

# Geometric properties of perspectives:

M4 geometry of perception  
endless geographies of  
explanation

*Image sources:* Marieb & Mallatt. 2003. *Human anatomy* (third edition), San Francisco, Ca: Pearson Education Inc. -- Takahashi, Takeo, 1994, *Atlas of the human body*, Harper Perennial, New York, NY.

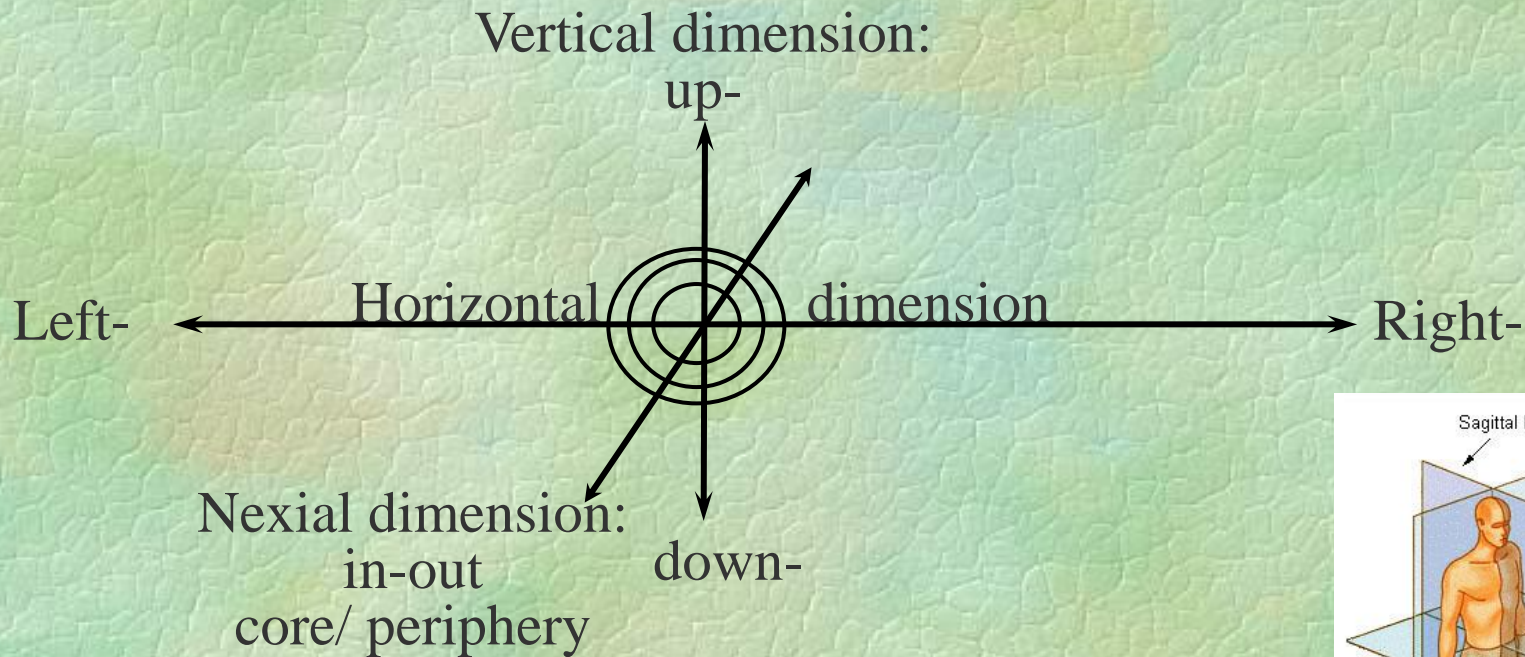


Bouchon, 2006,

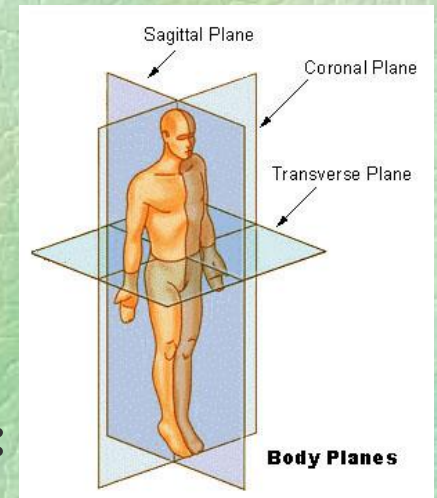
Ph.D. research advisor: Pr Stuart Hill, Chair Social Ecology

Topologic projections:  
conformations of  
perspectives

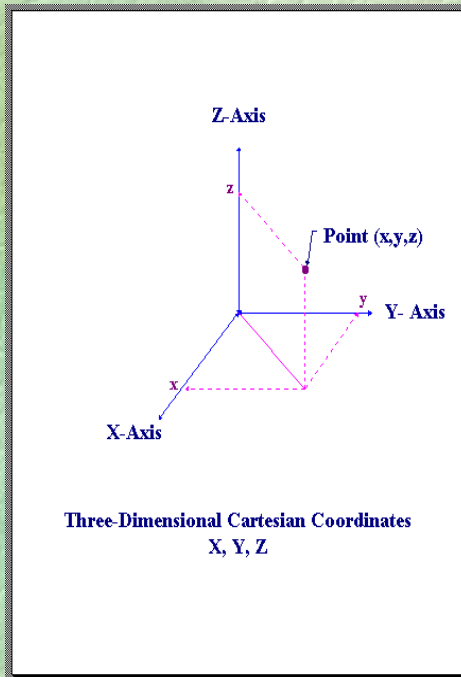
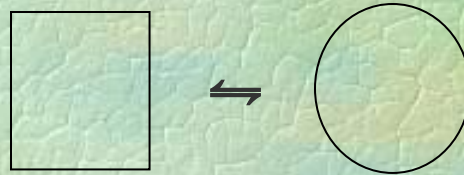
# Perspectives: 3 axes of complexity in both explaining and experiencing



**In medical descriptions:**

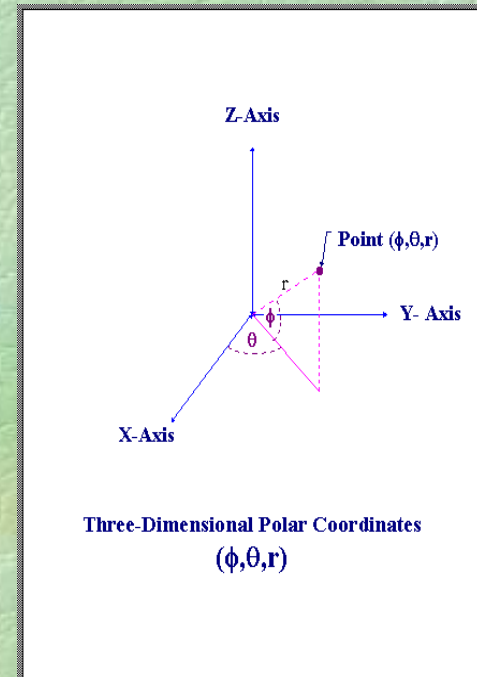


# Shapes in transformations & human frames of reference



‘Not only can God make a square circle, humans can too. The trick is to adopt a higher viewpoint.’

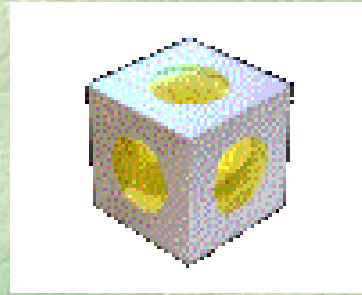
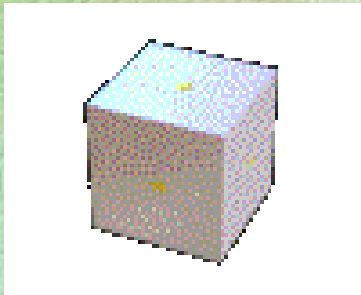
(Sheahen 2003)



→ See animation ‘Cube-Sphere’

# Scientific systems of coordinates and their dual transforms

‘**Morphometrics:** metric study of biological shape variation. ‘Factors include genetic factors, pre-natal environment’. There are many theories. We propose a statistical theory of shape.’ (*See animation 'Cube-Sphere'*)

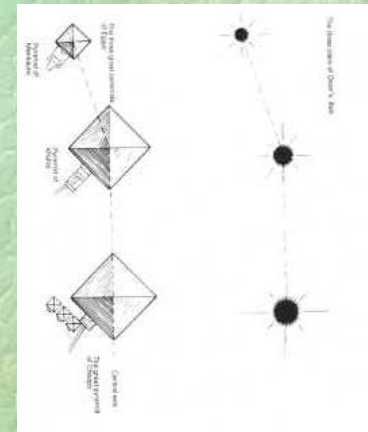


same properties as Left- and Right-perspectives  
and  
dominant human perceptions: visual and auditory

# The 3 'fundamental' perspectives: structural, nodal or modal, functional, representations do not match totally

Trivial knot ('unknot'),  
trefoil knot, and figure-eight knot:

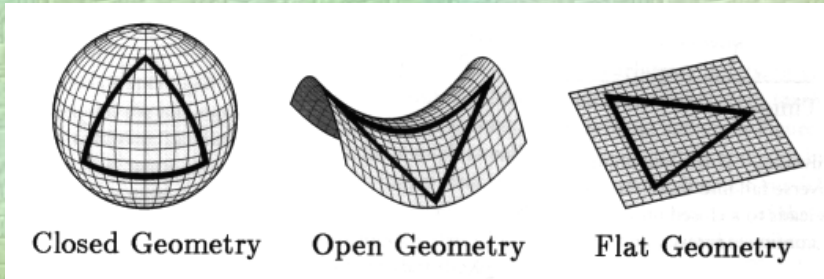
The 3-stars  
experiment:



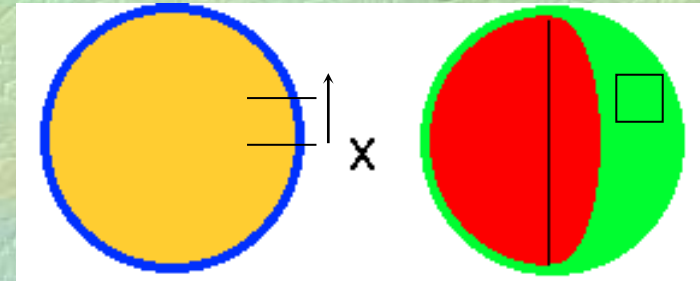
None of these 3 knots can be rearranged to  
look like the others. (Adams 2001)

*See also <3 star experiment>*

# 3 geometries and 2 geographies: experience and explanation



Spherical    Hyperbolic    Flat  
Universes with curvatures:  
positive      negative      zero



‘The cosmic density parameter  $\Omega$  determines the three possible shapes to the Universe; a flat universe (Euclidean or zero curvature), a spherical or closed universe (positive curvature) or a hyperbolic or open universe (negative curvature).’ (Schombert. J., June 2006)

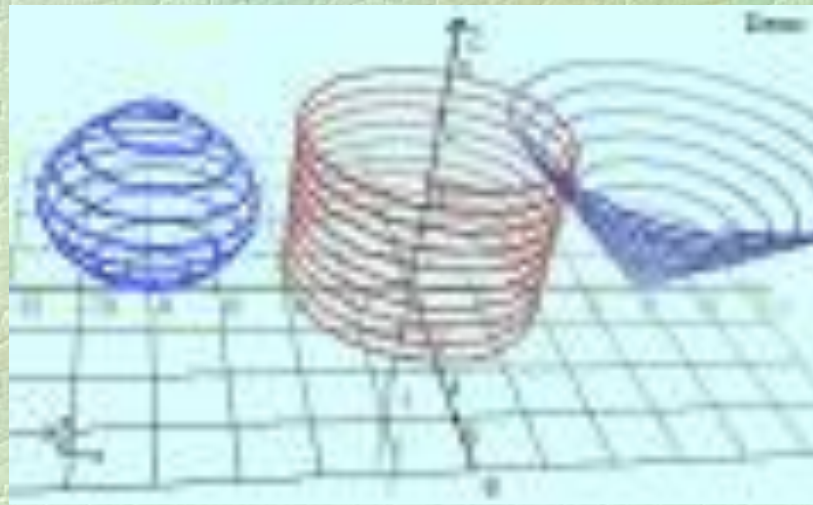
<http://abyss.uoregon.edu/~js/ast123/lectures/lec15.html>

S1:  $\infty$  Time circular (or a linear section of it) circulating from an invisible origin (center of yellow circle).

S3: Space FlatLands = Sphere-surface or ‘The Earth’ (square sector) with a hidden inside.

# Transformations of shape in 3D: 'shaping' of explanation/experience

(shaman, prophet, alchemist, healer, visionary, cosmologist...)



Topography:

Sphere, globe – Tube, tunnel, staff, rod, leg – Funnel, pit

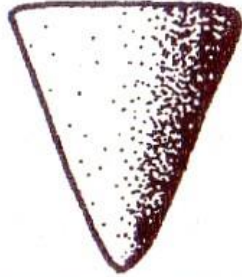
Topology:

Mathematical 'ball' – Wormhole (or snake) – Cup, crucible

# Shapes of late stone age 'tokens'

## Plain Tokens

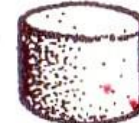
1. Cones



2. Spheres



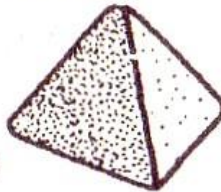
3. Disks



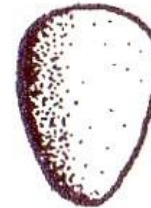
4. Cylinders



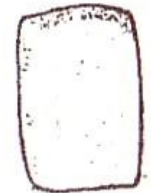
5. Tetrahedrons



6. Ovoids



7. Rectangles



'The early tokens, dating from about 8000 to 4400-4300BC are called plain tokens and mainly consist of a few types – spheres, cones, tetrahedrons, discs and cylinders. In the second phase of the system... complex tokens appear... most significantly in the activities... of temples.' (Rudgley 1999 p.51)

## Complex Tokens

1. Cones



2. Tetrahedrons



6. Ovoids



8. Triangles



10. Parabolae



15. Animals





# Gesture: wiggle, path, circle to represent modal transformations



Examples of ‘**motion event**’ expressions from Nicaraguan participants’ narratives.

(A) Manner and path expressed simultaneously.

(B) Manner and path expressed sequentially  
(Senghas, Kita & Özyüre 2004  
*Children creating core properties of language.*)

# ‘Gauge’ rePresentation of ‘fields’ of existence

*Descriptions: a physical space & a complex radial loop*

*[Left: a plane of **real** number, right: a plane with **imaginary** numbers]*

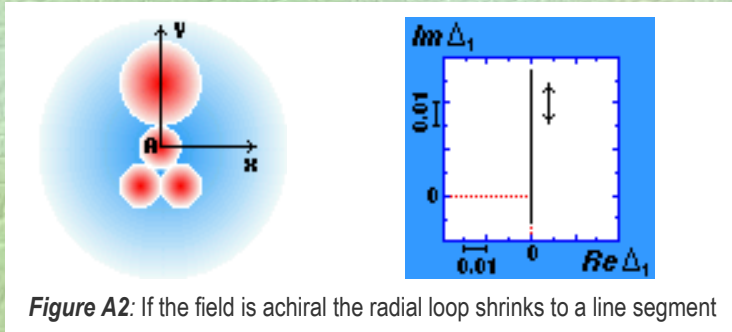


Figure A2: If the field is achiral the radial loop shrinks to a line segment

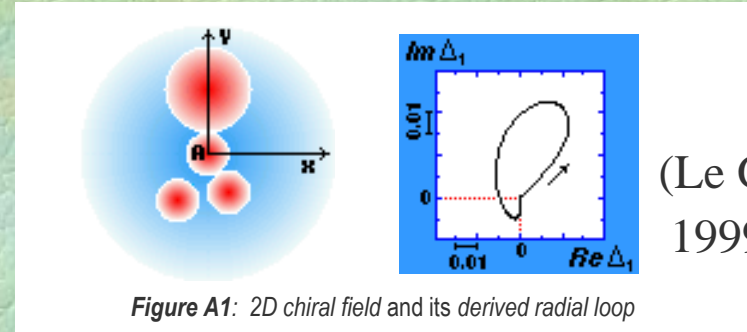


Figure A1: 2D chiral field and its derived radial loop

(Le Guennec 1999)

‘Achiral field whose radial loop is a line’: eg classic symmetry of the scientific

Space  $\Leftrightarrow$  Time

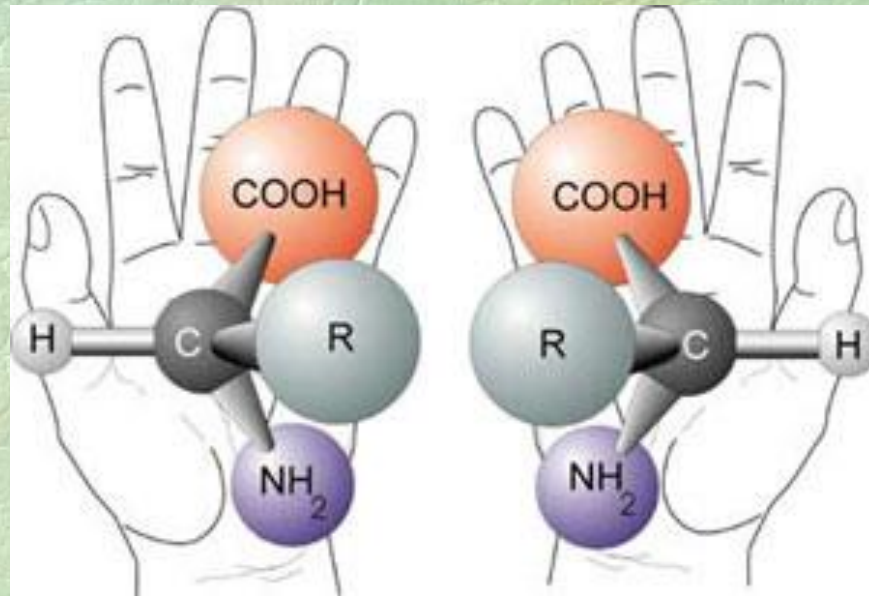
the ‘achiral’, stable ‘FlatLand’ with ineluctable ‘flow’ of time.

Looping ‘chiral field’: eg a TimedSpace with L-R uneven properties, and ‘natural’ processes such as seasonal time cycles :

uneven Human Reality  $\leftrightarrow$  regularity of ‘natural’ cycles

– ‘Icons’ of anthropomorphism and ‘physikemorphism’ –

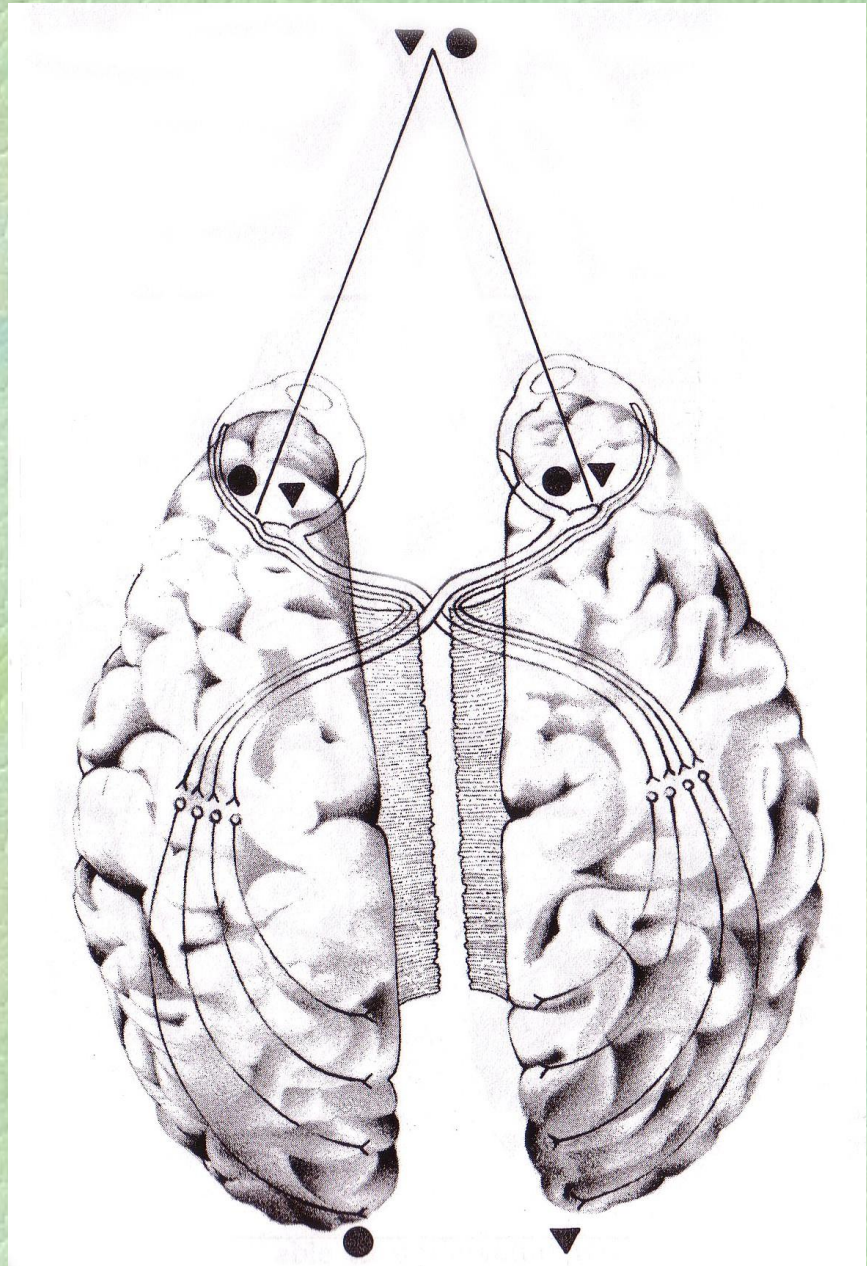
# The 2 hands of...: an example of physikeMorphism $\Leftrightarrow$ anthropoMorphism



Explanations we derive from nexial-topology (eg chirality) we eventually find as experiences in the natural-physical world or the anthropomorphic-human real world, and vice-versa.

# Left and Right: brain, vision & explanation

(Maturana & Varela 1987 p228)  
in Tree of Knowledge



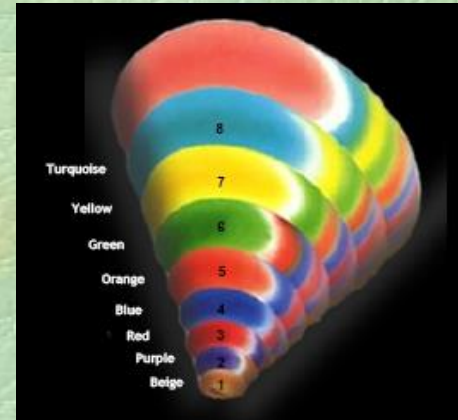
# PhysikeMorphism $\leftrightarrow$ Anthropomorphism



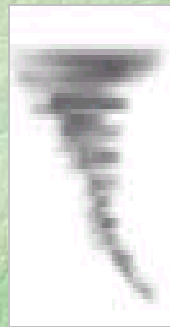
*Rugosa* coral  
in physical nature



Maxwell's early model  
by physical analogy  
(Nercessian 2002)



Spiral Dynamics of  
human evolution  
(Beck & Cowan 1996)



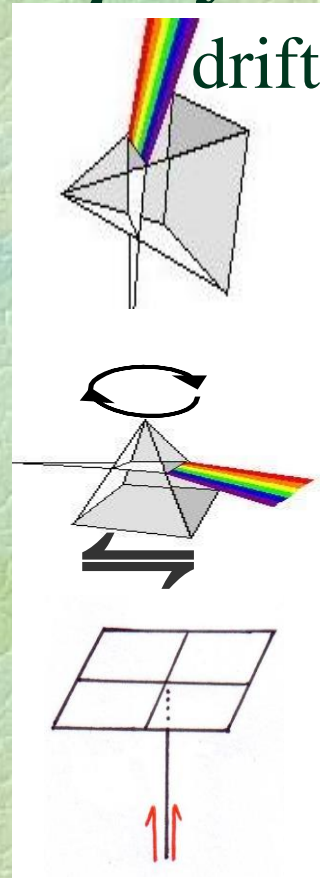
'Natural' whirl wind vs  
Medieval medicine: disease  
of 'wind'

The 'East wind' archaic 'Elemental' model, traced back to a female imaging of nexial-topologic orienting : 'Wind' as 'increase' in activity, covariant with 'going off track', hence of limited use.



# *One-way covariant deployments leave a 'drift':*

integration  
enfoldment



differentiations  
unfoldment

A common direction:

Relative: both sides are symmetric and in circularity, and have the *same* vertical axis topologically oriented 'up'.

They leave, altogether, a slight diffraction – a drift.

‘Nexial-topology’ (deployed)  
modelling shows that the same  
generic parameters  
frame perspectives  
in any field.

[mbouchon@ozemail.com.au](mailto:mbouchon@ozemail.com.au)

marika bouchon, University of Western Sydney

Ph.D. research advisor:

Professor Stuart Hill, Foundation Chair Social Ecology

