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NOT BY PHILOSOPHY, SCIENCE AND THEOLOGY ALONE

Making sense of ourselves and our world from diverse vantage points.

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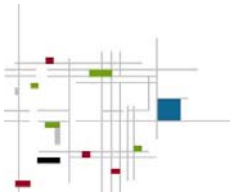


Yet . . .
we are celebrating right now that

- 400 years ago, Galileo first pointed his telescope to the heavens.
- 200 years ago, Darwin was born.
- 150 years ago, Darwin published *On the origin of species by means of natural selection*.

Central thesis of this talk

The deep understanding of nature through scientific exploration; the contemplation of what we consider divine; and the pursuit of wisdom through speculation, reflection, and analysis of the conceptual underpinnings of our beliefs, are insufficient to reach optimal understanding of ourselves and don't suffice to guide us, the best way possible, through life. We must reach insights beyond what disciplines offer.

Hesitant at the start

From an email dated Feb 23, 2008

My main concern, though, is with the past linkage in the description of these events between science and theology (I have no problem with the third concept, philosophy). I recognize that theology is not the same as (institutionalized) religion. However, there is of late an, in my view, **unhealthy debate** going on trying to reconcile science and religion or, from the perspective of others, engaging in the largely redundant effort to prove that there is nothing to reconcile. I have so far never found that debate, to which I have sometimes been invited, to be greatly exciting. It seems to be appealing mainly to some scientists who also profess a religion but who don't succeed reconciling the two within their own mind and, for the same reason, to some religious people who recognize the value of science. It's also an issue taken on by religious zealots who want to claim priority of religious views over science based ones. The latter are then often being taken to task by similarly zealous scientifically inclined folks, whose arguments I normally appreciate much better, but the whole debate leads to little that is constructive, though at times it can be humorous and entertaining. I don't deny that there are issues of interest at the intersection between religion and science if studied, for instance, from a historical, anthropological or psychological perspective, but this is generally not the focus of those who get excited about the science-religion debate. So, I want to avoid being drawn in such a fruitless debate and think it is only fair that I make this clear at this stage.

Reassured by the response received.

Our Festivals have always been about dialogue between the 3 disciplines. There is never a simple answer to any of the problems in the world but by using the 3 disciplines of Philosophy, Science and Theology we can surely develop ways in which we can improve how we deal with each other and this wonderful natural world that we live in before it's too late. We do not believe in dogma and we expect people to listen, discuss and even argue with respect. We like to absorb the material that speakers put before us and we like to have time to discuss it.

The central message.

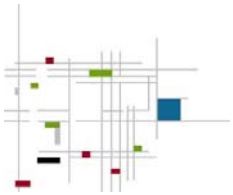
we can surely develop ways in which we can improve how we deal with each other and this wonderful natural world that we live in before it's too late.

So, it's about three things:

us

our world

timeliness.



Nonetheless, many questions remain.

- Why just those three disciplines?
- Isn't theology the odd one out among the three?
- What's the connection between theology and religion?
- And isn't the choice somewhat arbitrary anyway?
- What about history? What about the arts? Music? Poetry?
- And what about *trans*disciplinarity?

These and related questions have remained on my mind for more than a year.

I report back on what I have learned,

will raise further questions,

and set you homework.

Questions of origin, meaning and destiny.

D'où venons-nous? / Qui sommes-nous? / Où allons-nous?

Paul Gauguin, 1897–1898

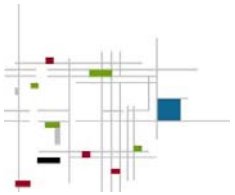
The sciences, the arts, religion, literary writing, poetic creation, music, cinema, dance, theatrical performance, explorations of the social, historical investigation, considerations about the meaning of knowing, and the pursuit of wisdom all give partial, incomplete and at times contradictory answers to these questions.

Our home in the universe and what we made of it.

A reality check.

Humanity in perspective

Event	Real time	7-day time scale	
Universe	13.7 billion years ago	Day 1	
Life	3.43 billion years ago	Day 6	1 a.m.
Hominids	5 to 10 million years ago (¼ to ½ million generations)	Day 7	5 minutes ago
Humans	100 to 200 thousand years ago (5 to 10 thousand generations)		6 seconds ago
Agriculture	10000 years ago (500 generations)		< 0.4 sec ago
Galileo	377 years ago (19 generations)		14 ms ago
DNA	56 years ago (3 generations)		2 ms ago
The Web	20 years ago (1 generation)		0.7 ms ago



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Humanity in perspective

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ANTHROPOCENE 8 ms ago

some 11 generations (latter part of 18th century)

Considering these and many other major and still growing impacts of human activities on earth and atmosphere, and at all, including global, scales, it seems to us more than appropriate to emphasize the central role of mankind in geology and ecology by proposing to use the term 'anthropocene' for the current geological epoch. The impacts of current human activities will continue over long periods. According to a study by Berger and Loutre (14), because of the anthropogenic emissions of $C0_2$, climate may depart significantly from natural behaviour over the next 50,000 years. (see Paul J. Crutzen: http://www.mpch-mainz.mpg.de/~air/anthropocene/Text.html)

Note about the 'Big History' perspective.

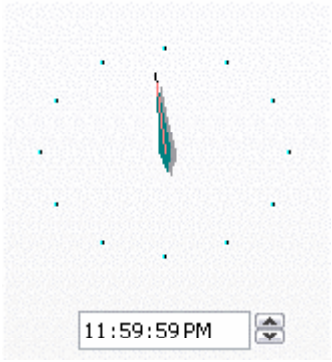
An important perspective if we want to more fully appreciate our place in the universe.

Check out in this regard the work of David Christian and his colleagues, for instance:

- Christian, D. (2004). *Maps of Time: An Introduction to Big History*. Berkeley, CA: University of California Press.
- Christian, D. (2008). *'Origins': An interdisciplinary core curriculum for schools in the USA and Australia*. http://www.learndev.org/dl/OriginsCurriculumIdeas.pdf.
- The 48-lecture series on *Big History: The Big Bang, Life on Earth, and the Rise of Humanity* available through The Teaching Company at http://www.teach12.com/ttcx/CourseDescLong2.aspx?cid=8050.

Consequences of human intervention

Agricultural revolution started less than half a second ago.



8000 BCE	8 million
0	250 million
1600	500 million
1800	1000 million
1960	3041 million
2000	6082 million
Today	6797 million

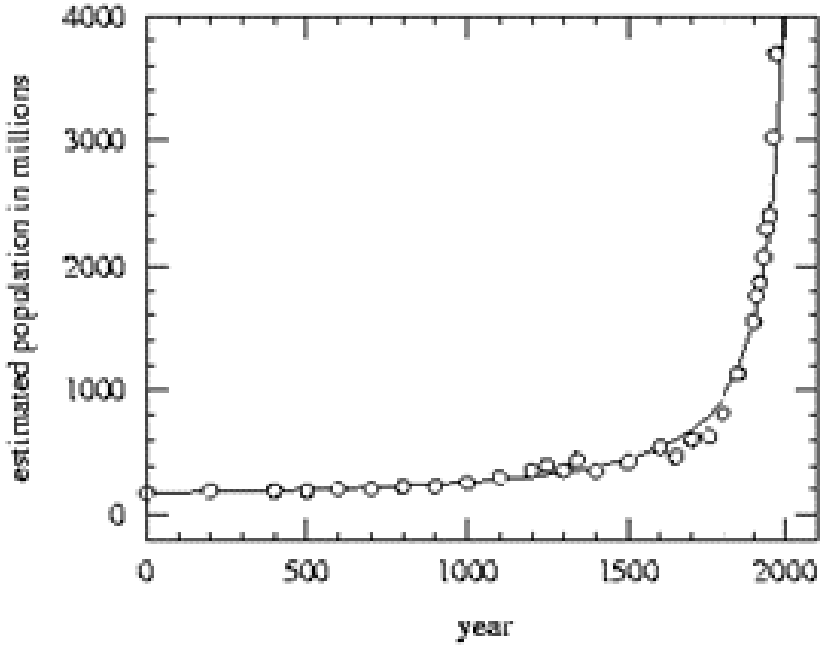


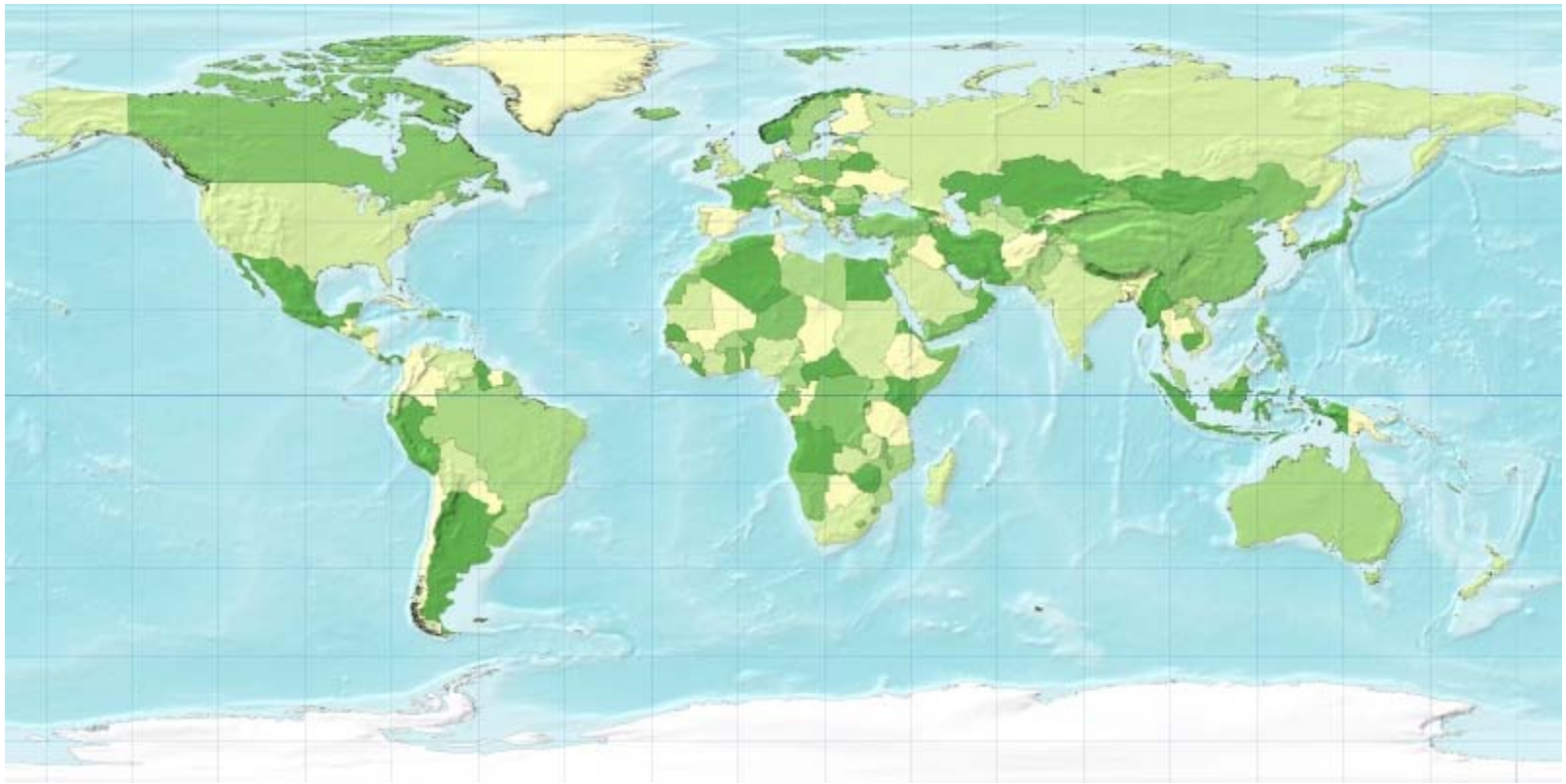
Figure 1: The more than exponential rate of growth of the world population (Source: Newman, no date)

The world: A distorted place to live in

Source: Images of the social and economic world – Mark Newman, University of Michigan

http://www-personal.umich.edu/~mejn/cartograms/

The world as we know it



Source: Images of the social and economic world – Mark Newman, University of Michigan

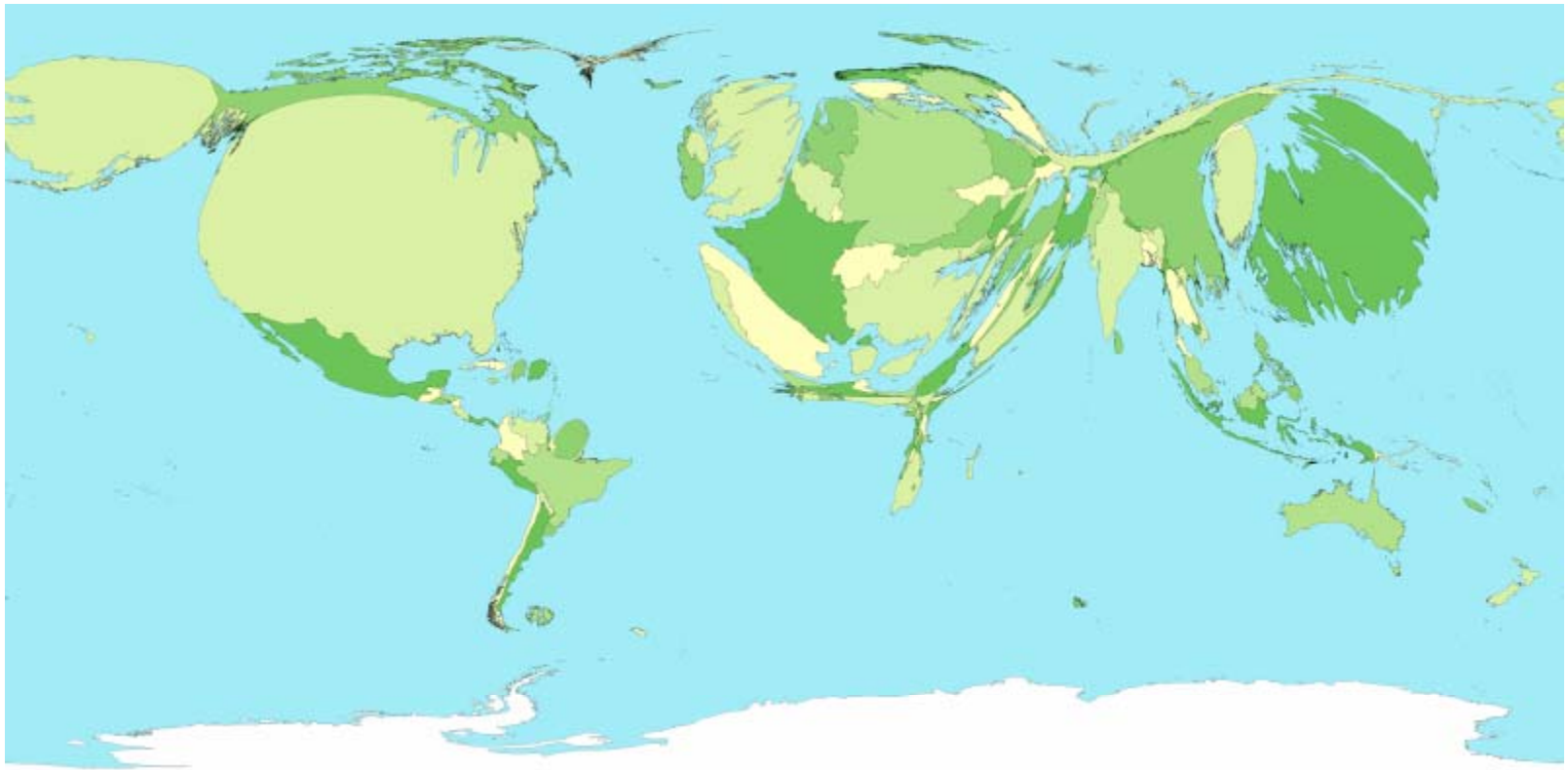
http://www-personal.umich.edu/~mejn/cartograms/

The world in population perspective

Source: Images of the social and economic world – Mark Newman, University of Michigan

http://www-personal.umich.edu/~mejn/cartograms/

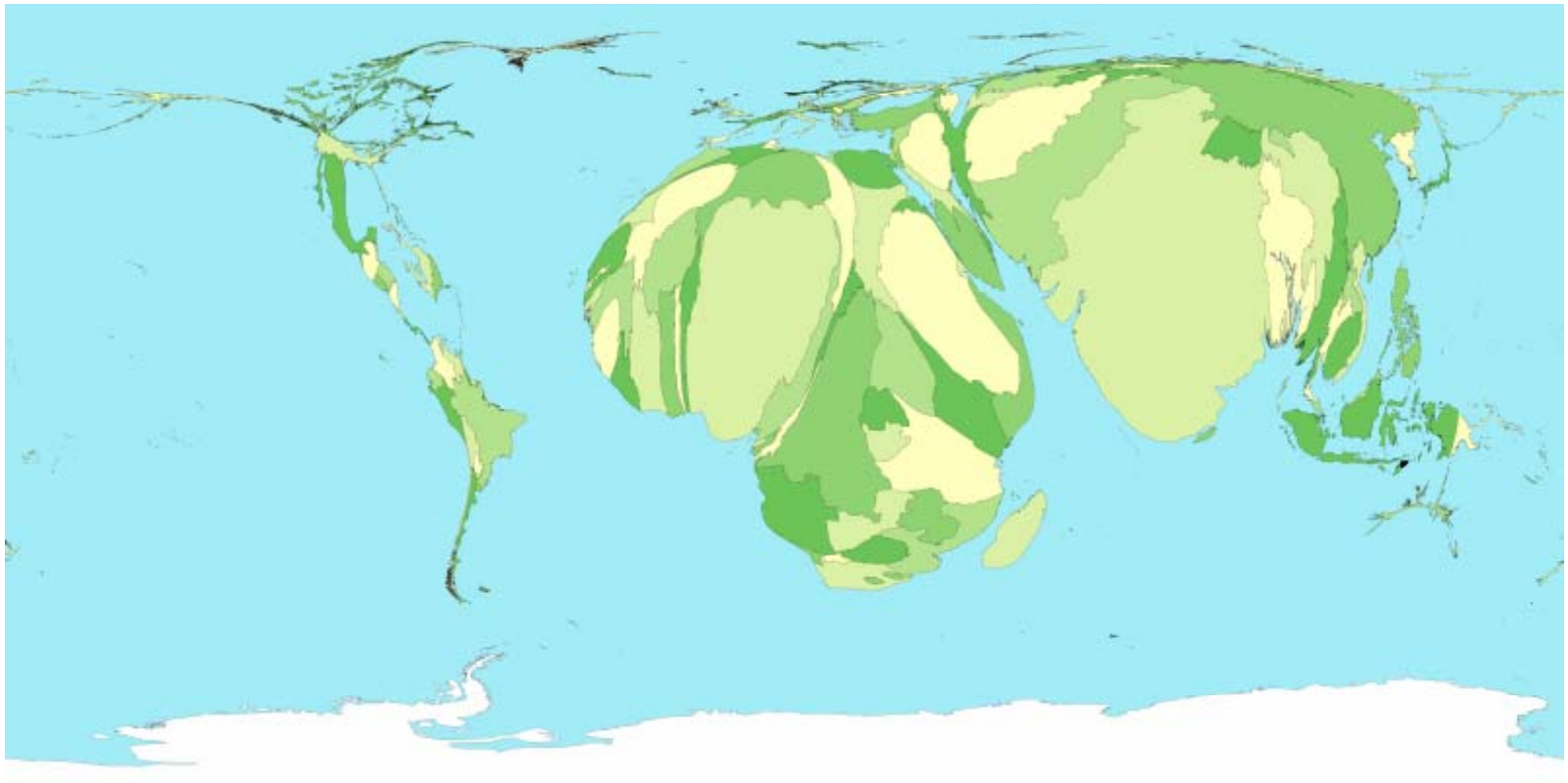
The world by gross domestic product



Source: Images of the social and economic world – Mark Newman, University of Michigan

http://www-personal.umich.edu/~mejn/cartograms/

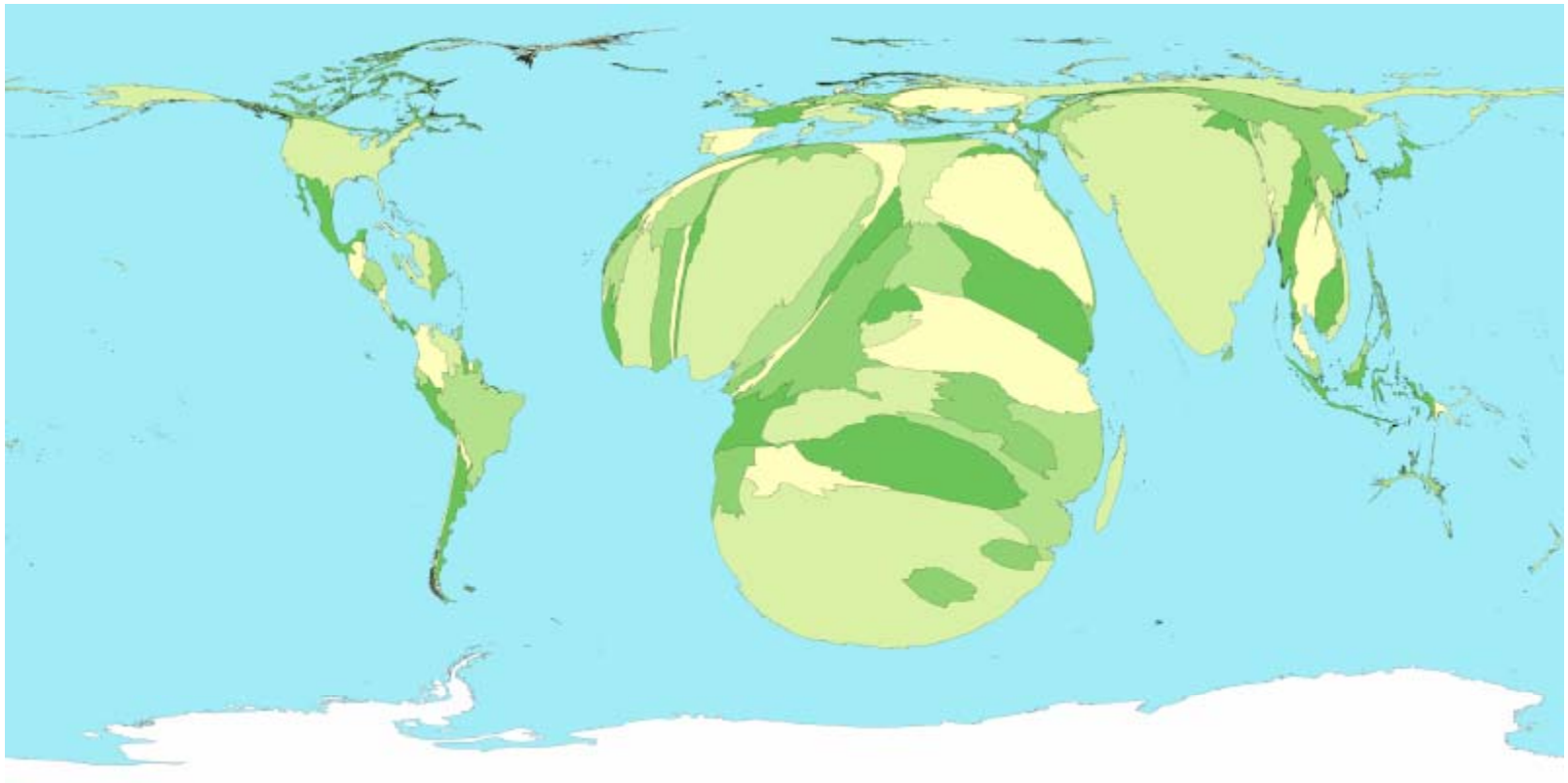
The world in child mortality perspective



Source: Images of the social and economic world – Mark Newman, University of Michigan

http://www-personal.umich.edu/~mejn/cartograms/

The world in HIV/AIDS perspective



Source: Images of the social and economic world – Mark Newman, University of Michigan

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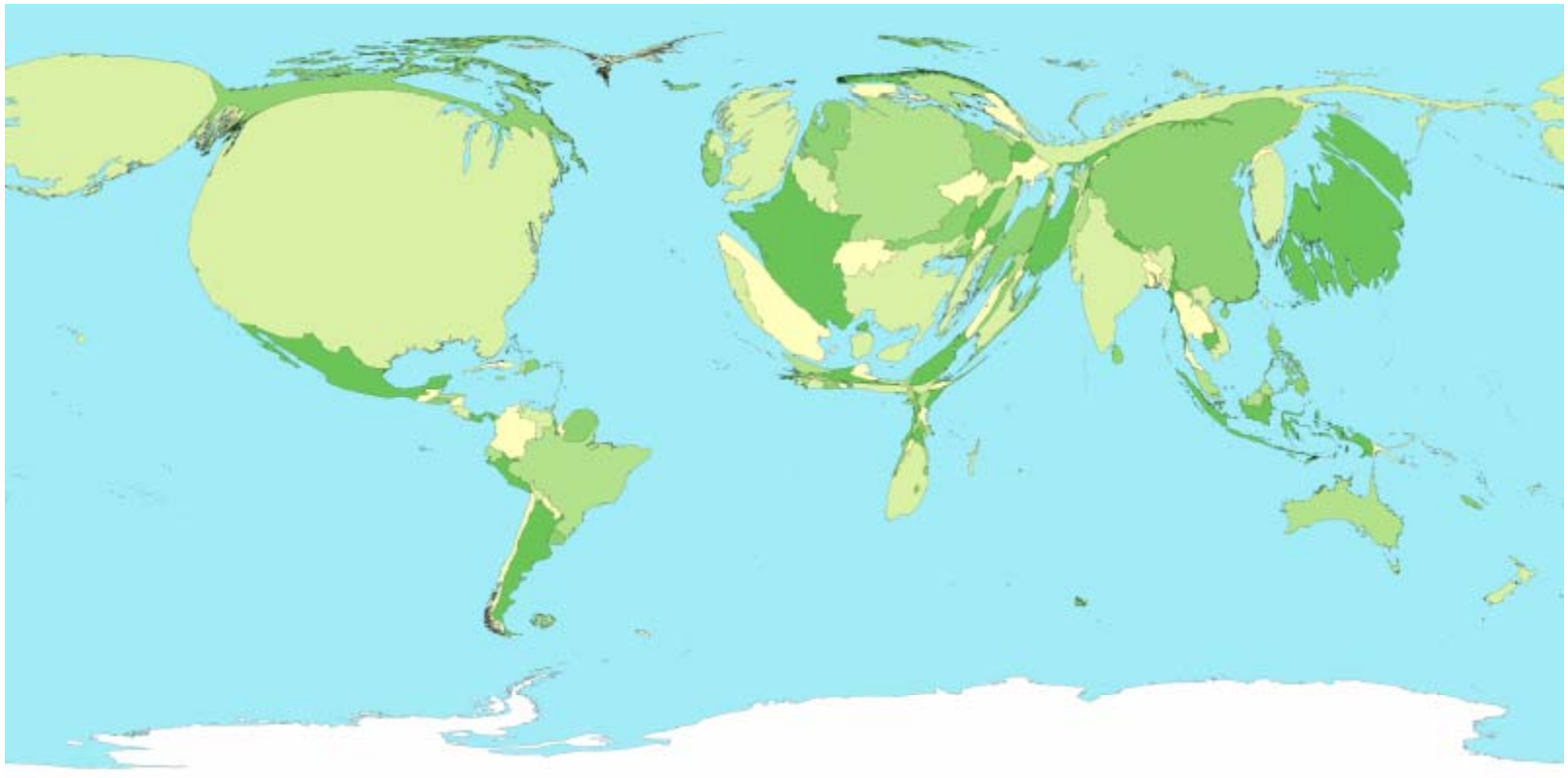
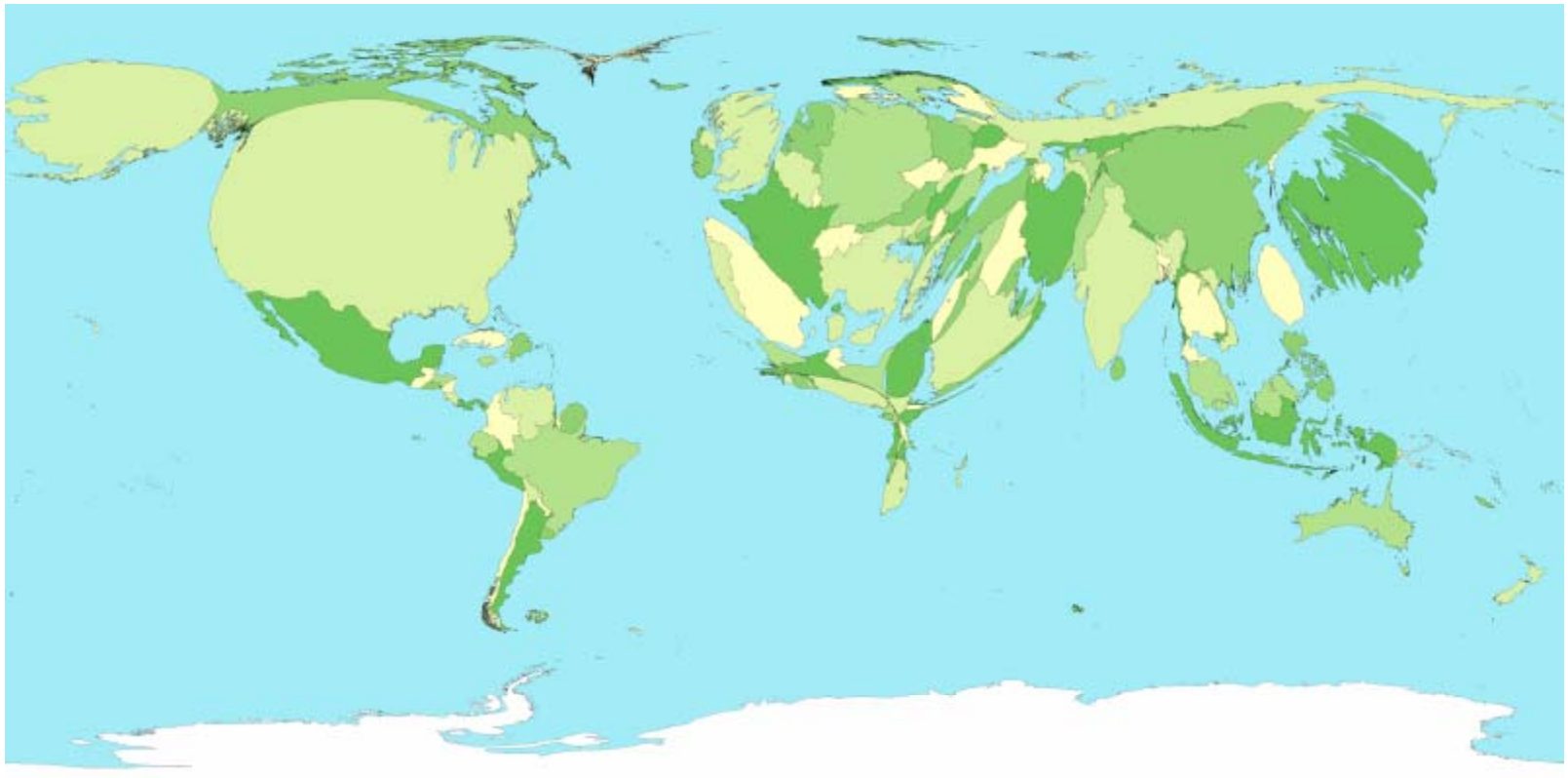
The world by spending on healthcare



Source: Images of the social and economic world – Mark Newman, University of Michigan

http://www-personal.umich.edu/~mejn/cartograms/

The world by energy consumption



Source: Images of the social and economic world – Mark Newman, University of Michigan

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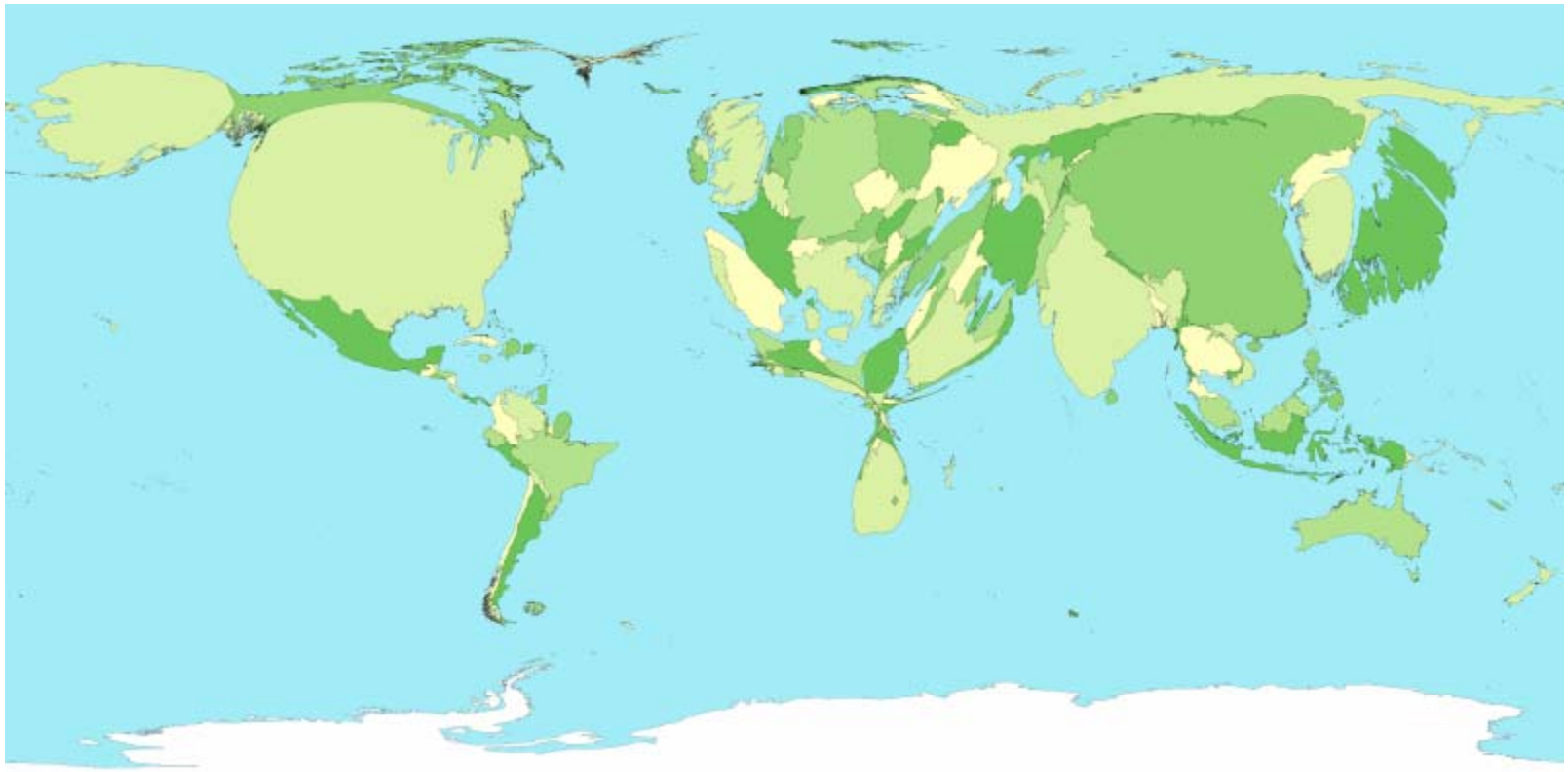
The world by greenhouse gas emission



Source: Images of the social and economic world – Mark Newman, University of Michigan

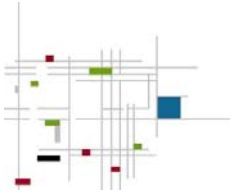
http://www-personal.umich.edu/~mejn/cartograms/

Should we be concerned?

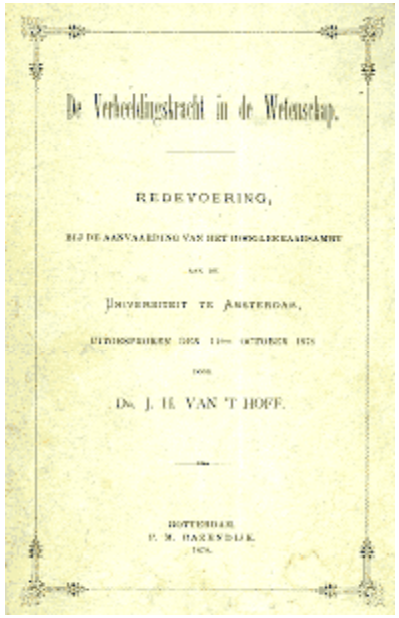
- No apparent pre-ordained purpose.

  The more the universe seems comprehensible, the more it also seems pointless. [Steven Weinberg (1993). *The first three minutes: a modern view of the origin of the universe*. New York: Basic Books.]

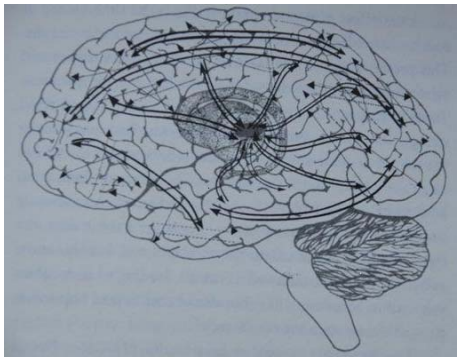
- No certainty either regarding our uniqueness in the universe.
- A potentially harmful species that could easily squander its heritage. Would it matter? Does it matter if we care?
- No answers from science about why we are here.
- Yet we evolved, and so did our nervous system, to feel concerned (ethically and aesthetically).
- Science, too, evolved and not everyone shares the premises underlying Weinberg's vision [e.g. Freeman Dyson (1979). *Disturbing the universe*. New York: Basic Books; and Paul Davies (2003) at http://www.guardian.co.uk/science/2003/jan/23/research.science].
- Whatever one's vision, it is only natural to be led by the concerns we have and interact with the world accordingly.



The conscious expression of concerns



- We give conscious expression to concerns through science and art.
- Not only art but also science is fed by the power of imagination:
  - Van 't Hoff, 1878 [De Verbeeldingskracht in de Wetenschap (Imagination in Science)];
  - Edelman, 2006 ["Science is imagination in the service of verifiable truth."];
  - Einstein, 1929 ["Imagination is more important than knowledge." (In interview with G. S. Viereck in *Saturday Evening Post* of Oct. 26.)]
- And what about religion?



Religion

My own (non-expert) view: Religions provide frameworks of metaphors of origin, purpose and destiny, within and through which generic patterns of human behavior evolved and became consolidated. They express a sense of belonging.

Awe may be at the roots of both science and religion; less so of art. Consolation may be found in both art (particularly music) and religion; less so in science.

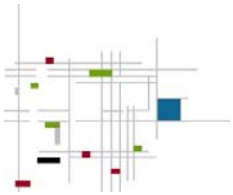
Edgar Morin: Science gets us a long way, but it "opens onto undecidables where philosophical options and religious beliefs come into play through cultures and civilizations" (Seven complex lessons in education for the future [UNESCO] - http://unesdoc.unesco.org/ images/0011/001177/117740eo.pdf).

Paul Tillich: God is indefinable and thus not confined by the mind or by words. Religion is direction or movement toward the ultimate or the unconditional. Faith/religion is thus expression of 'ultimate concern.' (*Ultimate Concern - Tillich in Dialogue by D. Mackenzie Brown*, available at http://www.religion-online.org/showchapter.asp?title=538&C=598).

Evolution beyond the mechanisms of natural selection: The role of culture.

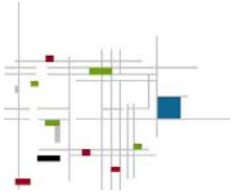
Unlike other species, we are, for the evolution of our humanity, not so limited as other animals to genetic accidents, thanks to the emergence in humans of language and the capacity to conceptualize. Besides, we have perfected the making and use of tools. Moreover, our advanced degree of consciousness permits us to ask questions that are so intriguing that we are willing to travel from far away continents to a place called Grafton to interact with others who are similarly confused.

In short: The pace at which humanity evolves is greatly accelerated thanks to our having access to not only our genetic history but also our cultural heritage. That's why learning is our most important faculty.



God created Man in his own image, and Man, being a gentleman, returned the favor.

- Variably attributed to Mark Twain and Jean-Jacques Rousseau. (Anyone who knows?)
- Good example of what Kieran Egan denotes as 'ironic understanding.'
- Sometimes used in science-religion debate as a way of affirming that the divine is man-made.
- However, so are our scientific constructs and artistic creations.
- It's all part of our cultural heritage.
- Culture and humans co-evolve. It's a dialectic relationship.
- Retracing our ancestry, it's fair to assume that neither religion nor science and art were immediately present when our species emerged. They are emergent properties in the growing complexity of our accumulating cultural heritage.



Diverse cultural achievements contribute to overall well-being.

It would be silly not to recognize the contributions made to our culture by science, the arts and religion. It would be particularly foolish to deny the worth of one such contribution by claiming superiority of a contribution.

Which is not to say that we should not appreciate critically how diverse cultural achievements contribute to overall well-being in our time and how relevant they continue to be.

Science

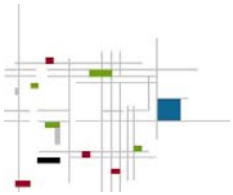
A community based process, premised on ethical standards, that leads from shared evidence to shared conclusions.

(Lee Smolin: http://www.tvo.org/podcasts/bi/audio/BI_Full_LeeSmolin_012404.mp3.)

Such community based effort spans the globe. The fact that it is based on shared values potentially contributes to making us all better.

(See also Jacob Bronowski (1956; revised 1965): *Science and Human Values*. New York: Harper & Row.

So, what about other communities? Religion, sports, the arts, etc.



Religion

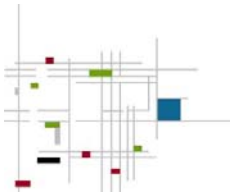
- Community idea quite prominently present, particularly in Islam (ummah; jama'ah).
- Binding elements:
  - Adherence to common accepted beliefs. (Not supposed to be challenged. Saint Anselm of Canterbury (1033-1109): Theology = Faith seeking understanding.)
  - Shared perceptions of the sacred.
  - Shared practices, frequently of symbolic nature, often beneficial to
    - social cohesion,
    - good care for the self and fellow community members,
    - sound management of the environment (e.g. Stephen Lansing (1991). *Priests and Programmers*. Princeton, NJ: Princeton University Press).
  - Shared myths.
  - Shared metaphors.

I also mentioned arts and sports communities.

What about them, and other such communities?

Try for yourself.

Let's explore instead different expressions of the sacred.

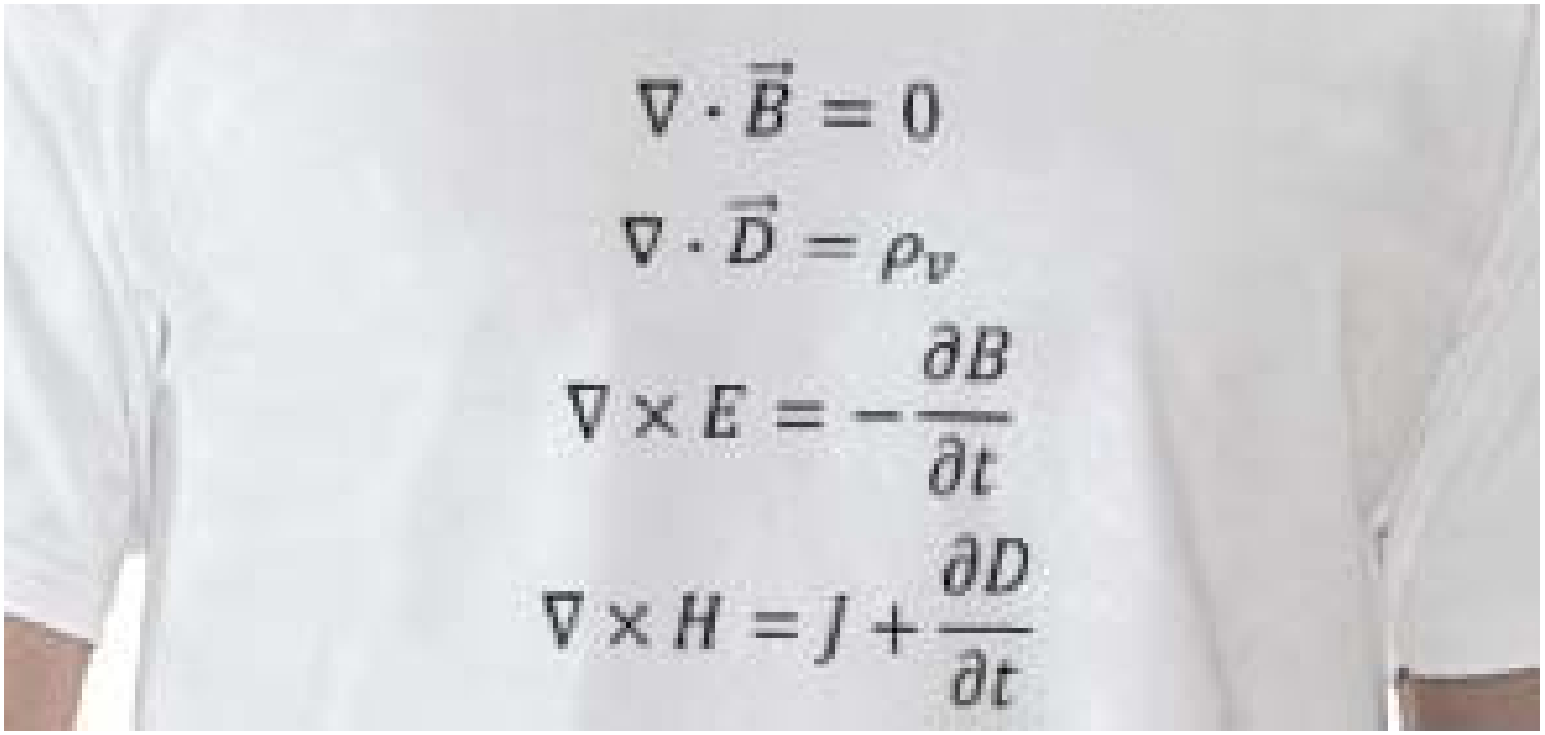


Representations of the sacred:

The name of the prophet

Representations of the sacred:

Maxwell's Equations

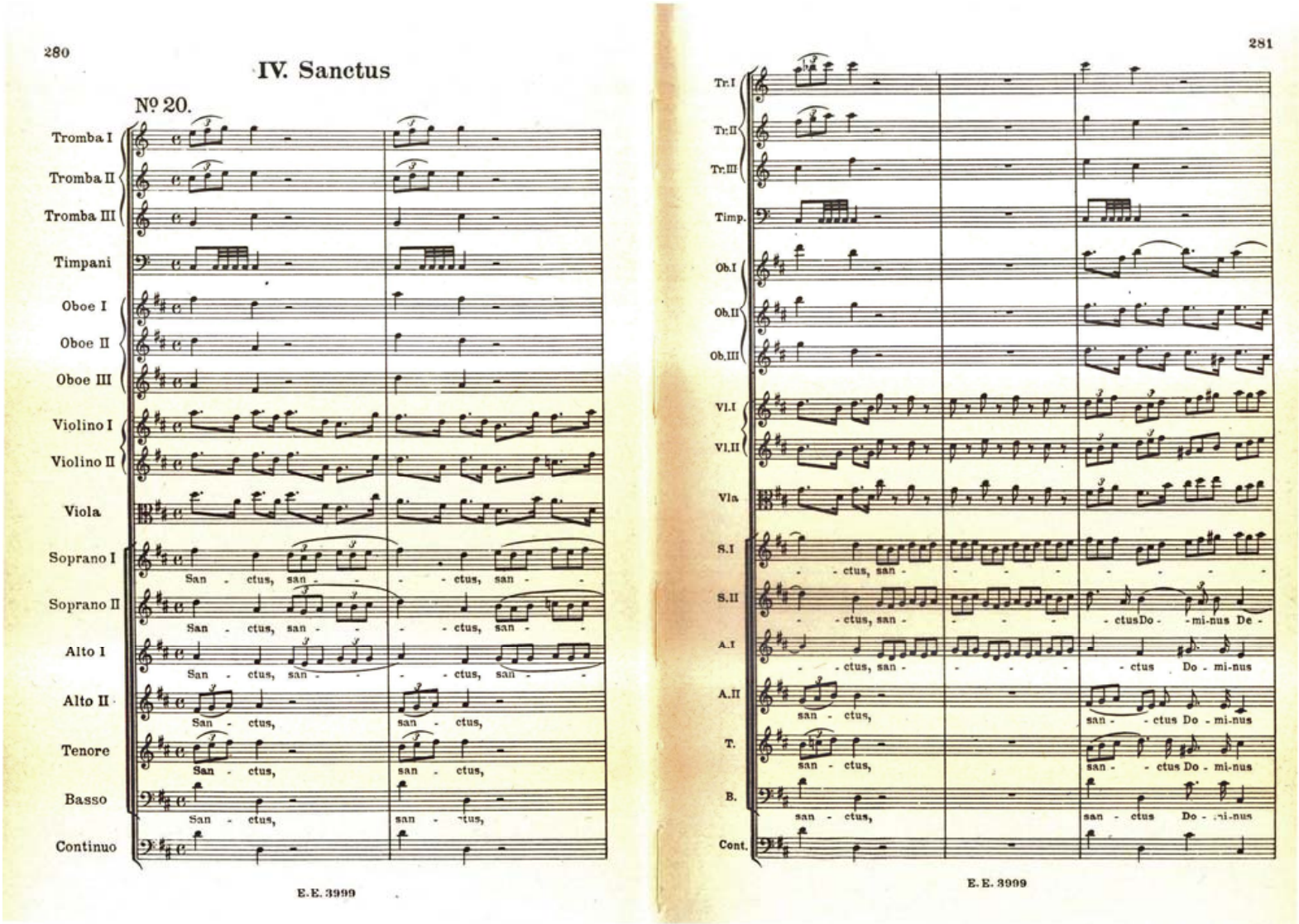


Representations of the sacred

Sacred Birman

Representations of the sacred:

Bach's B minor Mass

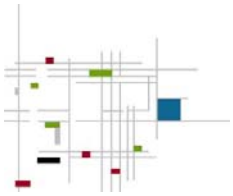


Concerns

Religion	Science
• Brand loyalty almost beyond belief, leading to rigidity. • Attribution of value to dogma. • Unquestioned authority. • Lack of agreed ways for reconciling diverse views/interpretations. • When left alone, propensity towards proselytism and towards claiming power, not excluding by violent means.	• Tendency towards generalization of natural sciences culture (to the exclusion of the social). • Overreliance on reductionism.)* • Tendency towards arrogance among some practitioners. • Lack of sensitivity among part of the community towards alternate ways of appreciating reality. • Risk of scientism, mostly among those outside the community.)**

)* See about this issue: Denis Noble (2008). The Music of Life: Biology Beyond the Genome. Oxford, UK: Oxford University Press.

)** See also: Bossi, L. (2008). A limit of science: The quest for immortality. In G. Steiner at al: *Is science nearing its limits?*. Manchester, UK: Carcanet.



I mentioned myth and metaphor

Both are important tools of the mind, but they are not the only ones.

Kieran Egan defines five cognitive tools that we employ to understand our world, allowing us to interact with it intelligently.

A supreme product of evolution
(at least from our point of view, I guess)

"My second favorite organ"

(Woody Allan)

I like my brain because, if I didn't have one, I wouldn't have a mind.

So, what's the mind?

An essential resource: **THE MIND**

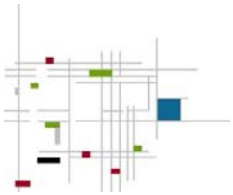
- Anglo-Saxon origin: *"gemynd"*= memory
- Two perspectives on memory:
  - memory as static concept (stored retrievable information)
  - memory as dynamic concept, i.e. giving meaning, intentionality.
- While we live, we are all "memories in the making"(Yusra Laila Visser, 1997).
- Susan Greenfield (2000): *"Mind . . . is the seething morass of cell circuitry that has been configured by personal experiences and is constantly being updated as we live out each moment"(p. 13).* In other words, it is, according to Greenfield, *"the personalization of the physical brain"(p.14)* through our experience.

Visser, Y. L. (1997). Personal communication.

Greenfield, S (2000). *The private life of the brain: Emotions, consciousness, and the secret of the self*. New York: John Wiley & Sons, Inc.

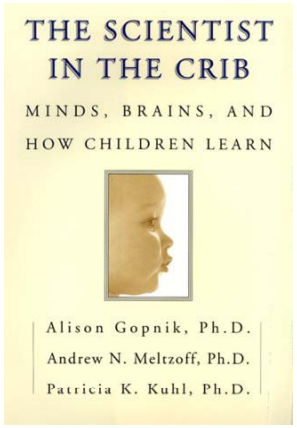
THE MIND

- An emergent property of how brain circuitry evolves through experience and reflection on experience. The brain is one of the most complex things—if not the most complex thing—we know in nature (some 10^{11} neurons).
- Kieran Egan calls it a “cultural organ.” It allows us to have access to symbols that members of the human species have learned to store outside their biological memory.
- During our lifelong learning journey we interact with that symbolic environment, taking from it and contributing to it. Both the culture and we ourselves change in the process.
- We start early on that learning journey, which is truly lifelong in a redefined sense of the term ‘learning.’



This is how it begins:

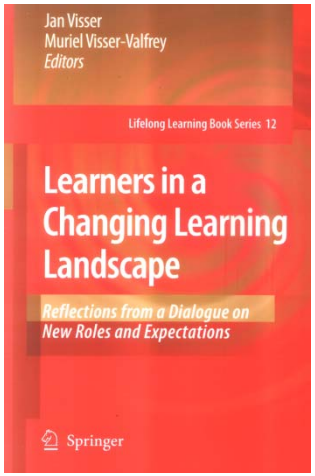
Walk upstairs, open the door gently, and look in the crib. What do you see? Most of us see a picture of innocence and helplessness, a clean slate. But, in fact, what we see in the crib is the greatest mind that has ever existed, the most powerful learning machine in the universe. The tiny fingers and mouth are exploration devices that probe the alien world around them with more precision than any Mars rover. The crumpled ears take a buzz of incomprehensible noise and flawlessly turn it into meaningful language. The wide eyes that sometimes seem to peer into your very soul actually do just that, deciphering your deepest feelings. The downy head surrounds a brain that is forming millions of new connections every day. That, at least, is what thirty years of scientific research have told us.



Gopnik, A., Meltzoff, A. N., & Kuhl, P. K. (1999). *The Scientist in the Crib*. New York: William Morrow and Company, Inc. (p. 1)

Learning undefined

*"Human learning is the **disposition** of **human beings**, **and** of the **social entities** to which they pertain, to engage in continuous **dialogue** with the human, social, biological and physical environment, so as to generate intelligent behavior to **interact constructively with change**."*



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(non-commercial only)

Visser , J. (2001). Integrity, completeness and comprehensiveness of the learning environment: Meeting the basic learning needs of all throughout life. In D. N. Aspin, J. D. Chapman, M. J. Hatton and Y. Sawano (Eds), *International Handbook of Lifelong Learning* (pp. 447-472). Dordrecht, The Netherlands: Kluwer Academic Publishers.

Schooling makes a minor contribution

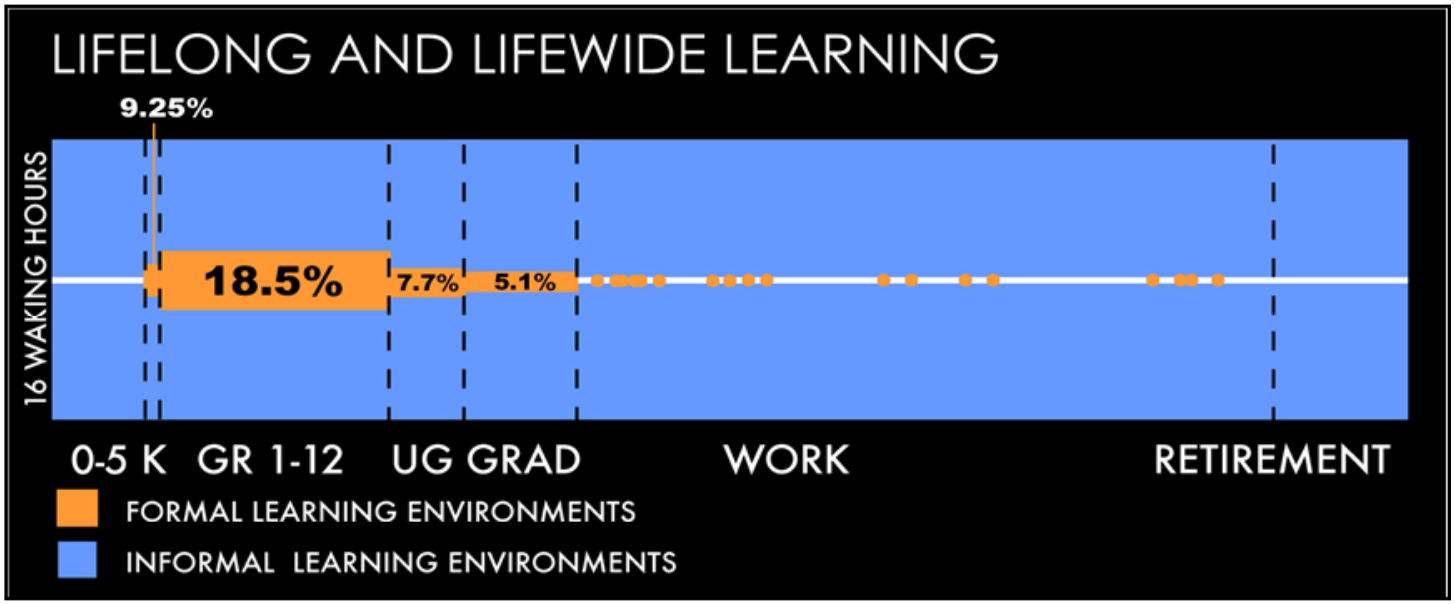


Figure 3-1. The LIFE Center's Representation of Lifelong and Lifewide Learning

Source: Bransford, J. D., Slowinski, M., Vye, N., & Mosborg, S. (2008). The learning sciences, technology and designs for educational systems: Some thoughts about change. In J. Visser & M. Visser-Valfrey (Eds.), *Learners in a changing learning landscape: Reflections from a dialogue on new roles and expectations* . Dordrecht, The Netherlands: Springer.

Kinds of understanding (according to Kieran Egan)

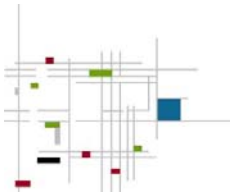
Foster the development of the cognitive tools that shape our understanding.

Kind of understanding	How it works
Somatic	Bodily experience.
Mythic	Awareness of the known as embedded in the unknown; mystery; awe; metaphor.
Romantic	Identification with heroes; association with the transcendent qualities the heroes embody.
Philosophical	The world of ideas; conceptual frameworks; abstractions.
Ironic	Recognition of different meanings through different kinds of understanding; humor; ambiguity.

Source: Kieran Egan (2008). *The future of education: Reimagining our schools from the ground up*. New Haven, CT: Yale University Press.

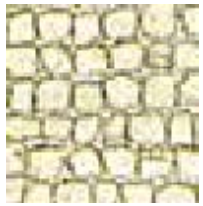
Key issues requiring attention

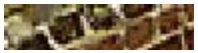
1. Re-imagining learning (beyond mere schooling) and the environments that foster it.
2. Mindsets that are essential to the human ability to interact constructively with change.
3. Deep understanding of what we are, where we come from, and what may ensue, i.e. awareness and appreciation of our home in the universe.
4. Figuring out what is required to change the conditions of learning in response to the challenges of our time.



Re-imagining learning and the spaces where learning occurs.

The little we know





Putting the picture together

learning development institute

www.learndev.org

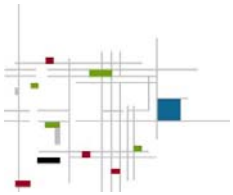
Placing things in context

Learning stories research

RESULTS:

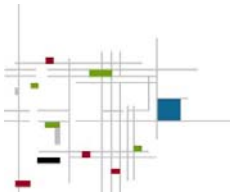
What makes a learning experience meaningful?

- Ownership of knowledge.
- Maintained across the lifespan.
- Laying path for continued growth.
- Implications in the ‘real-life’ context.
- Teaching.
- Overcoming negative perceptions of self.
- Discovery of persistence as strategy to manage life’s challenges.



The learning landscape is one!

- Schooling only a relevant part if adequately conceived and designed:
  - Integral component of lifelong and lifewide learning journey.
  - Fluid connections with other learning spaces: family, nature, community, media, productive and creative activity, etc.
  - Driven by vision of today's problems and challenges and awareness of essential values.
  - Geared towards building the mind rather than storage of factual knowledge.
  - Ability to acquire knowledge and wisdom more important than possession of knowledge.
- Informal learning at least as crucial and pervasive, and certainly more diverse (probably even more important), but different in terms of deliberate intervention (different players).



Important foci for learning in school
(according to David Christian)

- Understanding our place in the universe:
  - Spatio-temporal perspective.
  - Questions of origin.
  - Planet earth as one among many products of the evolution of the universe.
  - Humans as the product (in ecological context) of physical, chemical and biological evolution.
  - History of human life on earth.
- Learning relevant skills for now, and the ability to acquire them in the future.
- Envisioning humanity's futures in a planetary perspective

(see http://www.learndev.org/dl/OriginsCurriculumIdeas.pdf and also Edgar Morin: Seven complex lessons in education for the future – http://unesdoc.unesco.org/images/0011/001177/117740eo.pdf).

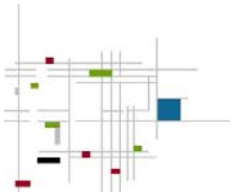
Thoughts to end: Human uniqueness (and vulnerability)

- Gerald Edelman: Higher order consciousness is a unique human feature. It is expressed in the ability to interpret the past and imagine the future.
- Blaise Pascal: Humans are *thinking reeds.*
- Stephen J Gould: "Consciousness, vouchsafed only to our species in the history of life on earth, is the most god-awfully potent evolutionary invention ever developed. Although accidental and unpredictable, it has given *Homo sapiens* unprecedented power both over the history of our own species and the life of the entire contemporary biosphere."

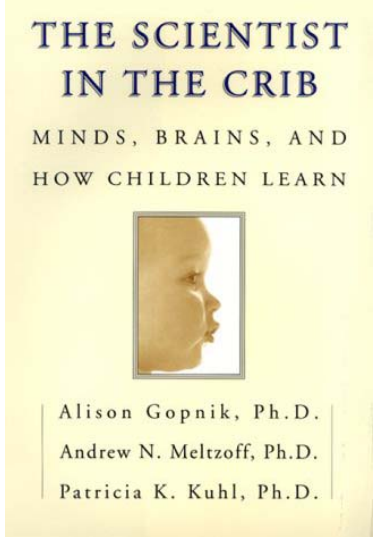
In praise of thoughtfulness
(Skepticism – Gr. *Skeptic* = thoughtful)

Carl Sagan (in 1987 Pasadena lecture on *The Burden of Skepticism*): "It seems to me that what is called for is an exquisite balance between two conflicting needs: the most skeptical scrutiny of all hypotheses that are served up to us and at the same time a great openness to new ideas. If you are only skeptical, then no new ideas make it through to you….

On the other hand, if you are open to the point of gullibility…, then you cannot distinguish useful ideas from the worthless ones. If all ideas have equal validity then you are lost, because then, it seems to me, no ideas have any validity at all."



Care for the mind



That book came out in 1999.

It's 10 years later now.

The child then born meanwhile ended up in school.

What has happened to its mindset?

The traditional schooling practice, with its emphasis on the acquisition of factual knowledge and lack of encouragement to explore and comprehend deeply, is possibly a major cause of the disappearance of curiosity. If so, it may be the single most important inhibitor of the development of the scientific mind.

Care for the habitat of the mind, the world in which we live and learn.

Learning for sustainable futures requires learning environments that foster and embody:

- Social consciousness, implying:
  - Relational skills (e.g. empathy; cooperation)
  - Conscious participation in culture.
- Respect.
- Planetary citizenship.
- Sense of community.
- Deep understanding of who you are, leading to feeling of agency
- Fluency in at least one symbol system different from the native one, e.g. a language other than the mother tongue and/or mathematics.

Such learning environments thrive on love and passion.

According to recent discussions in Cairo, Egypt, that will be continued and expanded in **March 2011** in **Stellenbosch, South Africa**.

See you there!

THANK YOU

JAN VISSER

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This presentation, and other relevant materials, are available at:

http://www.learndev.org/PST6.html