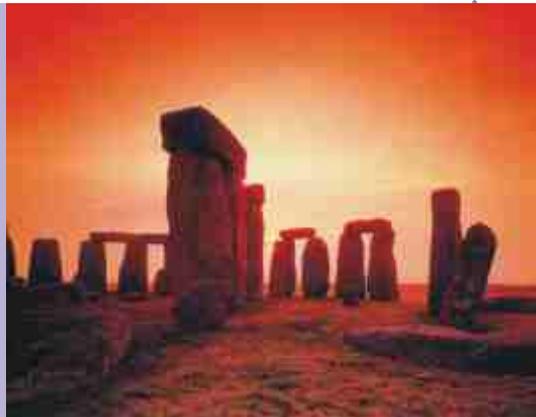


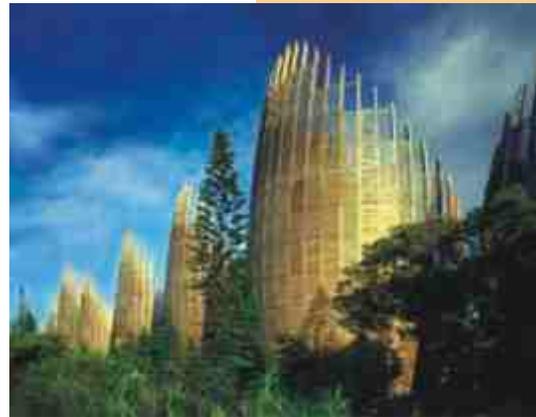
Concept and Culture

world-views organize societal systems

▶ MYTHOS - *Belonging*



● LOGOS - *Acquiring*



● THEOS - *Obeying*

HOLOS - *Integrating* ◀

World-Views

While living biological systems are genetically patterned to maintain and reproduce themselves, living social systems are symbolically patterned to maintain and reproduce themselves. This is because human societies have co-evolved with the emergence of the human capacity to use complex symbols and tools.

Societal systems are unified and organized around world-views, which are overarching conceptions of reality that explain the place of human beings in the world. World-views and cultures (learned traditions of thought and behaviour) provide meanings and symbolic tools for organizing the social institutions that in turn organize and regulate group and individual behaviours.

Societal evolution involves the emergence of new world-views (new symbolic interpretations of reality) with the capacity to organize more complex structures and processes. Different cultures at the same level of evolutionary development will have a similar world-view, social structures and economic processes.



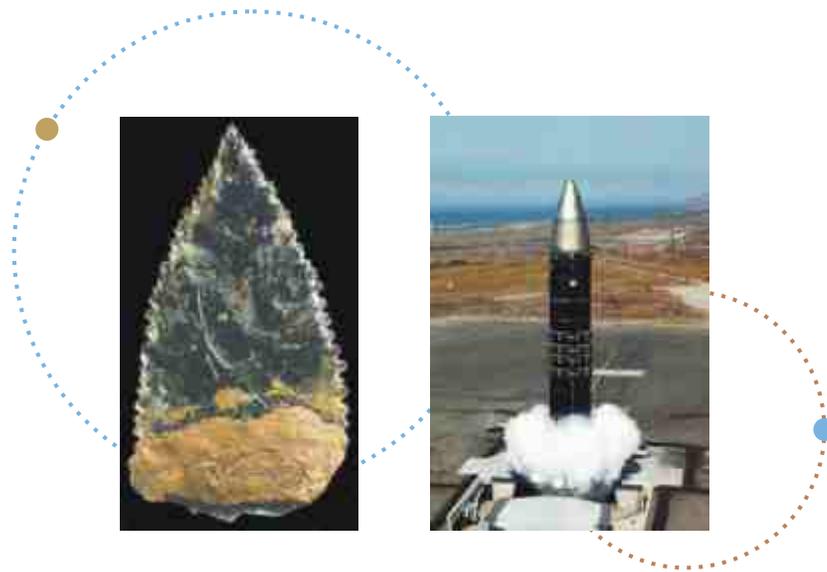
Priests supported the religious world-view of agrarian civilizations.
Scientists supported the rationalist world-view of industrial civilizations.

Environmental Control

All living and open systems are maintained by a continuous flow of energy. The evolution of more complex human societies has been marked by the appropriation of increasing amounts of energy from the environment. More complex societies require more energy per person than simpler ones because they have more networks, more information processing, more specialists and more regulatory hierarchies.

Historically, every society takes more energy out of its environment than it creates. Societies collapse when the energy flow is no longer available in sufficient quantities to sustain increased populations, defend the state from attack and maintain internal infrastructures.

Societal evolution involves the emergence of world-views with progressively increasing environmental and spatial control capabilities.

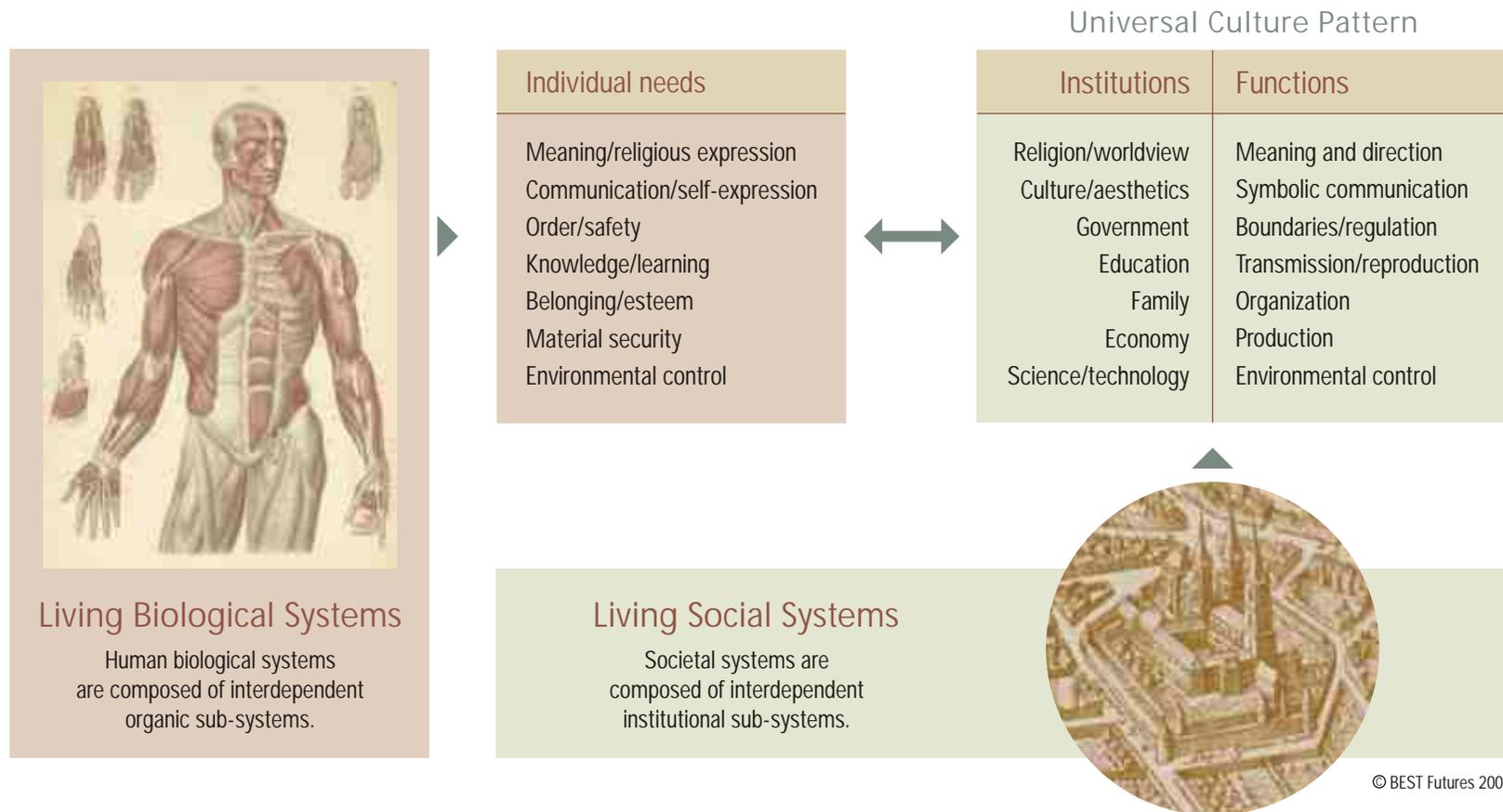


From spears to ICBMs: societal evolution involves the utilization of more energy per person and the emergence of superior environmental control capabilities.

The Universal Culture Pattern

Living systems can only survive if they have functional structures that enable them to maintain and reproduce themselves in their environments. The structures of all societies are isomorphic because they must all meet similar individual and societal needs. Although every society is culturally distinct, all societies are organized around the same set of key social institutions. This basic structure is called the Universal Culture Pattern (UCP). Individuals learn their fundamental views of reality and standards of conduct from their society's UCP.

All of the institutional sub-systems that make up a societal system's UCP are interconnected and interacting. Although there is a systemic tendency towards congruence, some of the segments of the UCP may change more rapidly than others. If not rebalanced, disequilibria may lead to conceptual and societal revolution.

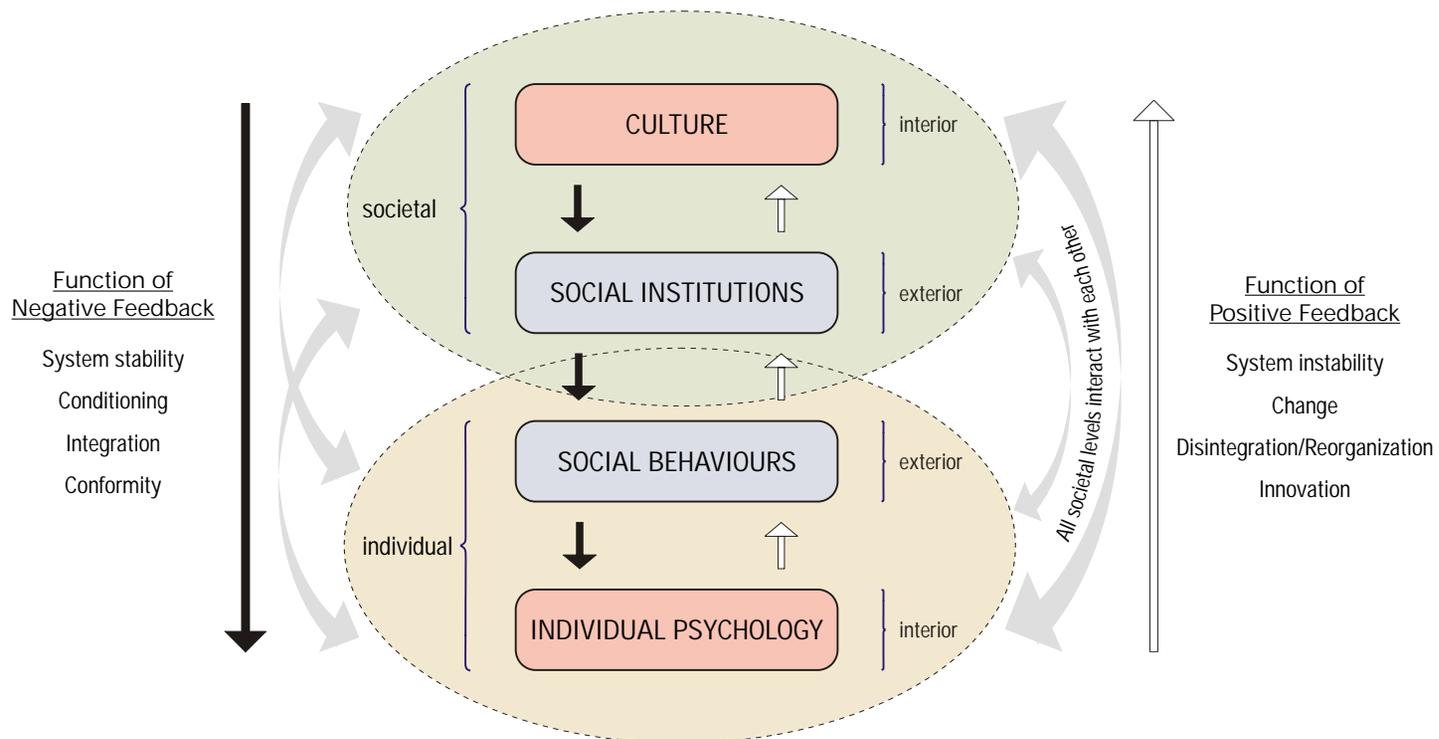


Individual and Societal Interaction

Historians have debated whether great people make history, or whether great people are made by history. Systems theory argues that interactive societal processes cause individuals, societies and environments to change each other and co-evolve. However, not all processes are equal: societies depend on natural environments – and not the other way around – and individuals depend on societies.

Societal systems are organized through worldviews. Congruent cultures provide meanings and symbolic tools for organizing social institutions. Institutions organize and regulate group and individual behaviours. These social behaviours in turn condition individual psychological structures.

Children are socially integrated (conditioned) through learning language, values, and skills from their families and peers. As they mature, they develop autonomy and reciprocal abilities to influence social behaviours, institutions and their wider culture.



Material and Societal Technics

Sociocultural systems use two types of interrelated technics (methods of applied learning) to equilibrate with their environments. Material technics (t_m) are primarily concerned with attaining environmental control: the processing of energy and natural resources. Societal technics (t_s) are primarily concerned with maintaining social control: the processing of information and the organization, regulation and reproduction of the societal system's world-view and social structures.

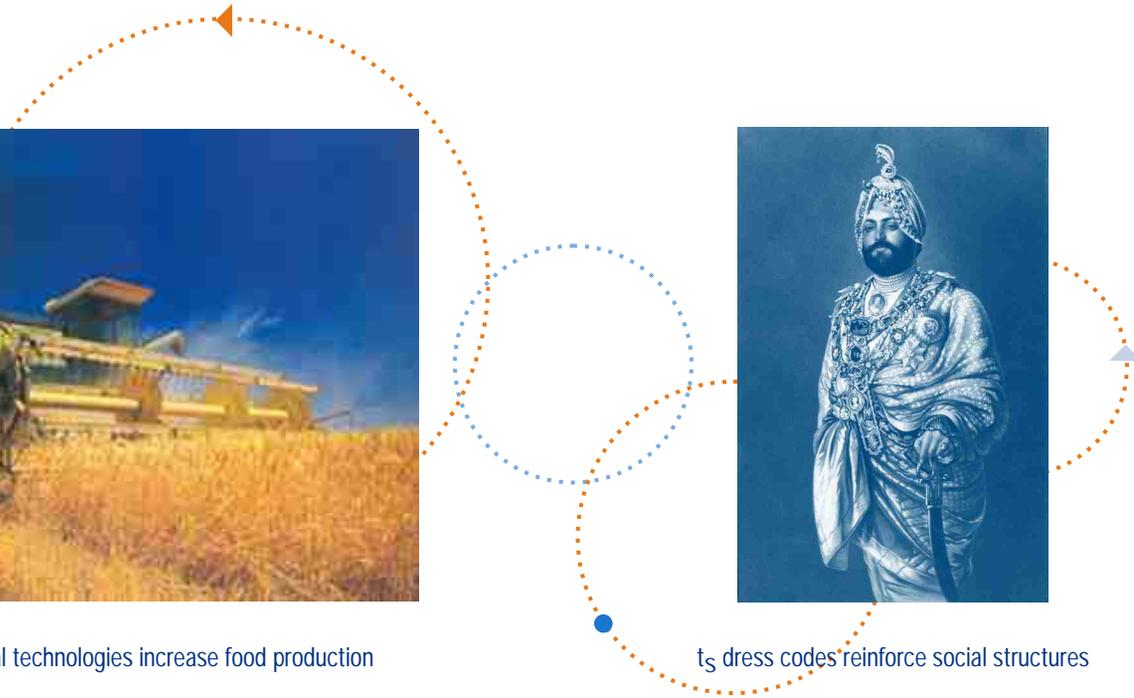
Societies are viable to the extent that their material technics enable them to physically manipulate and spatially organize their environments. Societies have longevity to the extent that their societal technics enable them to preserve internal and external equilibrium. Material technics tend to be connected to positive feedback processes (growth and change), while societal technics tend to be connected to negative feedback processes (equilibration).



t_m agricultural technologies increase food production



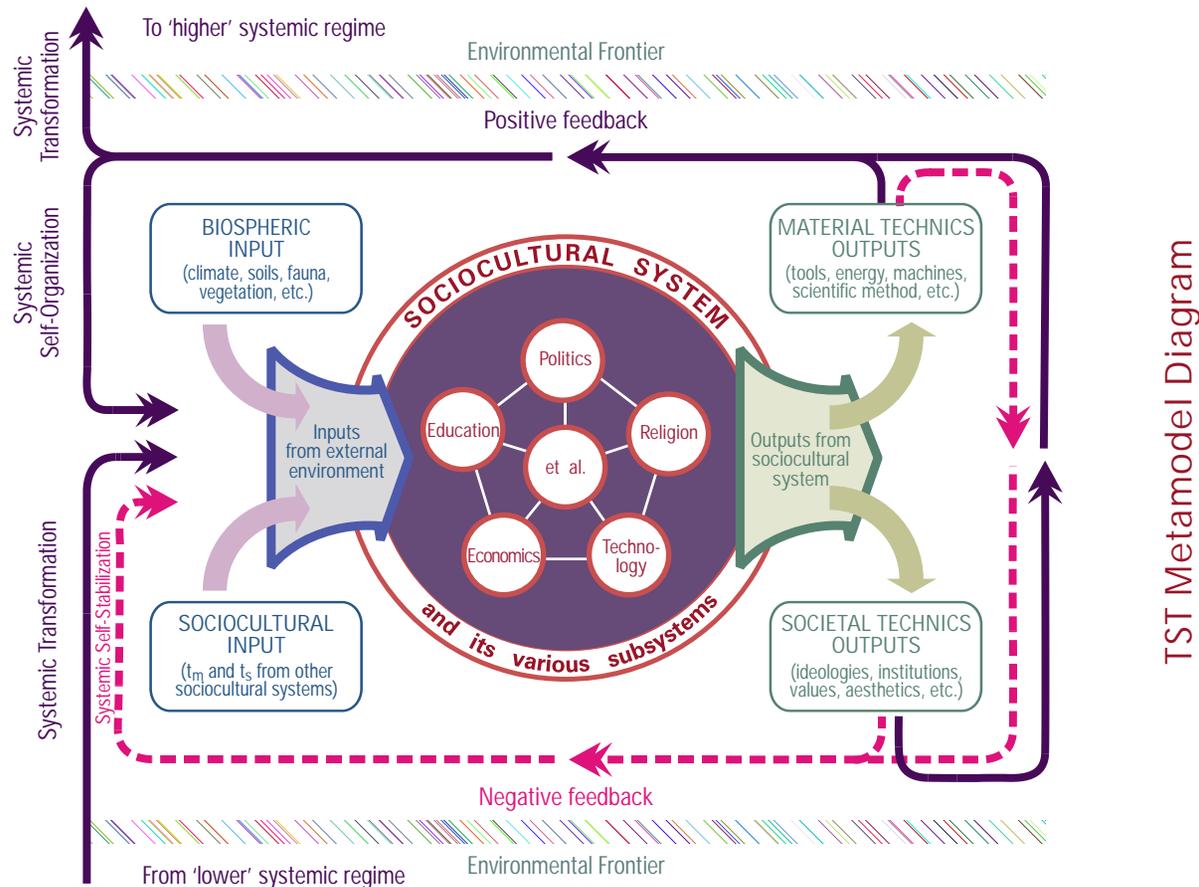
t_s dress codes reinforce social structures



System Inputs and Outputs

Human societies maintain and reproduce themselves through processing and converting information, resources and energy from their environments. They are complex cybernetic systems with feedback loops that take in inputs from the biosphere and from other societal systems, and convert these inputs into the material and societal outputs necessary for the system's maintenance, self-stabilization and reproduction.

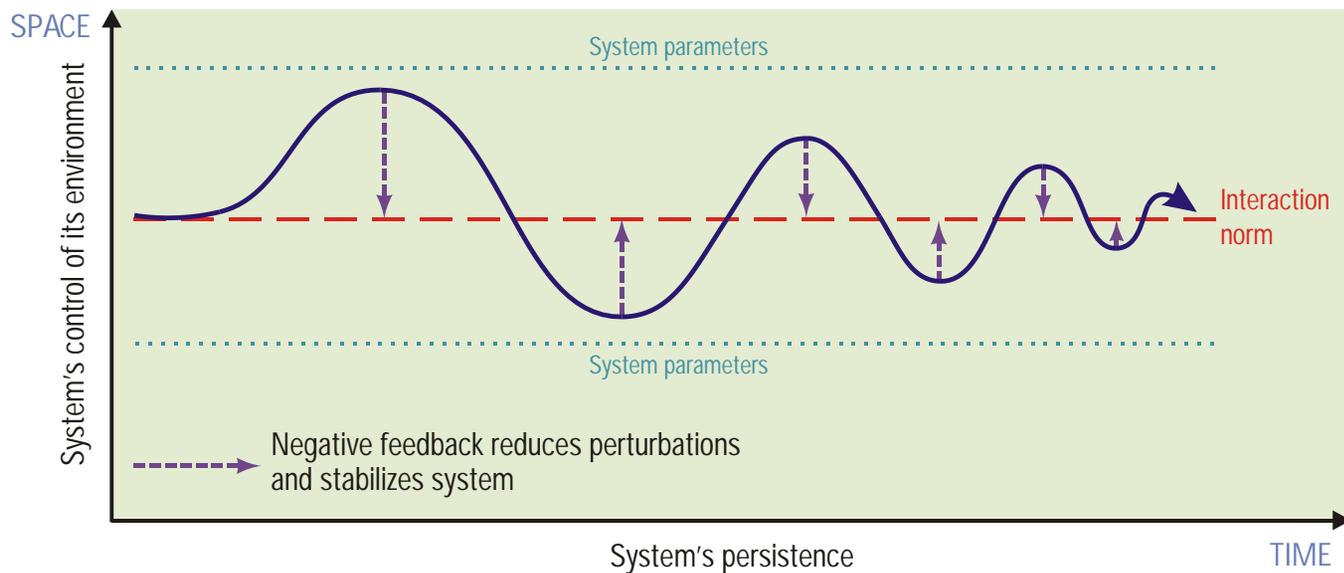
The diagram shows how material technics (t_m) and societal technics (t_s) interact upon a societal system in relationship to its environment. They normally combine to promote systemic self-stabilization: increasing imbalances between positive feedback and negative feedback result in either systemic transformation or collapse.



System Equilibration

Dynamic (open) systems such as living biological or societal systems are constantly re-equilibrating in response to internal and external developments. They use negative feedback to reduce perturbations (fluctuations) and maintain their systems within functional parameters. For example, humans sweat when too hot and shiver when too cold.

Societies are stabilized through system components such as cultural values and social institutions. An example of negative feedback is the use of social and economic rewards and punishments to reinforce a societal system and minimize deviations.



System Boundaries

All systems (whether stars, plants or societies) have boundaries. Boundaries are structures that manifest a system's underlying organization in a particular environment. In physical environments boundaries can be topological (e.g. the surface of the ocean); in social environments boundaries can be behavioural (i.e. ethnic membership).

Living systems have boundaries that are solid enough to preserve autonomy while being permeable enough to allow information and energy to be exchanged with the exterior. These boundaries enable systems to communicate and equilibrate with their environments. A system cannot maintain a congruent structure if its boundaries are exceeded – it must either collapse or establish a new structure with new parameters.

Societal systems and their sub-systems (e.g. families, schools, and businesses) are continually creating, maintaining and changing boundaries. A major function of specialized regulatory institutions such as legislatures, courts and the military is to control and integrate external and internal societal boundaries.



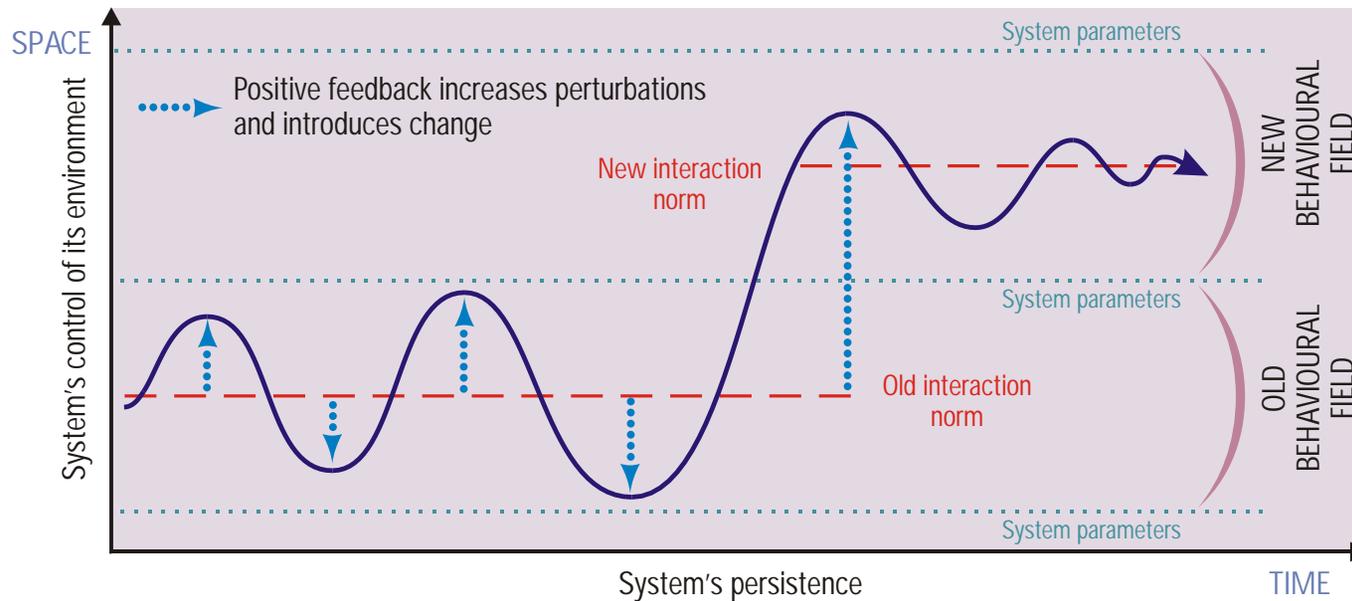
Legal institutions help to regulate societal boundaries

System Change

Positive feedback causes systems to change. For example, our physical growth is stimulated by positive feedback from hormones. Societies change due to positive feedback coming from internal developments in societal and material technologies (e.g. new philosophies or economic processes) or by changes in their external environments.

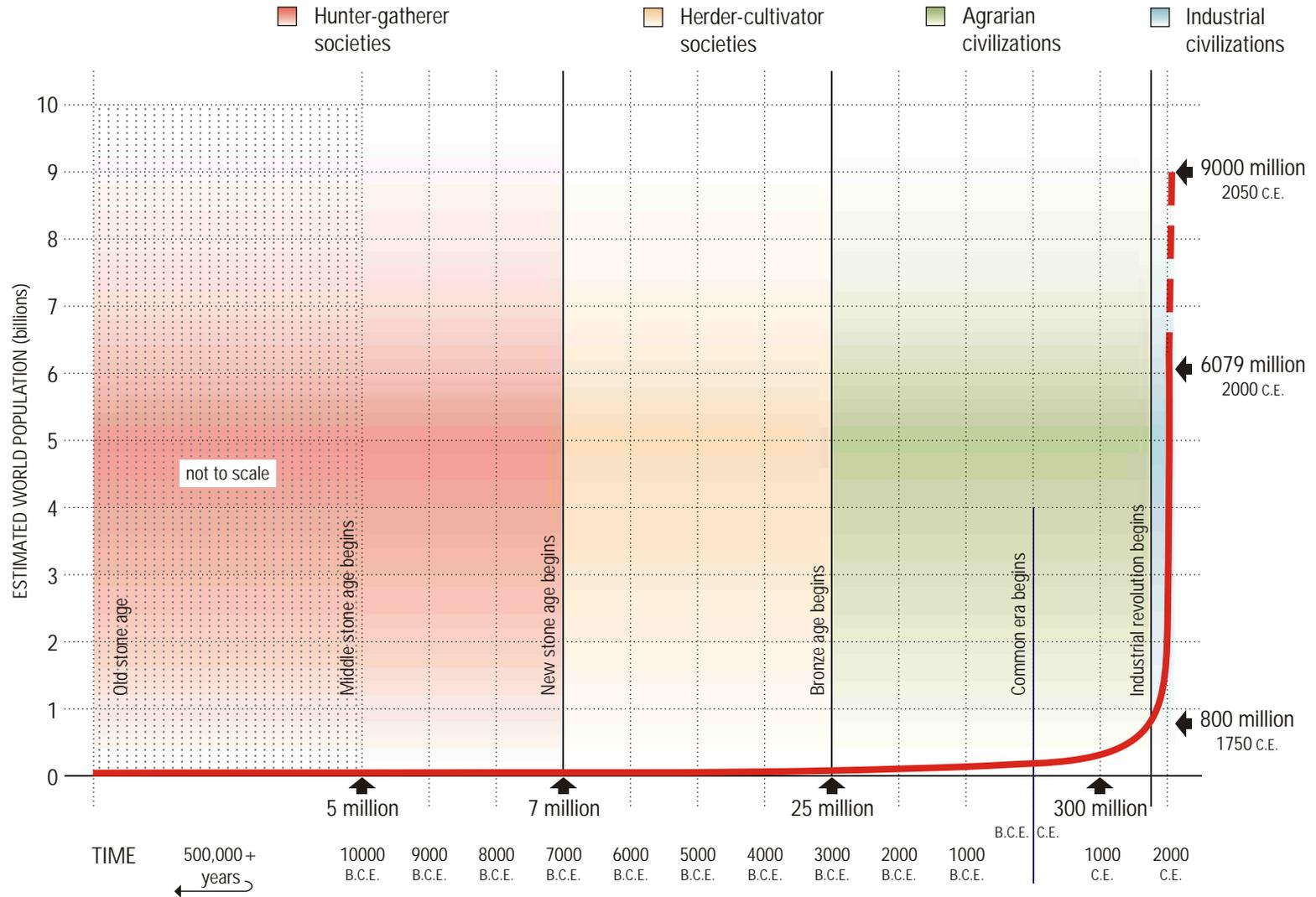
The external environment biases a system to move to a configuration (attractor) that optimizes its relationship with its surroundings. This process is called natural selection with living systems.

When change forces a societal system to exceed its boundaries, it can move the system to another stable configuration within the existing evolutionary level, cause it to break down to a less complex level of organization, or cause it to break through to a more complex level. New properties, structures and environmental relationships emerge at more complex levels.



Accelerating Change

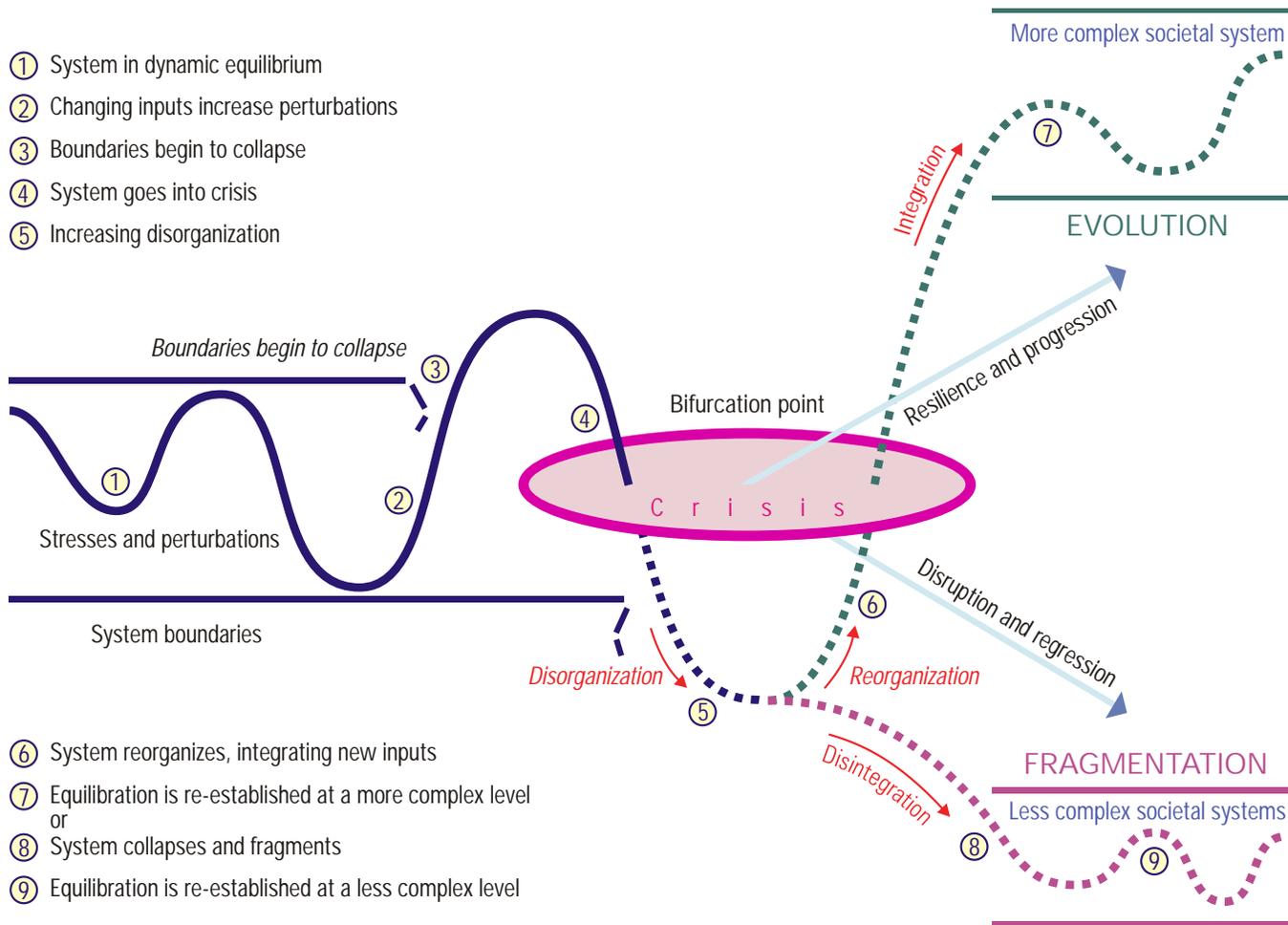
The rate of quantitative and qualitative change tends to accelerate over time. For example, human population growth has accelerated as more complex societal systems have evolved better environmental control capabilities (e.g. more food, less disease, etc.). Increasing populations in turn contribute to accelerating technological and societal change.



World populations are estimated. Based on data from U.S. Bureau of the Census (2003) and UNEP *Geo Year Book 2003*.

Bifurcation Points

All open systems exist in states of dynamic equilibrium with their environments. If a living system cannot control or adjust to changes in its internal or external environment, it will go into crisis. This is a bifurcation point: coherent pressures for change can cause a system to re-equilibrate at a more complex system state, while dysfunctional stresses can cause a system to break down to a less complex system state.



Societal Quantization

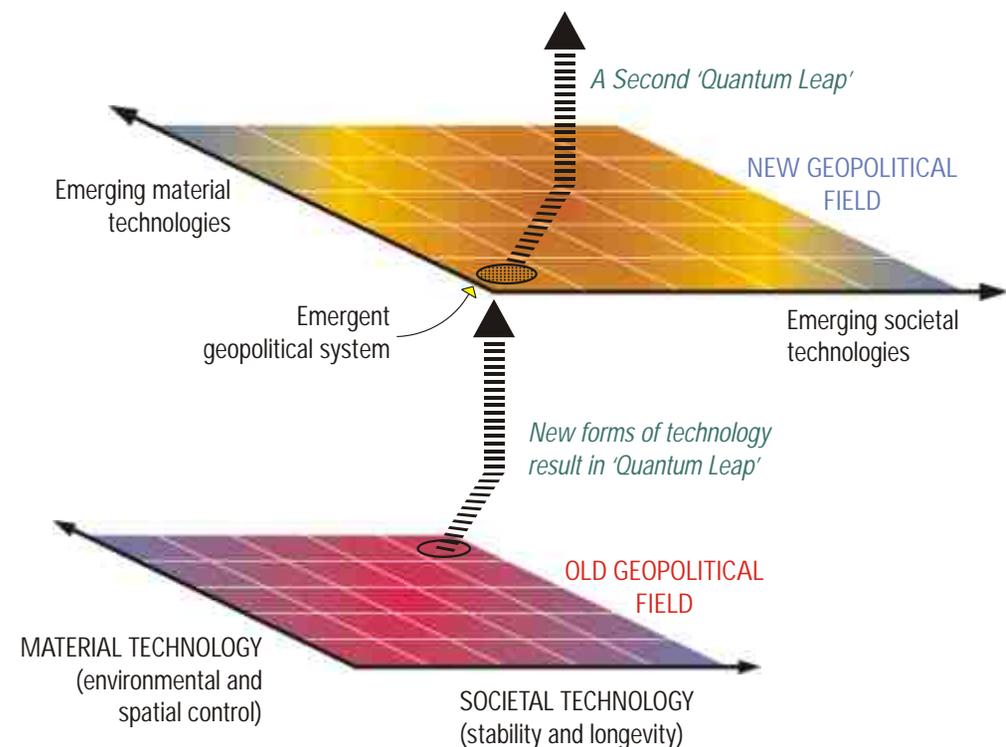
The process of a system evolving to a more complex system state is called quantization. The new system emerges with a new structure and additional properties.

Societal systems have evolved from simple societies to complex civilizations. Although every society is unique, societal systems can be broadly classified according to their level of development. For example, all archaic civilizations share similar worldviews (theocratic), social organizations (hierarchical), and economic processes (agrarian).

When a system cannot control or adjust to internal or external changes, it must change its structure and either re-organize to more complex level or fragment to a less complex level.

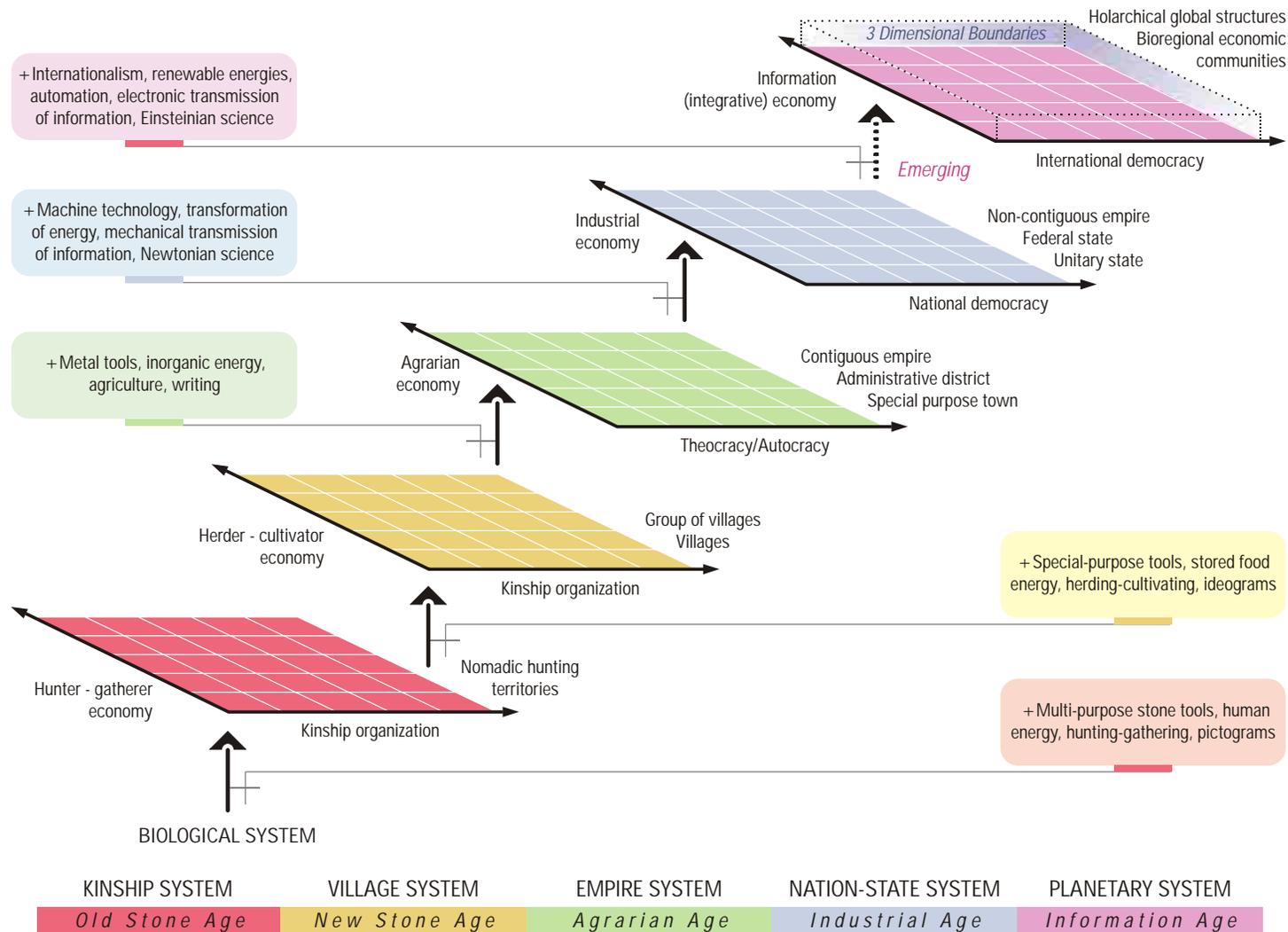
Societal quantum transformations are generated when a number of factors are present:

1. Technological/scientific innovations
2. Increased production and consumption of energy
3. Increased environmental control capacity
4. Exponential growth of populations
5. Economic growth and social complexification
6. Increased production/distribution of information
7. Increased societal feedback and control
8. New aesthetic canons and modes of expression
9. New cultural world view

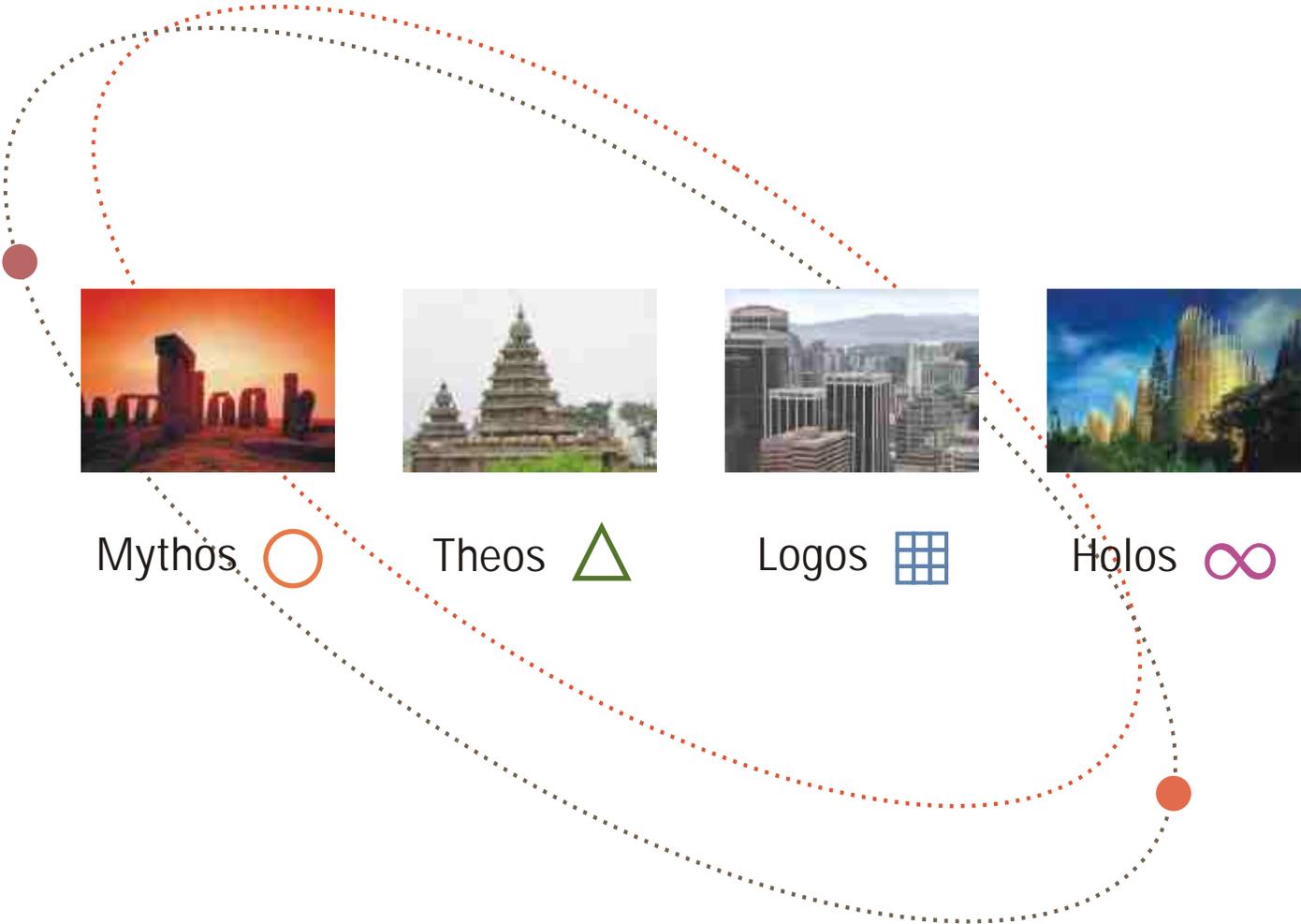


The Historical Evolution of Societal Systems

New material and societal technologies develop in response to human needs for increased meaning and improved living standards as well as to societal needs for increased environmental and spatial control. These developments eventually lead to the emergence of more complex societal systems (new historical "ages"). Societal evolution involves the congruent transformation of societal worldviews, social structures and economic processes. (See *Appendices 1-3.*)



Overview



The Evolution of the Universal Culture Pattern

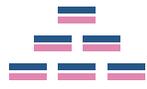
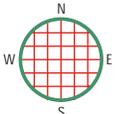
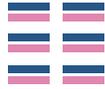
Universal Culture Pattern	Institutions	Mythos 	Theos 	Logos 	Holos 
	World view <i>orientation</i>	Animism <i>belonging</i>	Faith <i>obeying</i>	Logic <i>acquiring</i>	Holism <i>integrating</i>
	Culture <i>aesthetics</i>	Relationships <i>harmony</i>	Responsibilities <i>position</i>	Rights <i>achievement</i>	Interdependence <i>connectivity</i>
	Government <i>regulatory form</i>	Elders <i>customs</i>	Absolutist <i>decrees</i>	Constitutional <i>laws</i>	Consensual <i>self-regulating</i>
	Organization <i>basis</i>	Communal <i>kinship</i>	Autocracy <i>caste</i>	Meritocracy <i>class</i>	Holarchy <i>community</i>
	Economy <i>structure</i>	Foraging / horticultural <i>autonomous</i>	Agricultural <i>centralized</i>	Industrial <i>pluralist</i>	Information <i>distributed</i>
	Education	Tribal traditions	Caste traditions	Public education	Self-directed
	Technology <i>paradigm</i>	Human energy <i>magical</i>	Harnessed energy <i>religious</i>	Linked machines <i>mechanistic science</i>	Networked systems <i>relativistic science</i>

The Evolution of Societal Form and Function

Attributes	Mythos I 	Mythos II 	Theos 	Logos 	Holos 
Form	Undifferentiated	Differentiated	Unipolar	Multipolar	Network
Axis of growth	Point	Nucleus	Line	Plane	Cube / Sphere
Qualitative spatial control	Reactive	Direct	Linear <i>(linked nuclei)</i>	Two-dimensional <i>(grids/oceans)</i>	Three-dimensional <i>(inner/outer space)</i>
Quantitative spatial control	Transient	Immediate	Local	Regional	Global
System feedback	Interpersonal	Intertribal	Bureaucratic	Pluralistic	Networked
Direction of feedback	Circular	Centripetal	Centralized	Multiple <i>(power law)</i>	Systemic <i>(interactive)</i>
Positive feedback	Almost none	Minimal	Restricted	Intermittent	Constant
Economic exchange	Sharing	Redistributing	Taxing	Selling	Empowering
Duration	500,000 years \pm <i>to the present</i>	9,000 years \pm <i>to the present</i>	5,000 years \pm <i>to the present</i>	250 years \pm <i>to the present</i>	Emerging

Evolution involves the emergence of more conscious, complex, open, and permeable living systems with increased abilities to process information, energy and resources from their environments.

Icon Chart of Societal Evolution

Levels	Worldview (T _s)	Environmental control Spatial expletion (T _m)	Population density Spatial impletion (T _m)	Social organization (T _s)	Science and technology (T _m)	Matter/energy use (T _m)
Mythos I Old Stone Age	Belonging  Animism	Undifferentiated  Nomadic	Transient control  Cave/Tent	Clan  Communal	Multi-purpose tools  Hunter-gatherer	 Human power
Mythos II New Stone Age	Supporting  Ancestor worship	Random siting  Settlement	Immediate control  Village	Tribe  Collective	Specialized tools  Herder-cultivator	 Stored energy
Theos Agrarian Age	Obeying  Divine rule	One-dimensional control  Agrarian civilization	Local control  Town	Caste  Autocracy	Metal tools  Agrarian economy	 Harnesses energy
Logos Industrial Age	Acquiring  Rationalism	Two-dimensional control  Nation state	Regional control  City	Class  Meritocracy	Machines  Industrial economy	 Linked machines
Holos Information Age	Integrating  Holism	Three-dimensional control  Planetary system	Global control  Bioregion	Community  Holarchy	Electronic networks  Information economy	 Networked systems

Evolution ↓

The Process of Quantization

Societal systems quantize (undergo qualitative and quantitative transformation) in three general stages:

- 1) A paradigm-changing societal or material technic emerges which supports one or more quantizing factor.
- 2) The presence of a quantizing factor supports the quantization of one or more segments of the Universal Culture Pattern.
- 3) The quantization of a societal institution supports the quantization of the entire societal system.

The process of quantization can progress or regress:



A new paradigm-changing technic is emerging (i.e. one that helps to create a more complex, open and conscious system).



The new paradigm is directing one or more societal institutions.



The emerging or directing technic or institution is quantizing downward (to less complexity, openness and consciousness).



The quantized institution is part of a congruent societal system.

Quantization Factors for Mythos and Theos

<i>Factors causing the emergence of the societal system*</i>	○ Mythos I <i>Old Stone Age</i>	○ Mythos II <i>New Stone Age</i>	△ Theos Old World <i>Agrarian Age</i>	△ Theos New World <i>Agrarian Age</i>
<i>Increased external awareness</i> New technology/science	Fire; simple tool-making	Specialized tools; horticulture	Agriculture; measured time and space; metal tools	Agriculture; measured time and space
<i>Increased energy</i> Greater energy use and production	Co-operative hunting and gathering	Domesticated plants and animals; stored food	Harnessed wind, water and organic energy	Harnessed water and organic energy
<i>Increased external feedback</i> More environmental control	Hunting territories	Permanent villages	Towns linked by roads/rivers/coasts into empires	Towns linked by roads/rivers/coasts into empires
<i>Increased connectivity</i> Population growth/urbanization	Slow spread of human bands	Food production increases population densities	Increasing population densities; expanding trade	Increasing population densities; expanding trade
<i>Increased complexity</i> More complex institutions	Culturally organized societal systems	Increasing specialization; hereditary roles	Food surpluses support artisans and ruling elites	Food surpluses support artisans and ruling elites
<i>Increased internal awareness</i> More information systems	Symbolic thinking; language; oral traditions	More complex rituals; pictographs	Writing, mathematics, record-keeping	Writing, mathematics, record-keeping
<i>Increased internal feedback</i> More societal feedback and control	Kinship system (communal clans)	Village system (collective tribes)	Empire system (caste-based autocracies); bureaucracy	Empire system (caste-based autocracies); bureaucracy
<i>More complex aesthetics</i> New modes of expression	Magical symbols; naturalist art	Complex crafts with abstract designs	Art and architecture glorifying god-kings	Art and architecture glorifying god-kings
<i>More complex world view</i> A more functional view of reality	An egalitarian world of spirits and totems	Increasing ancestor worship	A hierarchical reality ruled by divine beings	A hierarchical reality ruled by divine beings

*Functional new societal systems are only able to evolve when all quantizing factors are present.

Quantization Factors for Logos and Holos

<i>Factors causing the emergence of the societal system*</i>	 Logos Conceptualized <i>Greco-Roman civilizations</i>	 Logos Theocratized <i>Medieval Europe</i>	 Logos Mechanized <i>Industrial Age</i>	 Holos Emerging <i>Information Age</i>
<i>Increased external awareness</i> New technology/science	Dualistic analysis; geometry; grids	Two-dimensional navigation; heliocentric astronomy	Mechanistic science; chemistry; aviation	Relativistic science; electronic networks
<i>Increased energy</i> Greater energy use and production	<i>Agrarian economies*</i>	Simple machines; firearms	Fossil fuels; linked machines; electricity	Renewable energies; networked systems
<i>Increased external feedback</i> More environmental control	Coastal navigation	Global exploration by sea	Ability to exploit most terrestrial environments	Management of global environments
<i>Increased connectivity</i> Population growth/urbanization	Large urban centres	<i>Agrarian population densities*</i>	Increasing urbanization; international trade	Most people live in cities; mega-cities
<i>Increased complexity</i> More complex institutions	Currency and trade	Merchant class	Regulated capitalism; pluralist institutions	Globalization; planetary system
<i>Increased internal awareness</i> More information systems	<i>Agrarian information systems*</i>	Mechanical printing	Public education; mail; mass media; telephones	Internet; global telecommunications
<i>Increased internal feedback</i> More societal feedback and control	Logic; dialogue; republican governments	<i>Agrarian forms of government*</i>	Nation-state system (class-based meritocracies)	Holarchical planetary system (community-based)
<i>More complex aesthetics</i> New modes of expression	Humans as the focus of art and architecture	Perspective in art	Individualistic art; advertising	Multirelational art; films; virtual reality
<i>More complex world view</i> A more functional view of reality	Logic and objective facts can help explain reality	Reason in the service of faith	Dualistic rationalism	Holism; an integral systems approach

*Functional new societal systems are only able to evolve when all factors are present.

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Contact Information

[Introduction to Time - Space - Technics](#) summarizes some of the key concepts developed by Dr. Alastair M. Taylor (1915-2005) in his manuscript *Time-Space-Technics*. It comprises the first three sections of [Time - Space - Technics: A Graphic Presentation](#), written by Graeme Taylor and illustrated by Fereshteh Sadeghi. You may view the Table of Contents of the complete eight section presentation and/or order it on CD (with high resolution graphics suitable for classroom use) at: www.bestfutures.org/bestproducts

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