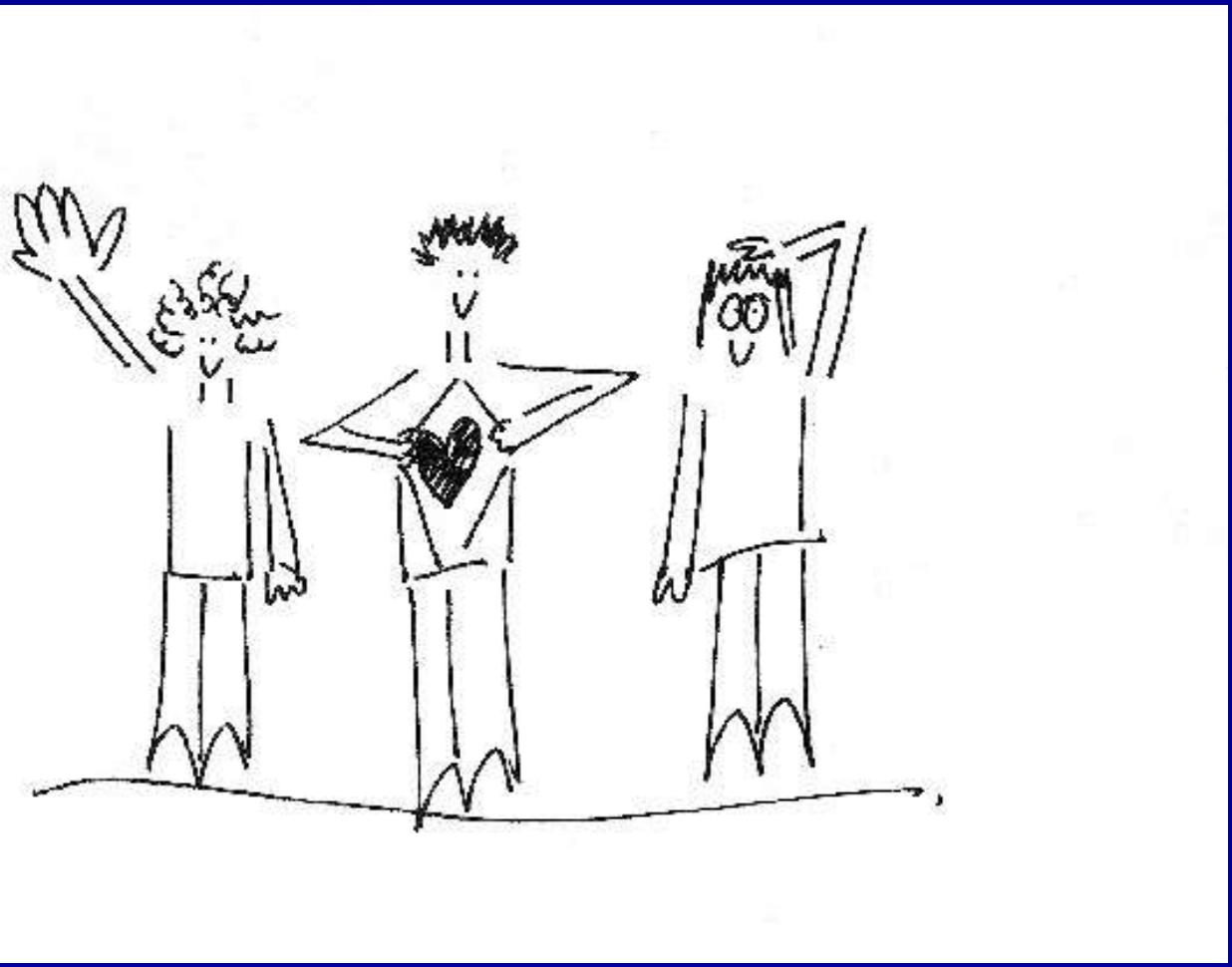
We should:

- Understand how we are all dependent on planetary systems
- Learn how to deal with complexity and change

… and to do so with realism and optimism

- Learn how to contribute to our own development
- Recognise that it is OK to be wrong and it is OK to fail

The ‘Three Hs’ Heart, Hand & Head



Values *for* life itself … ?

- Develop respect for self, others and the environment
- Understand the need for new ways of behaving
- … and have the knowledge and skills to do so
- Endeavour to pass on a lasting positive legacy to future generations.

What should we teach?

What should we teach?

- The ‘tools’ for learning (RRR)
- ‘Education for life itself’
- ‘Values for life’
- The ‘skills’ for learning (e.g. critical thinking)
- … and a special request … understanding of the scientific paradigm

In praise of the ‘scientific’ paradigm

In science, being wrong is only just second best to being right

(after Thomas Huxley)

Where should we teach?

SCHOOL

Why teach ~~indoors~~ outdoors?

Why teach environmental/sustainability education outdoors?

- Being *in* 'the environment' and experiencing natural processes
- Link to schooling - knowledge and understanding can be evaluated
- Significance of 'place'
- Significant Life Experiences (SLE) research indicates links between outdoor experiences and life-long personal values
- Affective and personal values development

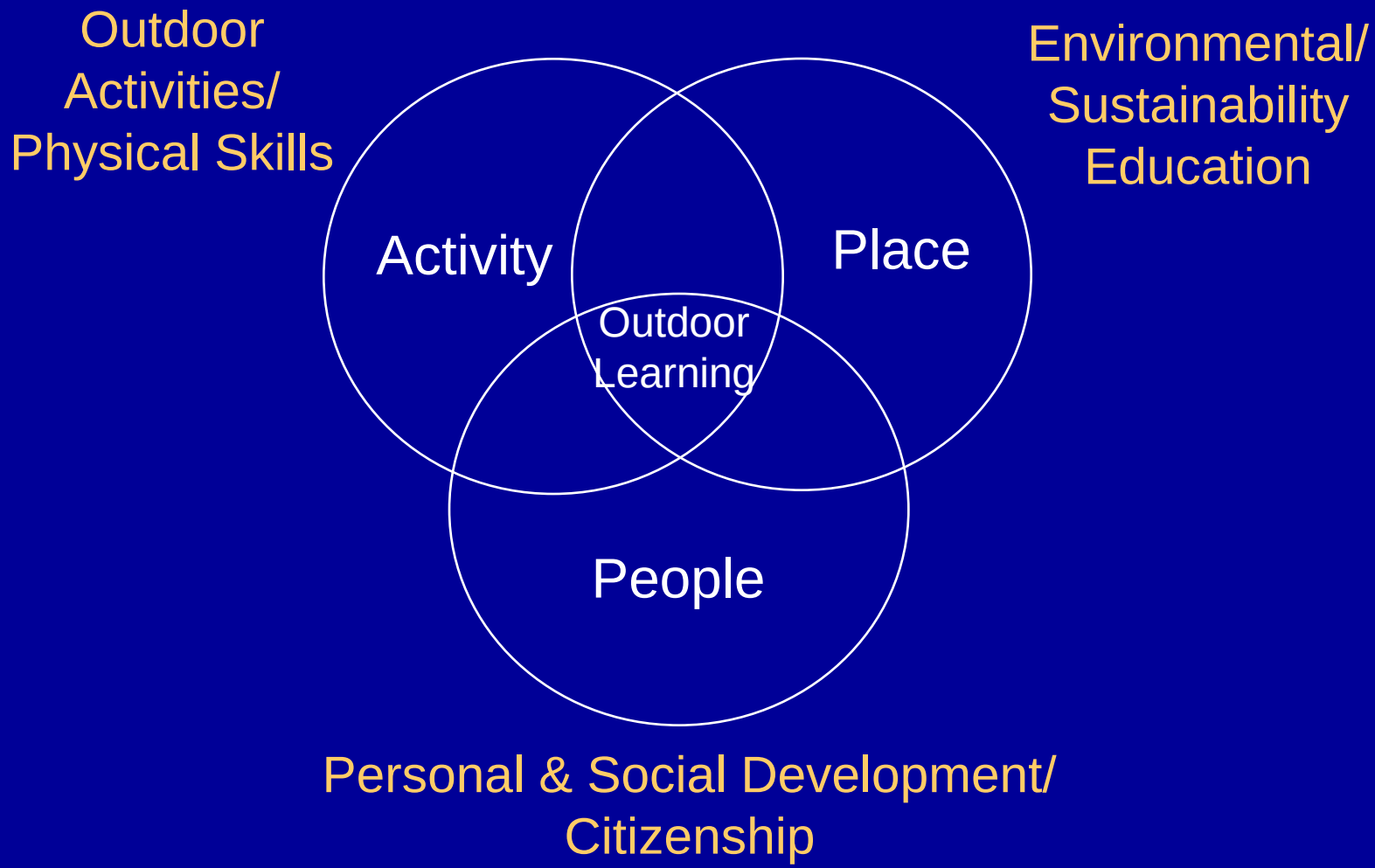
Young people value (outdoor) experiences that …

- are fun or enjoyable, often involving doing something new and doing activities that engaged the senses;
- leave them feeling uninhibited: being ‘free’, outdoors, setting their own agenda, not being rushed, being close to nature;
- feel authentic i.e. relating to the hands-on nature of practical activity, encounters with animals, being exposed to the effects of the weather and not always knowing what will happen next.

What young people value in outdoor experiences depends on the way three dimensions interact: the *context/place*, the *activity* itself and *social aspect.*

(Mannion et al, 2007)

Mapping these onto a philosophical model of outdoor learning …



How should we teach?

A class test or ‘multiple choice’ exam … ?

Question 1 In order to ensure the future survival of the human race we should:

a) …

b) …

c) …

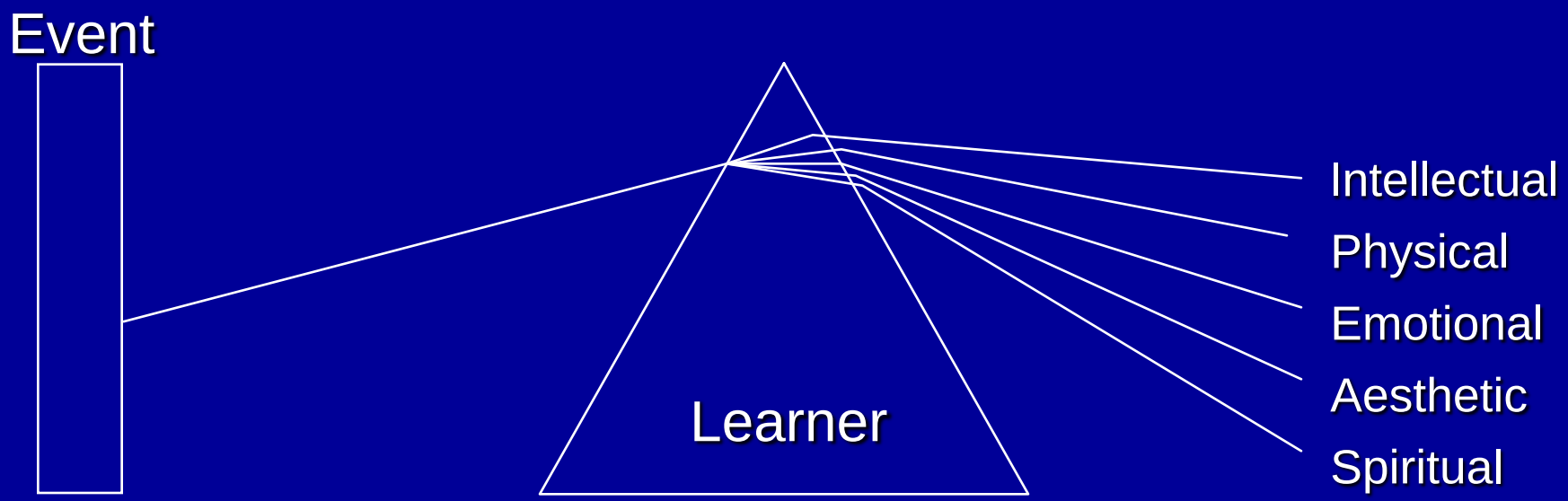
Question 2 To promote inter-national and inter-generational equity we should:

a) …

b) …

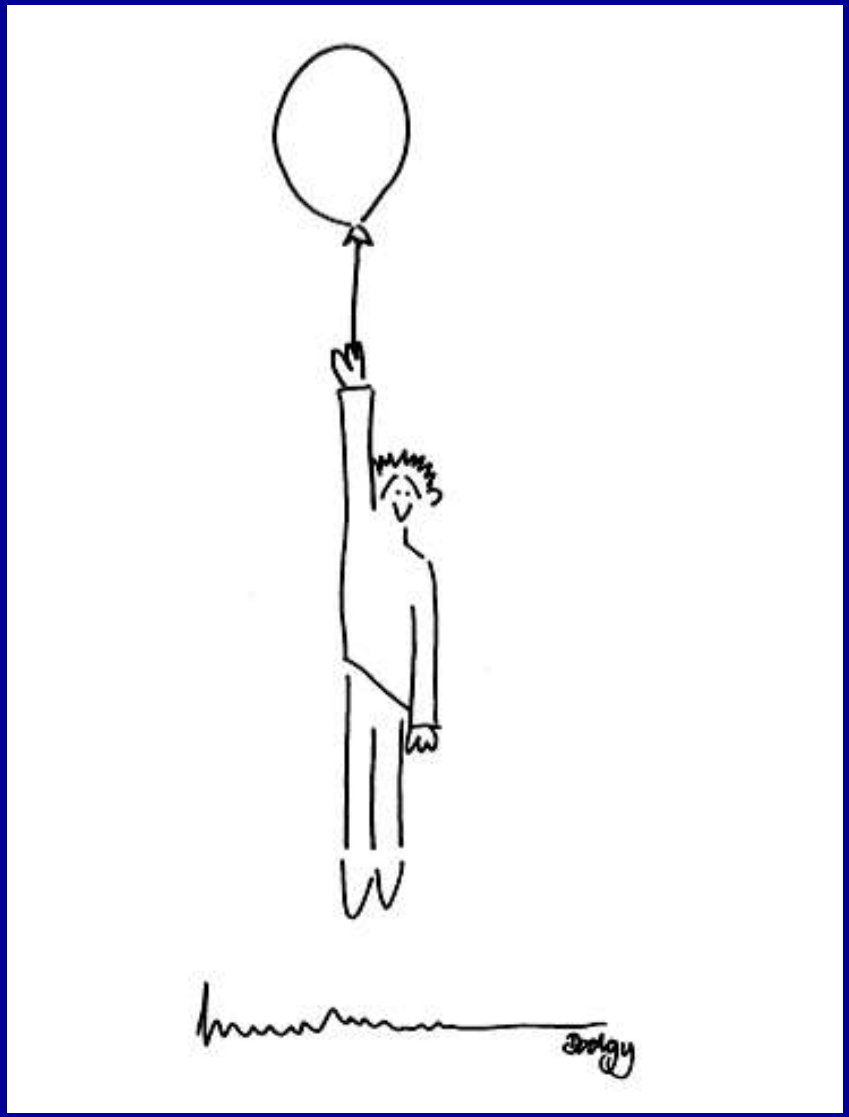
c) …

There are many ways of ‘knowing’ and we/students all ‘learn/know’ individually



Exploring a complex global issue

The answer is
‘4 minutes’ -
what is the question?



Why a plant
in a pot?

By Leaves We Live

This is a green world, with animals comparatively few and small, and all dependent on the leaves. By leaves we live. Some people have strange ideas that they live by money. They think energy is generated by the circulation of coins. Whereas the world is mainly a vast leaf colony, growing on and forming a leafy soil, not a mere mineral mass: and we live not by the jingling of our coins, but by the fullness of our harvests.

Sir Patrick Geddes (1919)

Rearrange these into a well known equation …

Carbon Dioxide

Water → +

Oxygen + Plant growth

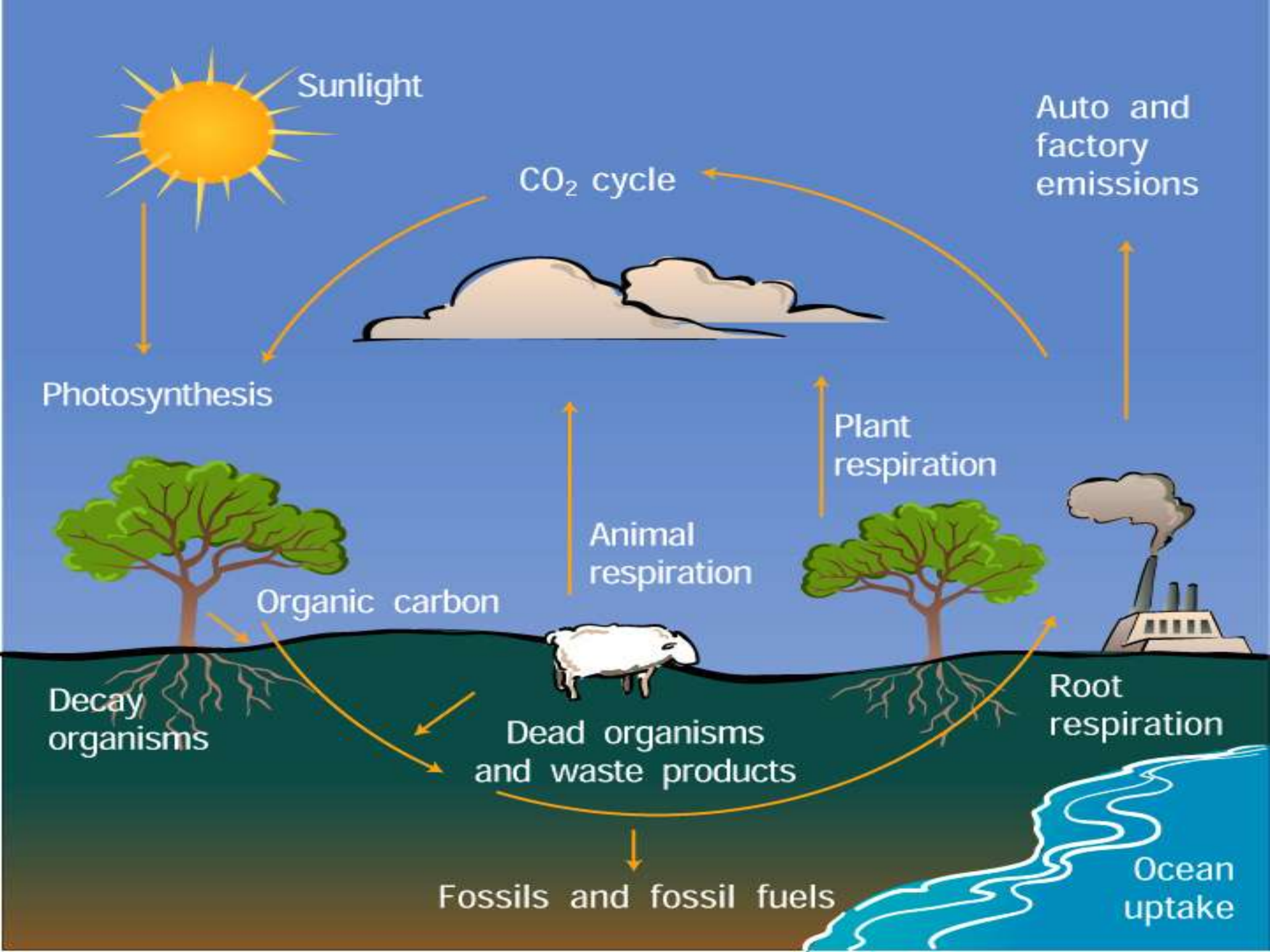
… a skill to baffle many politicians, advertising executives, financiers …

The Carbon Cycle and Photosynthesis

Water + Carbon Dioxide → Plant growth + Oxygen

$6H_2O + 6CO_2 \rightarrow C_6H_{12}O_6 + 6O_2$

A few million years in the life of a carbon atom …


Sunlight
CO_2 cycle
Auto and factory emissions
Photosynthesis
Plant respiration
Animal respiration
Organic carbon
Decay organisms
Dead organisms and waste products
Root respiration
Fossils and fossil fuels
Ocean uptake

That's all very well but we'll be old or dead soon ..

- We are predisposed to undervalue adverse outcomes which are a long way off, especially if we might be old or dead soon

- (We tend to exaggerate the dangers of rare and dramatic events)

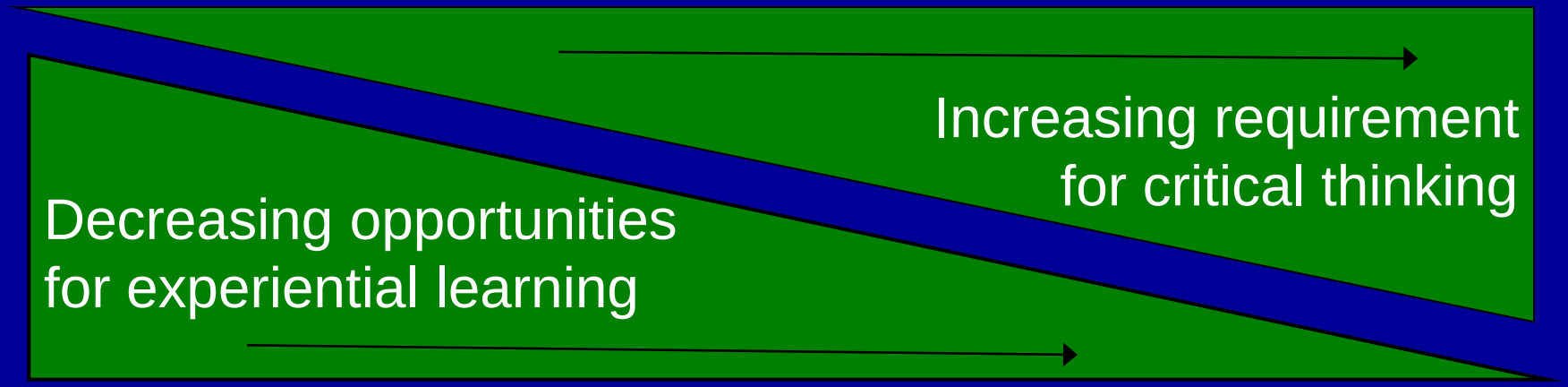
(Ben Goldacre, Guardian Newspaper, December 2009)

… and anyway I haven't noticed any of this so called 'global climate change'

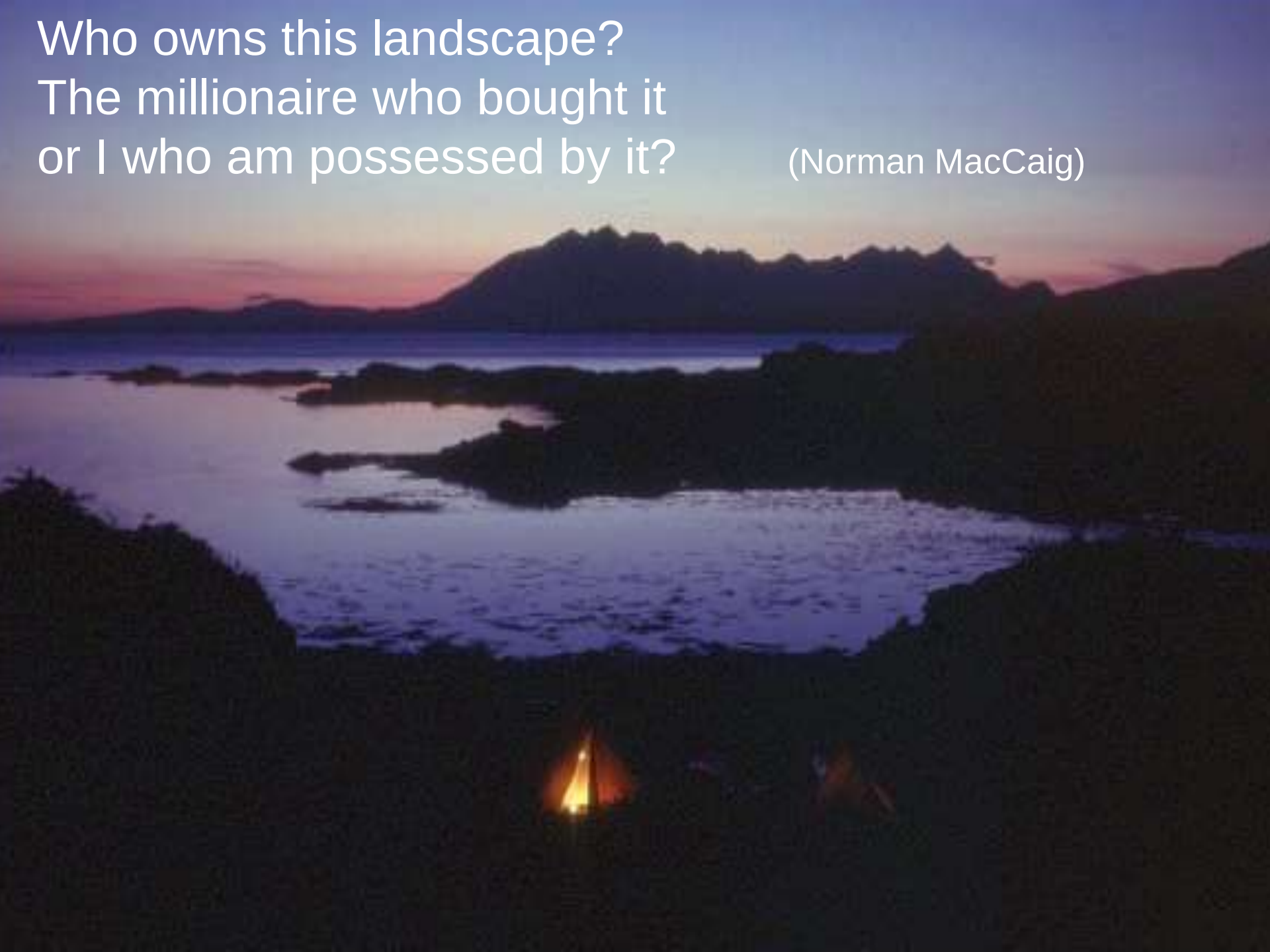
Is this ‘climate change’ –
or is it just ‘weather’?

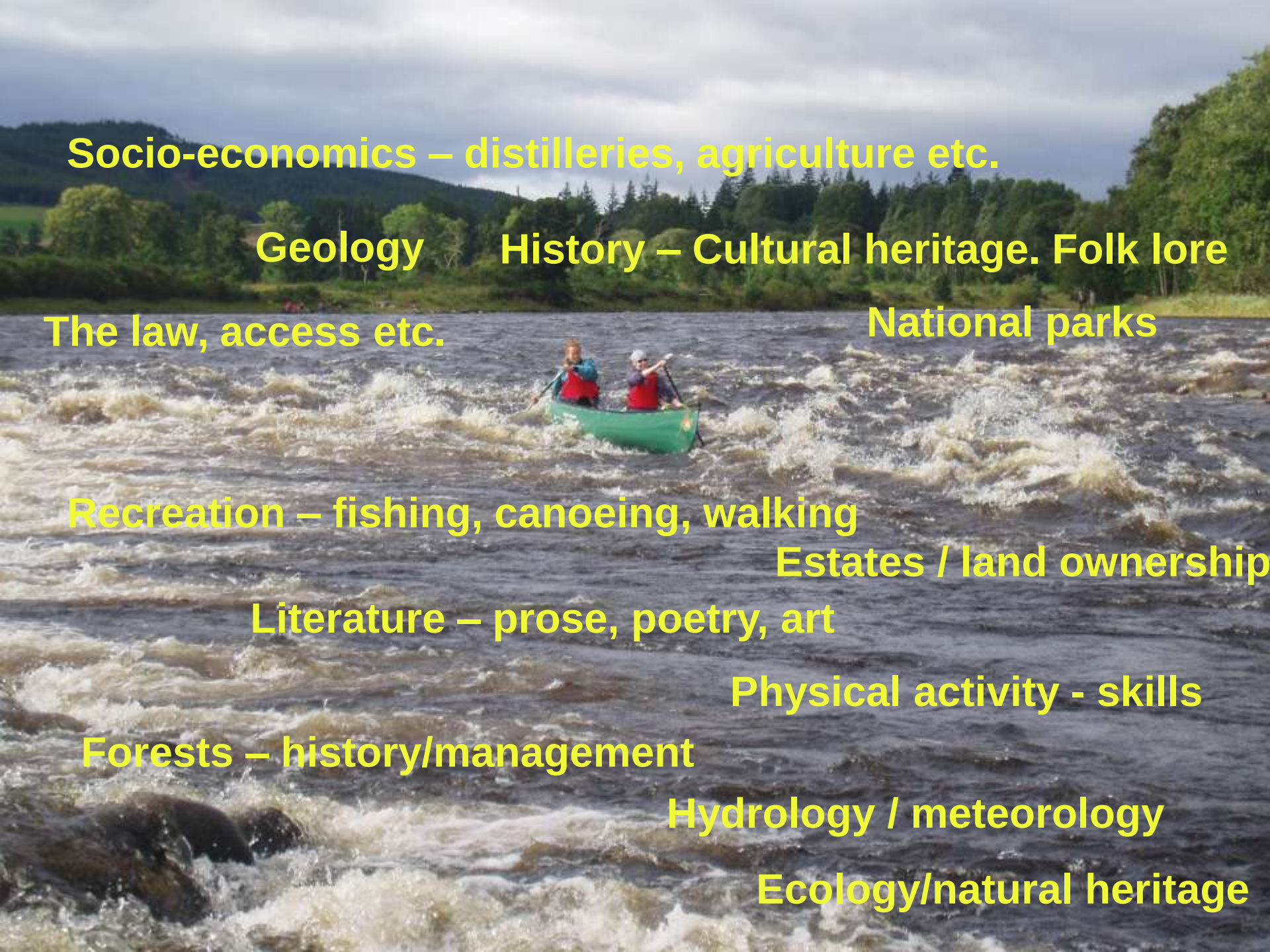
12
10
Newcastle
14
Manchester
12 PM
TUESDAY

The pitfalls, for frogs and humans, of learning through experience in a complex world



A sense of place …

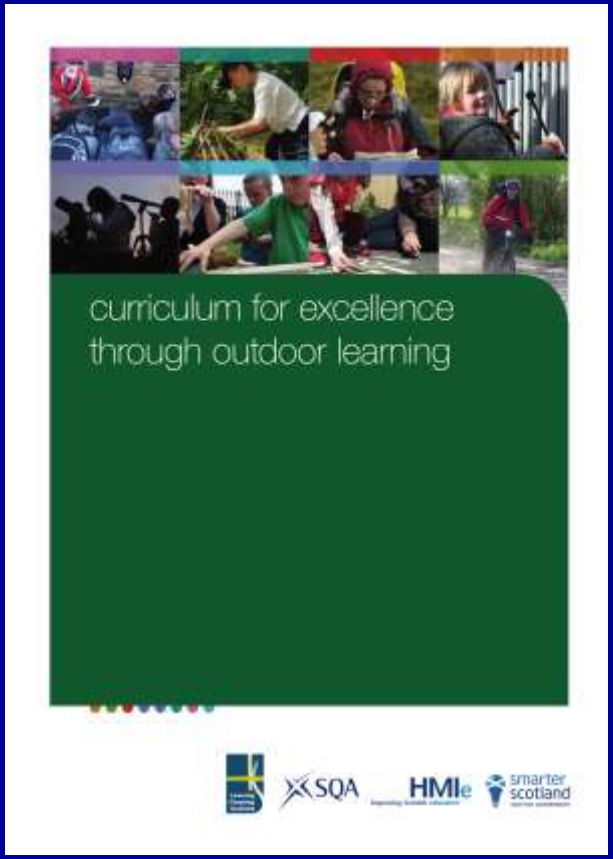

Who owns this landscape?
The millionaire who bought it
or I who am possessed by it?
(Norman MacCaig)


Socio-economics – distilleries, agriculture etc.
Geology
History – Cultural heritage. Folk lore
The law, access etc.
National parks
Recreation – fishing, canoeing, walking
Estates / land ownership
Literature – prose, poetry, art
Physical activity - skills
Forests – history/management
Hydrology / meteorology
Ecology/natural heritage

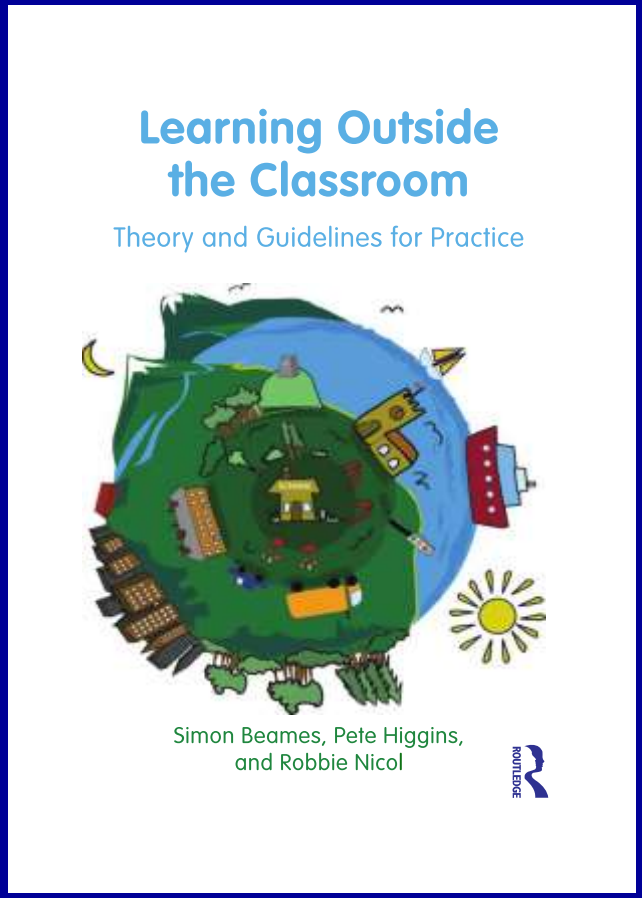
A framework for learning outdoors

"The journey through education for any child in Scotland must include opportunities for a series of planned, quality outdoor learning experiences."

Learning & Teaching Scotland 2010 p. 5



… and theoretical and practical guidance …



Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has.

Margaret Mead (1901-1978)

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