



United Nations
Educational, Scientific and
Cultural Organization



Management of
Social Transformations
Programme

FUTURES LITERACY FOR NEXT GENERATION R&I POLICY

RIEL MILLER

Vienna, Austria

April 3, 2019



ÖSTERREICHISCHE PLATTFORM
für Forschungs- und Technologiepolitikevaluierung



HERE COME THE ROBOTS!





Diversifying the 'use-of-the-future'



Getting Better at Living with Complex Emergence

In the present,
just:

Repetition

Difference

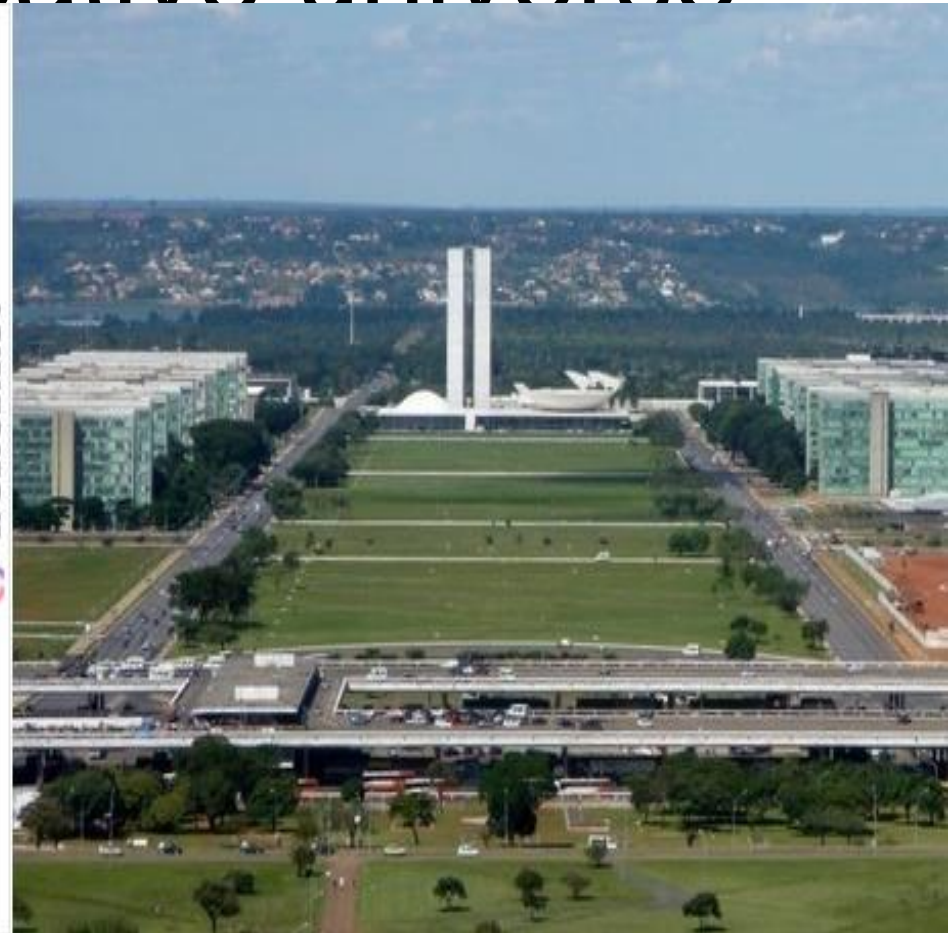
Repetition and Difference



UNKNOWN unknowns – before
this happened no one could
know –
we live in a creative universe

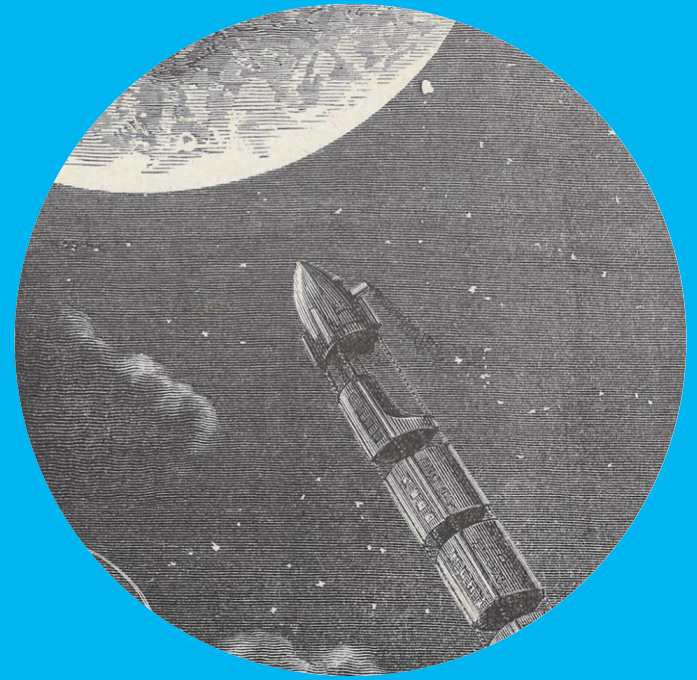
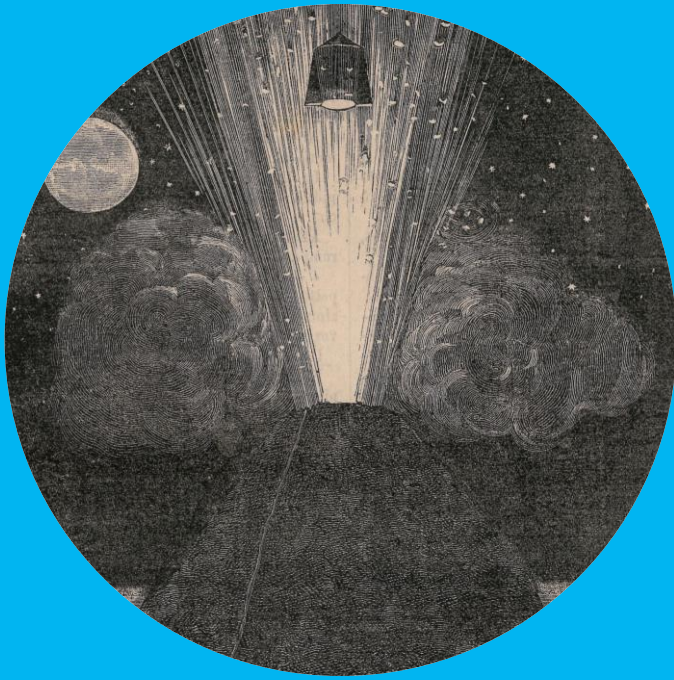


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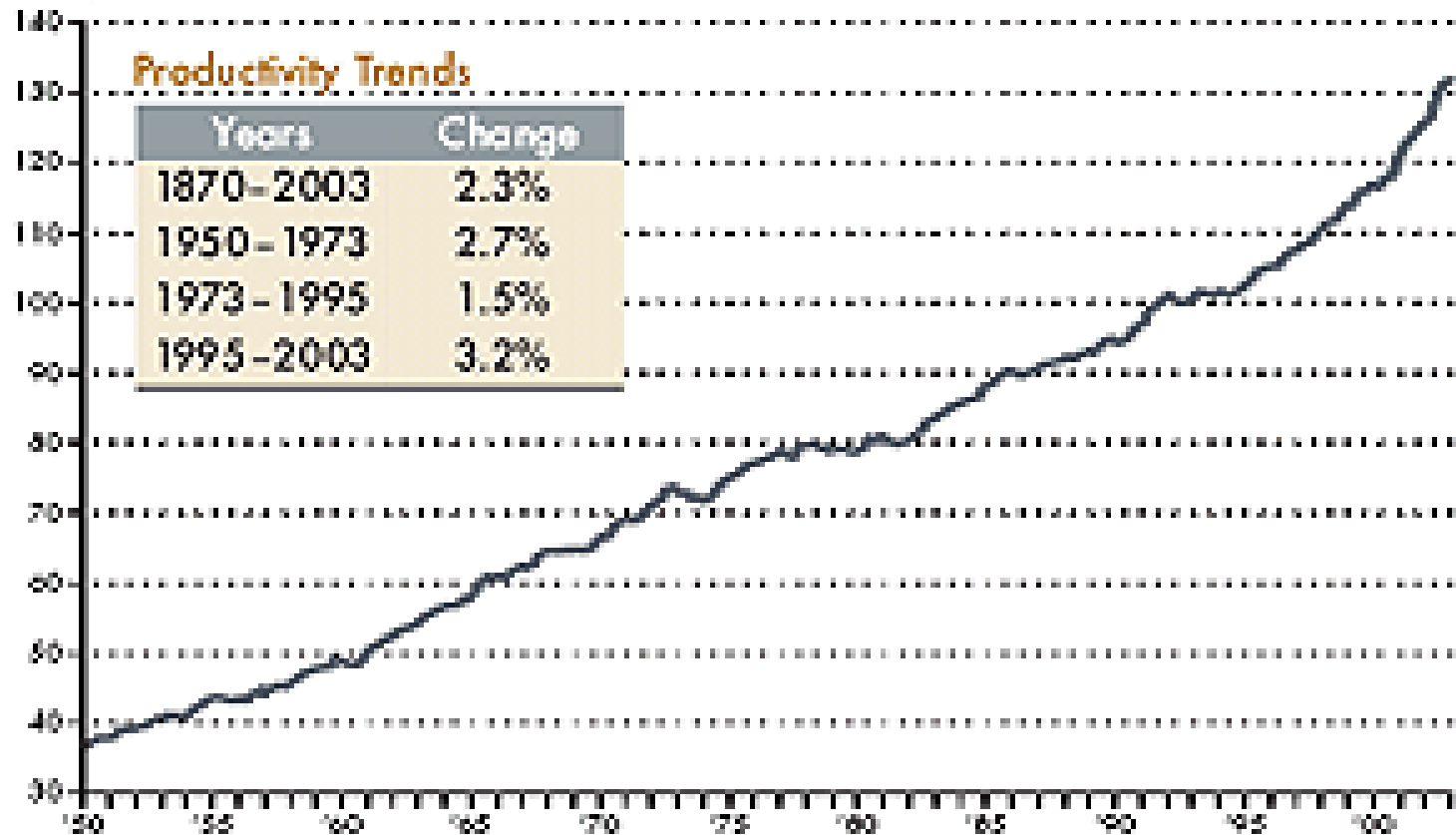
THINKING ABOUT CHANGE

Is it About Going to the Moon?



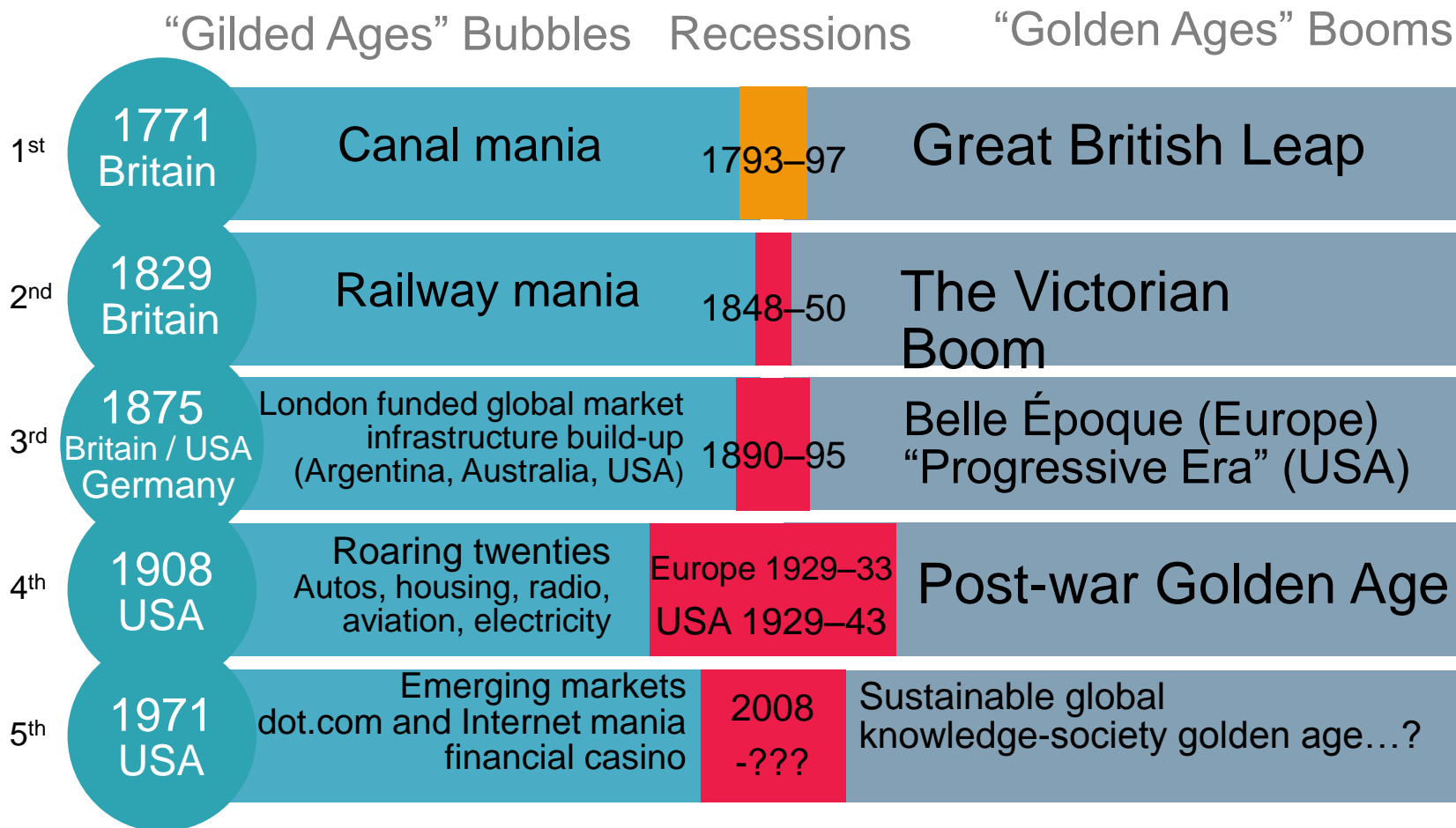
Productivity Growth US

Index, 1992 = 100



2003 Annual Report – Federal Reserve Bank of Dallas, <http://dallasfed.org/fed/annual/2003/images/8trends.gif>

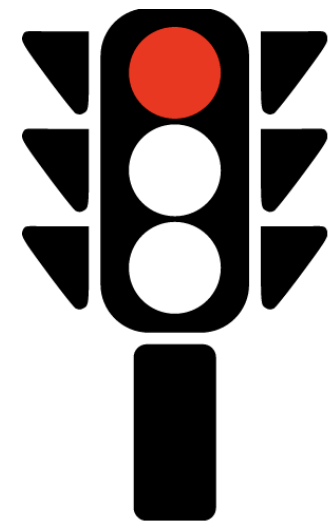
Continuity and change...



Source: Carlota Perez

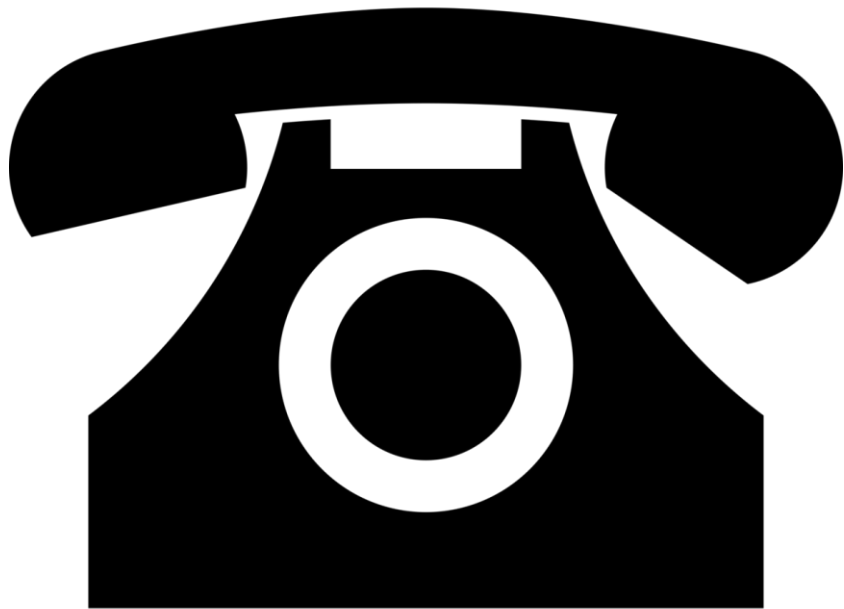
What we do and how we do it changes...

SUBSTITUTION



COMPLEMENTARIT

Y



EMERGENGE



Can we think about changes in the conditions of change?

Change within the system

Change outside the system

Inside-in

Inside-out

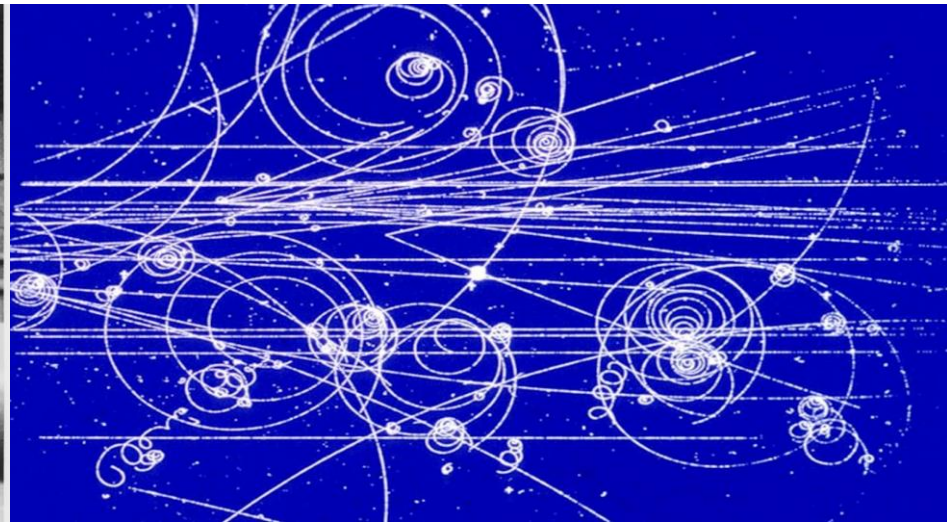
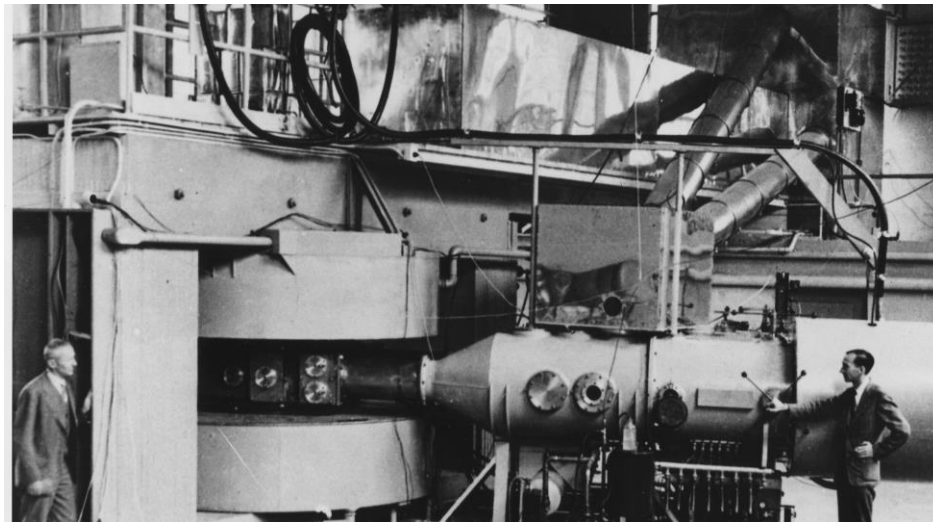
Outside-in

Outside-out



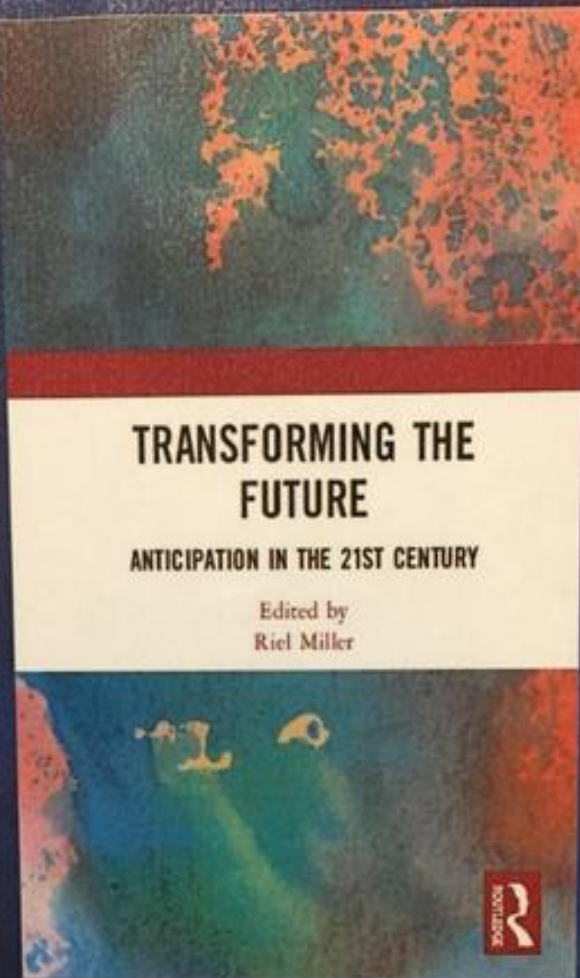
What is Future Literacy?

The future does not exist in the present but anticipation does. The form the future takes in the present is anticipation.



Making the invisible visible

New



FREE on line for
download:

Just search for:
*“Transforming
the Future”*
UNESCO

Transforming the Future
Anticipation in the 21st Century

Edited by Riel Miller

In the late 17th Century
Anton van Leeuwenhoek
discovered bacteria.
The microscopes he
invented revealed invisible
worlds. But it took another
two centuries to make
sense of this discovery.



Futures Literacy Labs 2012 - 2016



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

- **Paris:** The Future of Cultural Heritage Research, November 19-20, 2012
- **Baku:** Scoping Global Anticipatory Capacities, June 1, 2013
- **Paris:** Knowlab Design Test Session “Scoping the Know-Lab: Tomorrow’s Knowledge, Creation Microscope”, June 20-21, 2013
- **Brasilia:** The Future of Science, 11-12 July, 2013
- **Sao Paulo:** Changing the Way Universities Use the Future?, July 15, 2013
- **Chicago:** The Future of Futurists, July 19, 2013
- **Oslo:** Innovation as Learning, Knowing as Learning, Knowing as Science: Imagining a Universal Innovation Society in 2040, October 21-22, 2013
- **Bogota:** Using the future to think about local labor markets, November 25-26, 2013
- **Rio de Janeiro:** Imagining the Future of Science in Society, November 28-29, 2013
- **Paris:** Imagining the Future of the Transition from “Youth” to “Adult”, January 13-14, 2014
- **Freetown:** Youth & Rites of Passage in Sierra Leone, January 20-21, 2014
- **Munich:** Imagining the Future of Sports in Society, February 5-6, 2014
- **Paris:** Inhabiting Planet Earth 2100: Beyond Cities?, March 27-28, 2014
- **Calceta, Bahia de Caraquez, Monta:** A Series of Future Literacy Knowledge Lab in Ecuador, April 26–May 1, 2014
- **Yangon:** Addressing the future of education in Myanmar?, May 2-3, 2014
- **Laoag City:** Resilient Cities, Brighter Futures -A Forum for Sustainable City Futures, May 21-24, 2014
- **Johannesburg:** All Africa Future Forum, May 26-28, 2014
- **Ottawa:** The Future of Innovation Ecosystems in the Public Sector, June 4-5, 2014
- **Tanzania:** Future-Proofing an Entire Nation, September 2013
- **Brasilia:** Joint International Foresight Academy, November 16-21, 2014
- **Paris:** L’Afrique de Demain ?, May 21, 2015
- **Rabat:** Imagining Africa’s Future, June 25-26, 2015
- **Bangkok:** Rethinking Education: the Future of Informal Learning, September 1-3, 2015
- **Ulaanbaatar:** The Future of Mongolia, September 20-October 2, 2015
- **Paris, 9th** UNESCO Youth Forum, October 26 – 28, 2015
- **Rabat:** Futures Literacy: Advancing a Community of Practice in Africa – The Future of Urbanisation and Water in North Africa, December 4-5, 2015
- **Tunis:** Social Transformations, 3 – 4 March, 2016
- **Montevideo:** What Development for What Uruguay? March 28 – 30, 2016
- **Paris,** Reframing Mobility and Identity: The Future of Africa, July 4 – 5, 2016
- **Havana:** Using the Future to Embrace Complexity, July 13, 2016
- **Antipolo City:** Developing the Capacity of Filipino Youth Leaders to Use the Future, November, 13-16, 2016
- **Turku,** Complex Futures of Human Settlement, June 14-15, 2017
- **Rabat, Bucharest...** and many more

Changing the conditions of change



How to get better at sensing and making sense of complexity
–uncertainty is not a liability it is an asset
– transforming human agency.

Futures Literacy

Human Agency vs Complexity

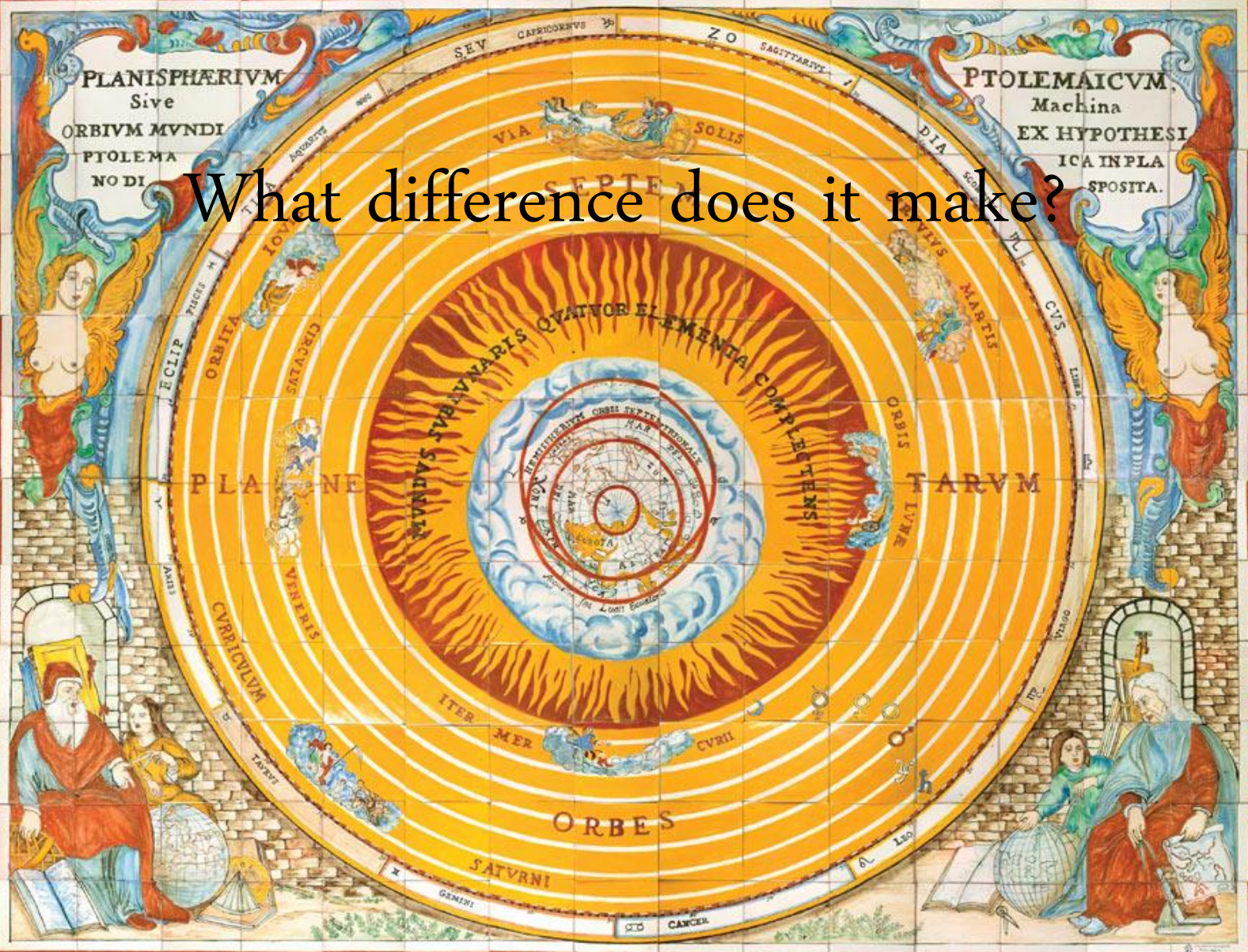
Futures Illiteracy generates:

- Fear of uncertainty
- Bias to seeking path dependency
- Fetishism of immortality
- Pre-occupation with endogenous continuous improvement – reform
- False sense of temporality of change – seeking permission to not forecast, to liberate the imagination

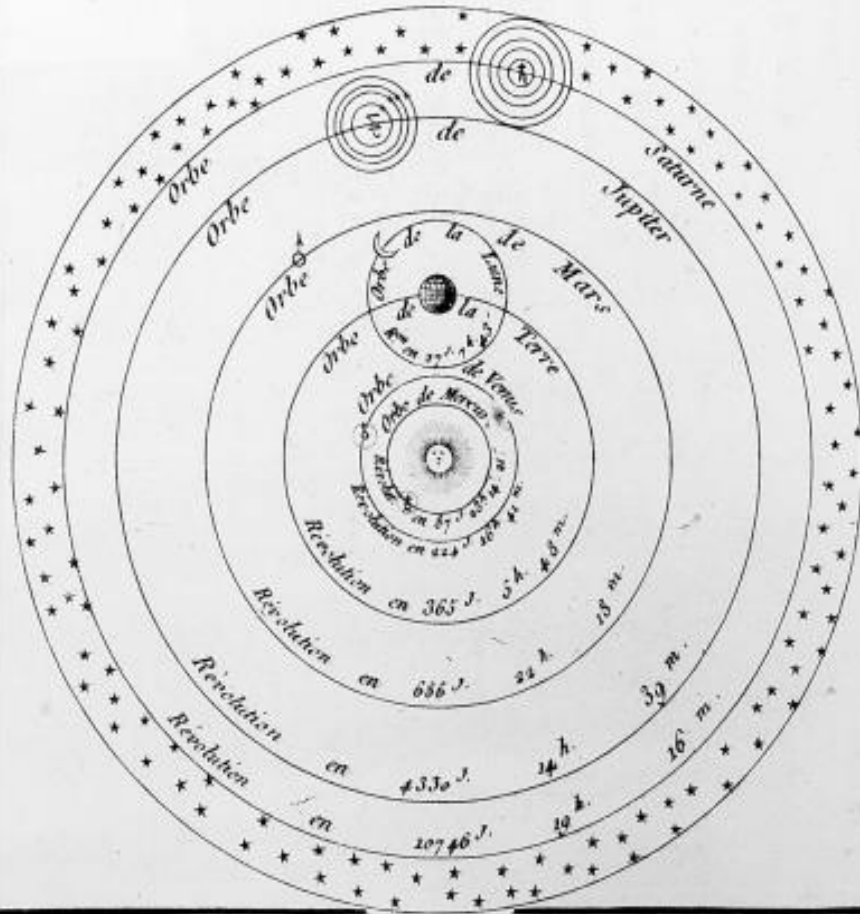
PLANISPHERIVM
Sive
ORBIVM MVNDI
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EX HYPOTHESI
ICA IN PLA
SPOSITA.

What difference does it make?



SYSTEME DE COPERNIC



So why bother?

- It changes what we see.
- It changes what we imagine.
- It changes what we resist.
- It changes what we preserve.
- It changes how we preserve what we want to preserve.
- It changes the conditions of change.

Copernic, aussi instruit que sage, replace le soleil immobile au centre du monde, comme un flambeau qui l'éclaire et le chauffe; il lui donne un mouvement de rotation sur lui même. Dans son système, le mouvement diurne de tout le ciel s'explique avec une extrême facilité; il suffit en effet que l'habitant de la terre tourne autour de l'axe, d'occident en orient, pour que tous les astres lui paroissent rouler d'orient en occident et qu'il rapporte au soleil le mouvement qui n'est réel que pour la terre. Mais tandis que la terre tourne sur elle même en 24 heures, elle décrit une orbite autour du soleil, dans l'espace d'une année. Par ce mouvement propre, que l'illusion attribue au soleil, cet astre semble s'avancer chaque jour d'environ un degré vers l'orient, pendant qu'il est emporté chaque jour avec tout le ciel et d'un mouvement commun vers l'occident. La trace de ce mouvement annuel est l'écliptique, au bout de 365 jours, une éclipse observée se reconnoit à la même heure, au même lieu, où elle s'étoit montrée l'année précédente, à pareil jour.

How we anticipate matters
It changes the present



Thank you

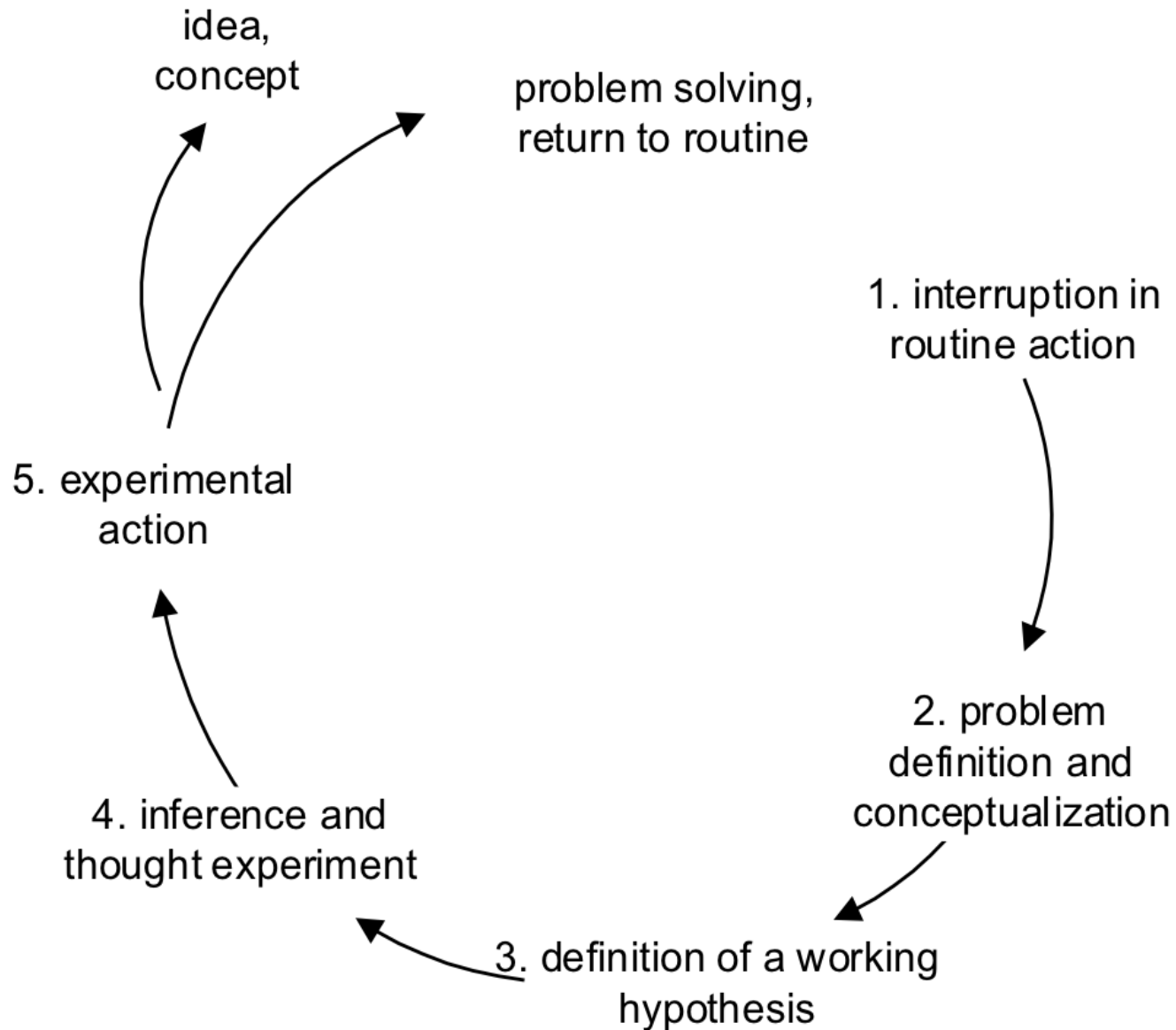
r.miller@unesco.org

Futures Literacy Labs 2012 - 2016



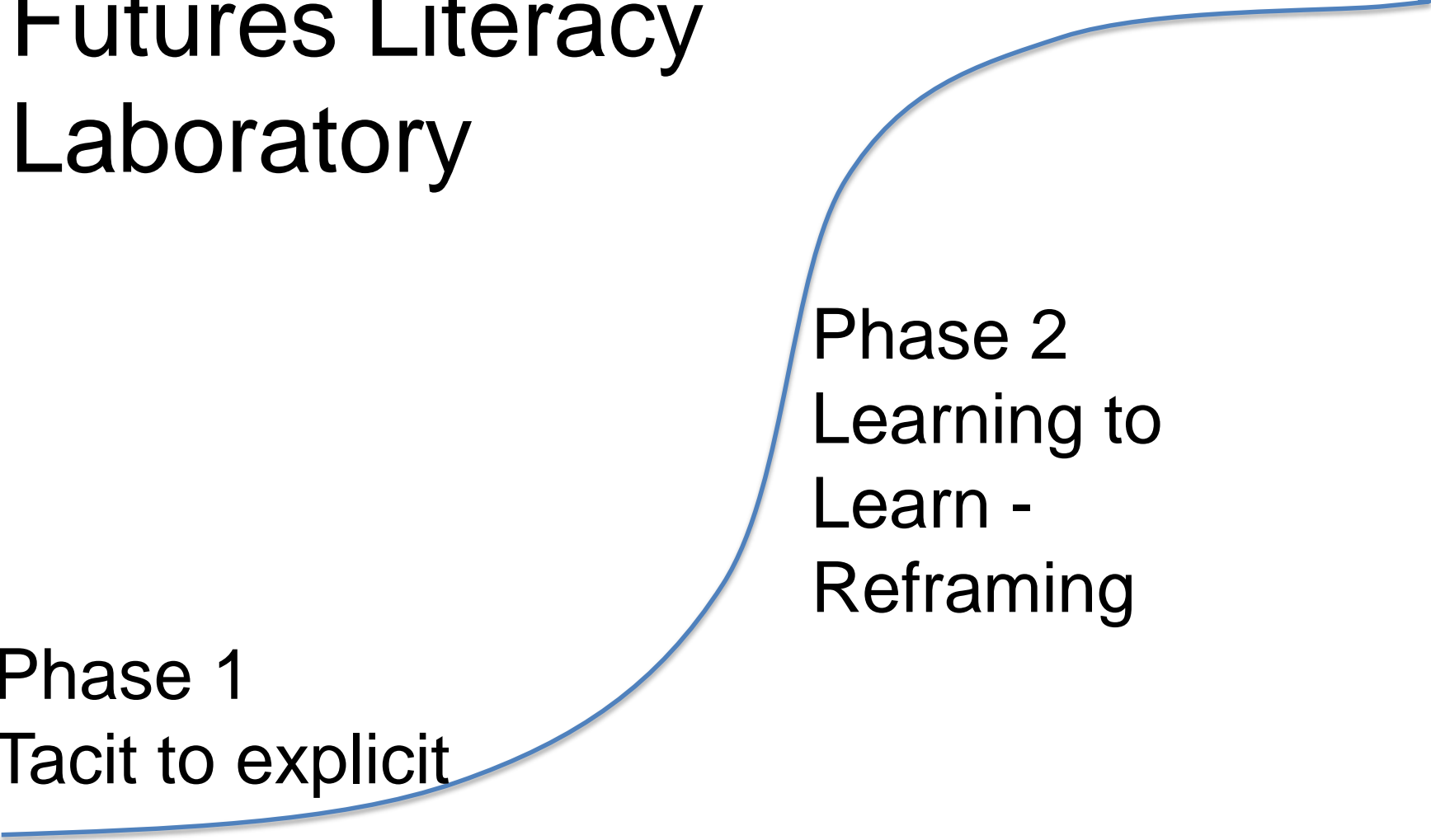
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The Learning Cycle



Meta-frame for Futures Literacy Laboratory

Phase 1
Tacit to explicit

A blue S-shaped curve starts at the bottom left, rises steeply in the middle, and levels off at the top right. The curve is positioned between the text labels for Phase 1, Phase 2, and Phase 3.

Phase 2
Learning to
Learn -
Reframing

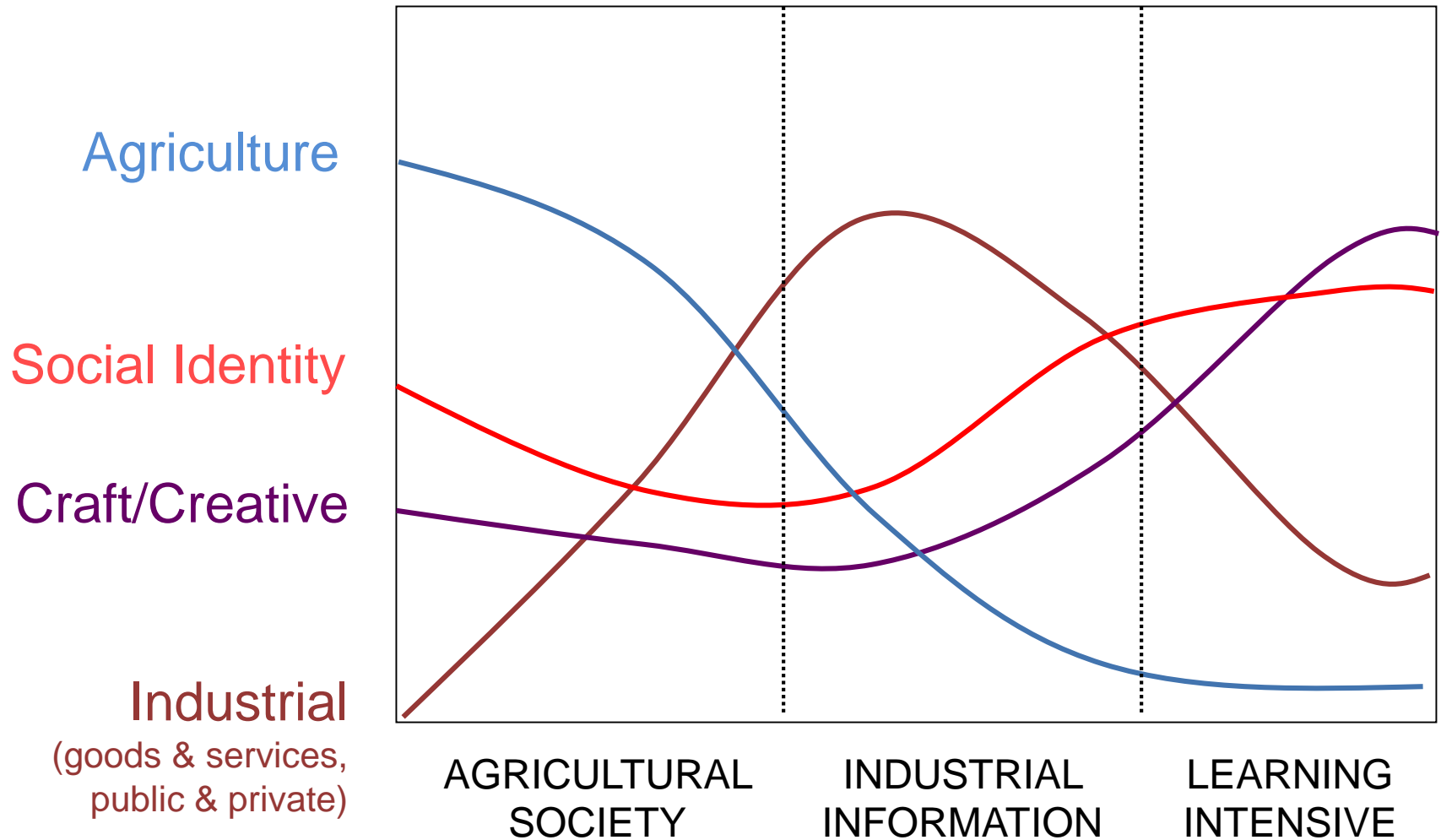
Phase 3
New Questions

THE LEARNING INTENSIVE SOCIETY

NOT A PREDICTION
NOT A DESIRED FUTURE
AN IMAGINARY (RE)FRAME

Compositional Transformation

Share of total wealth creation by source



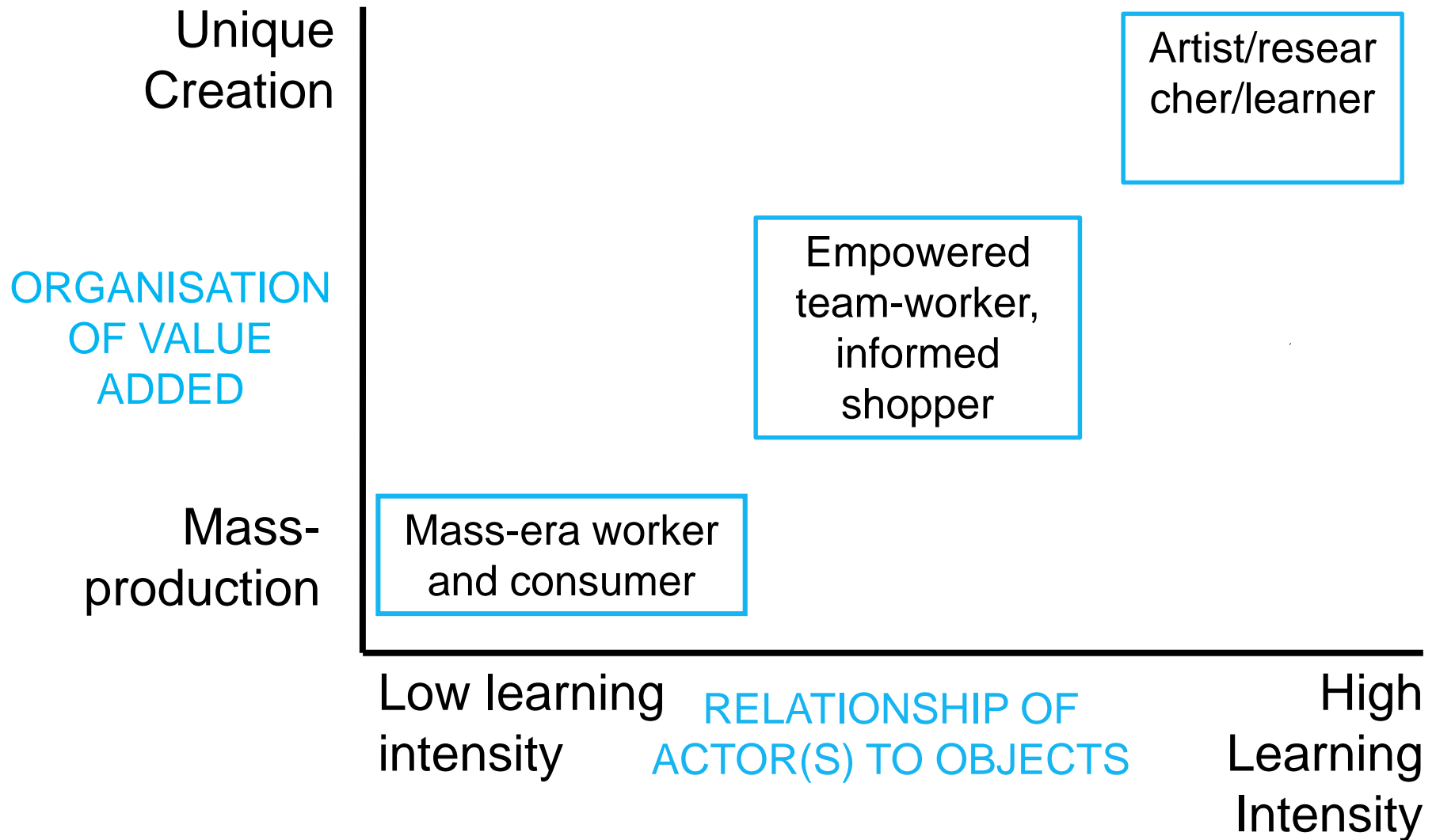
SYSTEMIC ECONOMIC TRANSFORMATION

Changes What and How We Produce

- Unique creation dominates
- Organization is fluid and open

“Next stage” of transactional production systems – beyond mass-production and mass-consumption

Creating wealth – Changing sources



Beyond the dualism of supply & demand



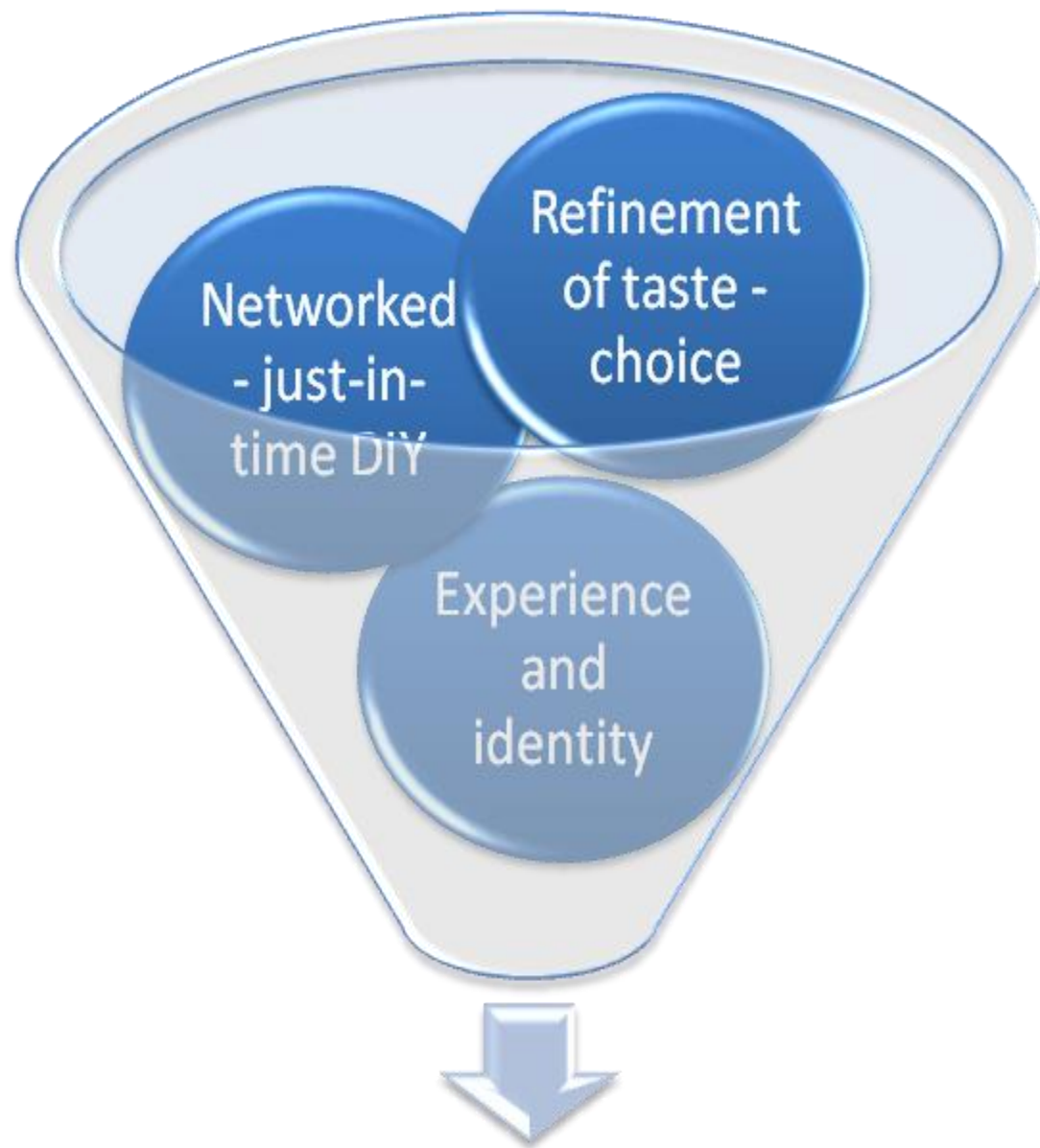
First car produced
using a “desktop
factory”



Conception

Management

Execution



Unique creation

Mobile, ubiquitous, accessible

A large flock of starlings flying in a murmuration against a sunset sky. The birds are densely packed, forming a large, dark, cloud-like shape that moves across the frame. The sky is a mix of blue, orange, and yellow, suggesting a sunset or sunrise. The birds are small, dark silhouettes, and their collective movement creates a dynamic, fluid pattern.

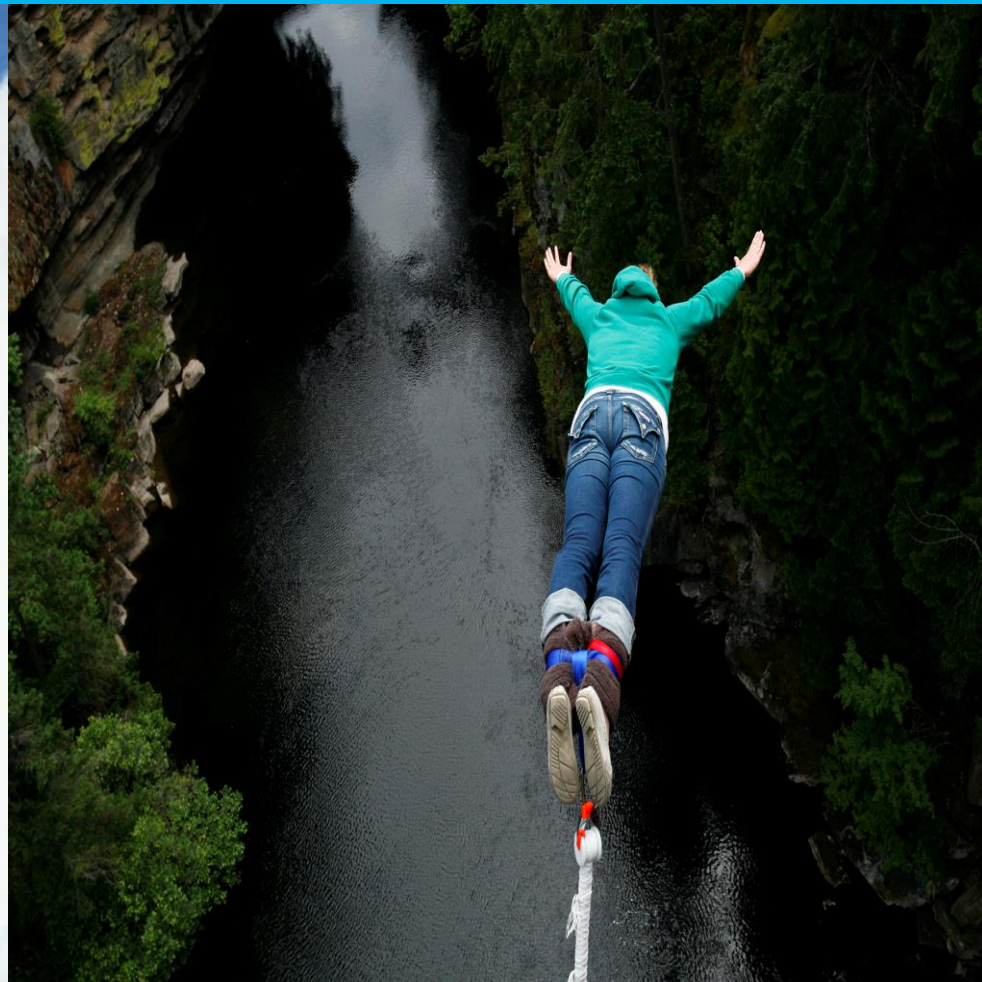
Murmuration: Starlings Flying in a Flock

Imagine Clouds of Unique Creation
Flows of Collaboration and Experience
Local and Global, Multiple Dynamic Communities
Birth, Death, Entry, Exit - Heterarchical

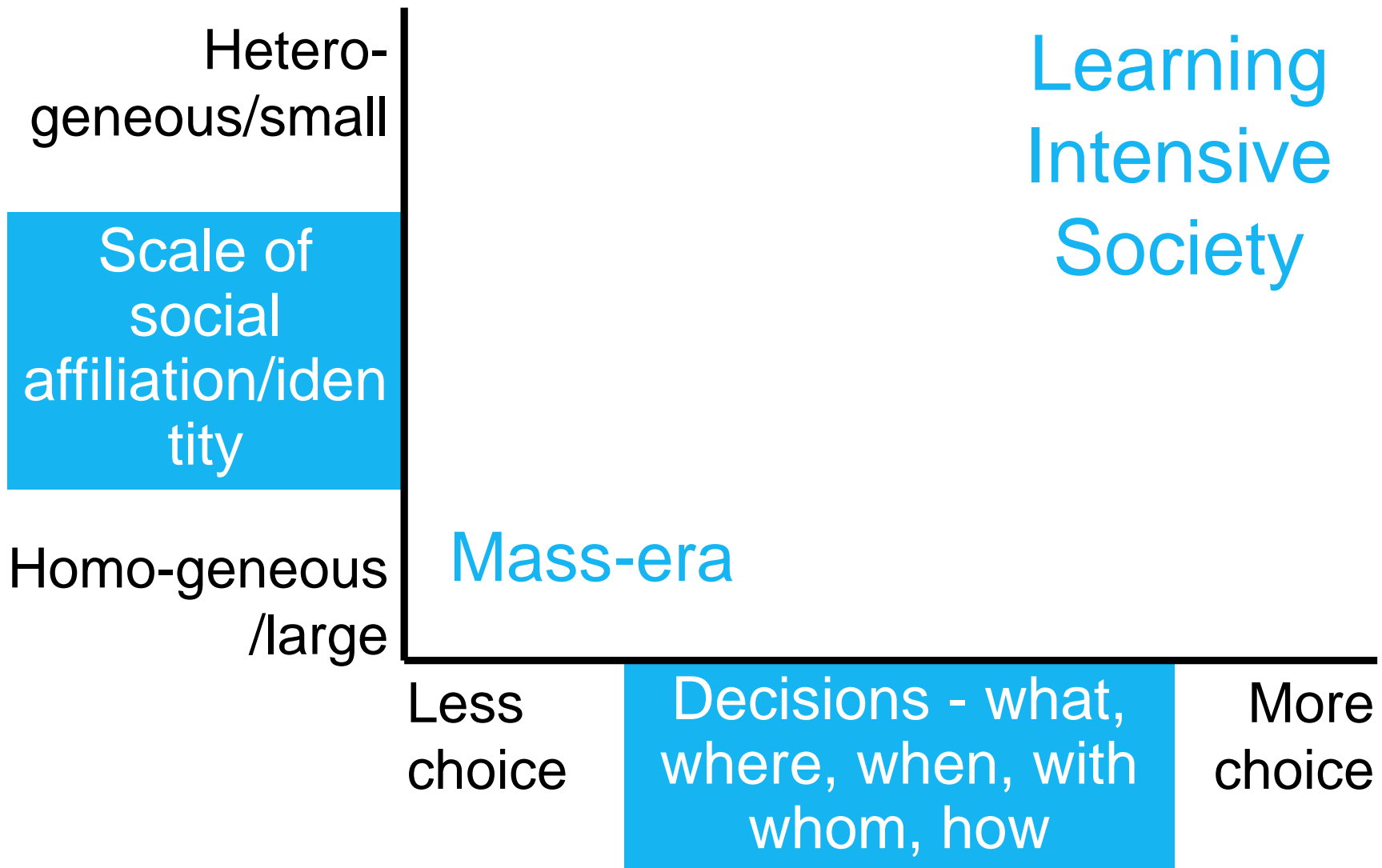
Identity, capacity to be free



Experiencing?
Belonging?
Meaning?



Identity & choice

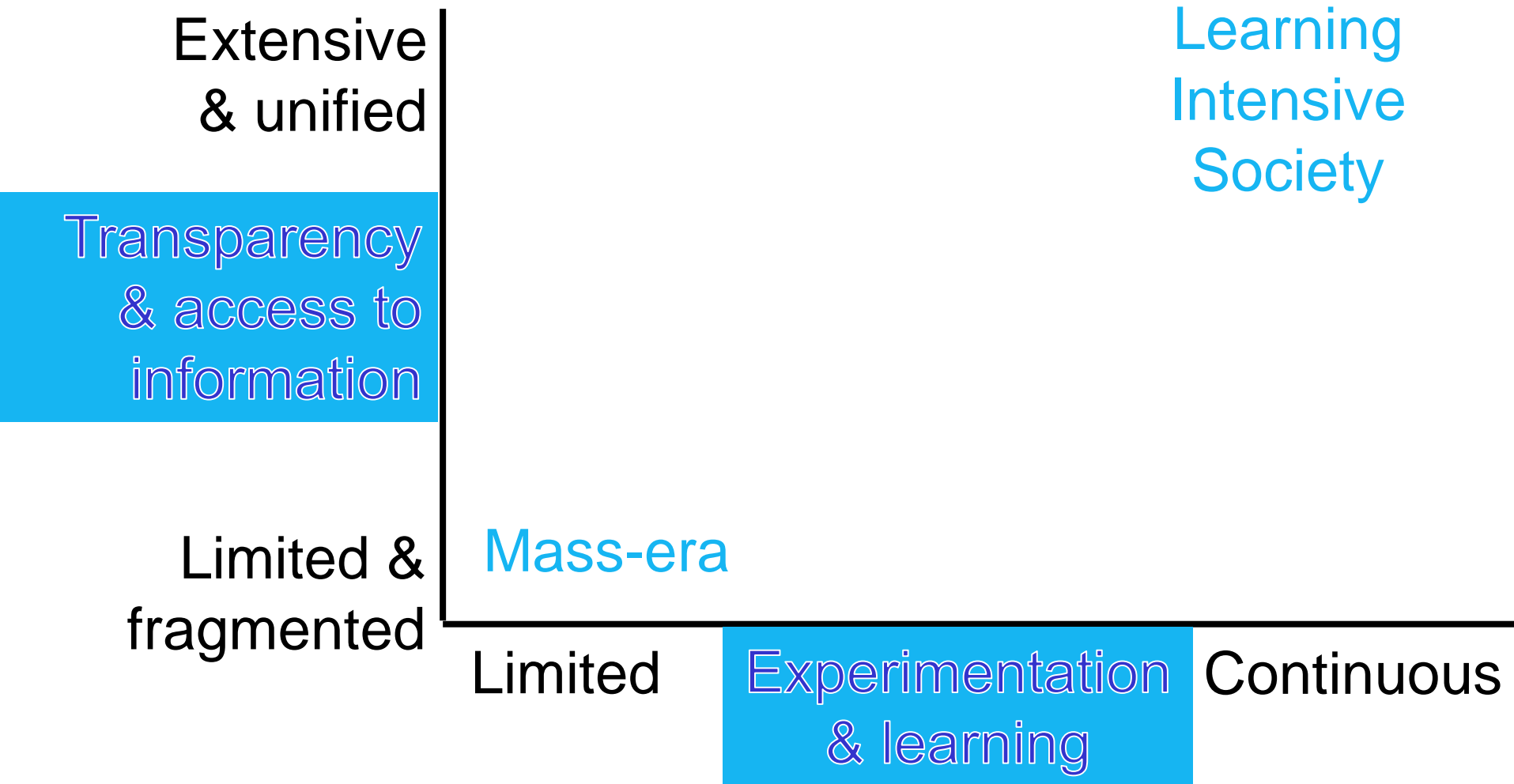


Beyond individual VS collective: banal creativity



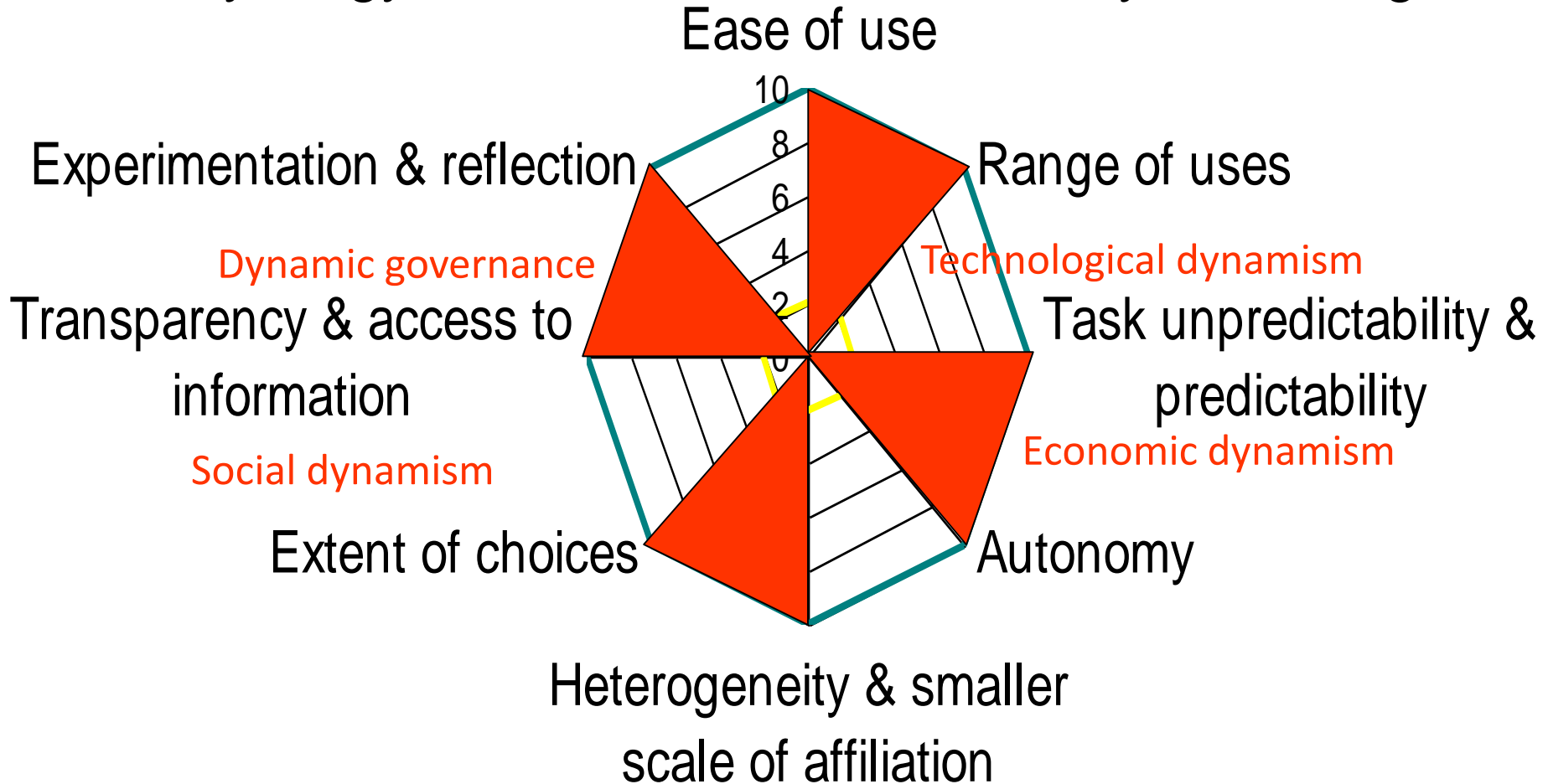
Decision making capacity

Governance: capacity to make decisions



Capacity for reframing and sense making: spontaneity

21st Century Transitions: Synergy Conditions and the Policy Challenge



— Mass-era — Learning society

Expanding the number of university graduates does not increase wealth nor lead to “greater competitive” advantage (changes in the conditions of change)

Systemic Change

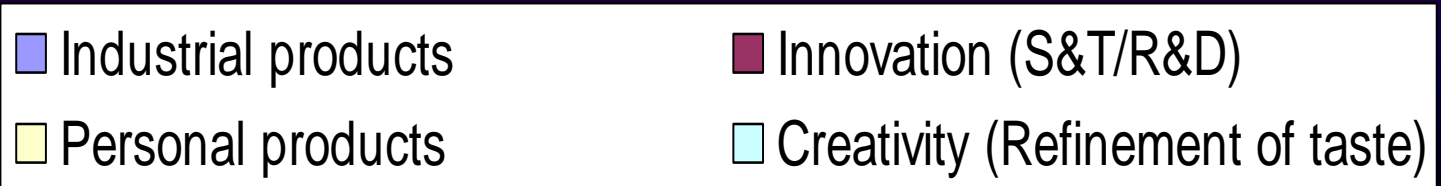
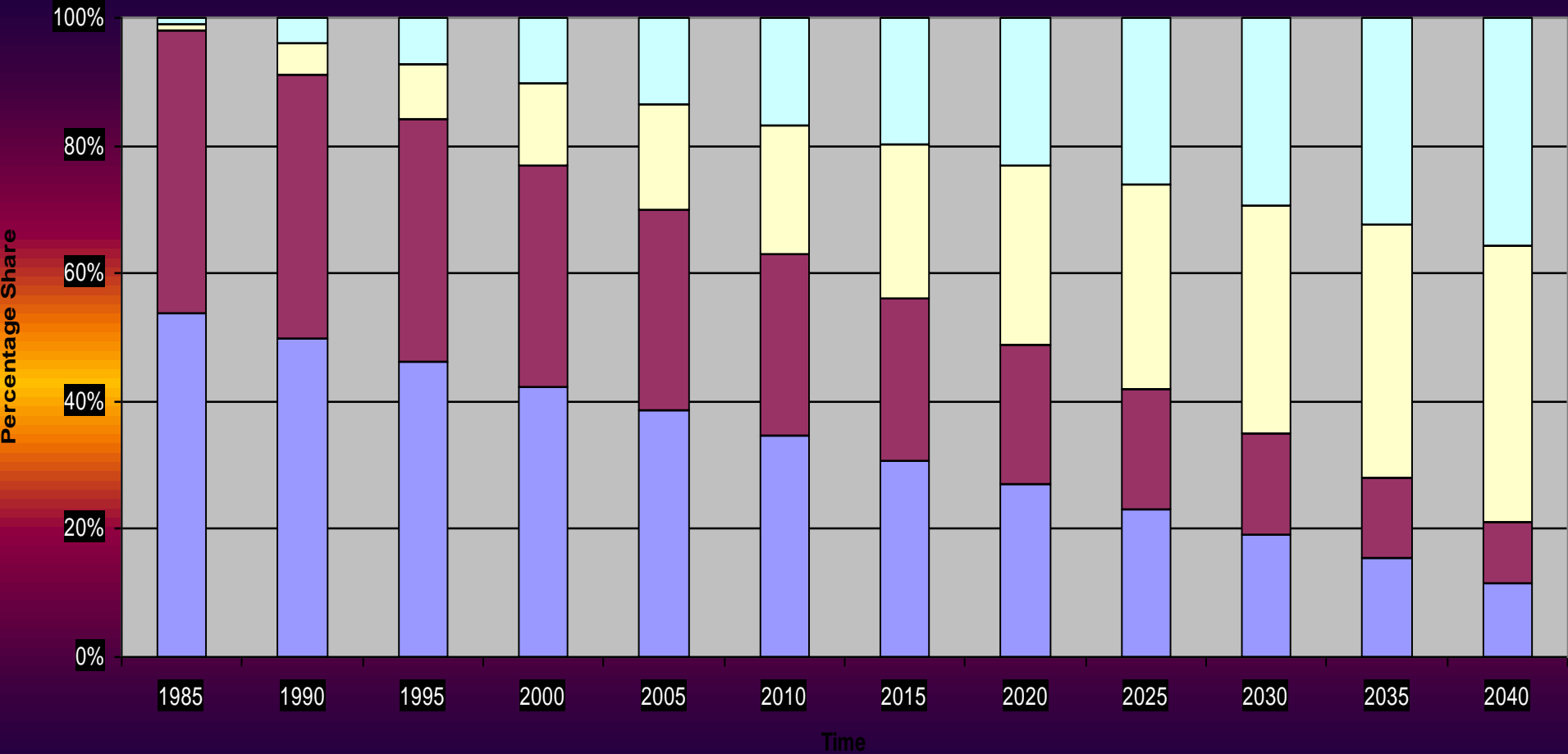
Challenge

Why?

Anticipatory Assumptions:

- A. The preponderant source of wealth is no longer industrial (tangible or intangible).
- B. The primary source of productivity increases is learning by doing, i.e. experience that allows for refinement of taste (self-knowledge)
- C. Unique creation is local, ideas are global and tangibles are cheap

Changing Composition of Output



The corporate form of organization is marginal

Why organise into production units?

Theory of the firm: Lower costs than constantly negotiating the transaction.

Practice: ownership of capital and division of labour.

Why firms are unnecessary in an economy dominated by networked unique creation: transaction costs are low, capital is your capacity to create (i.e. what you have learned), and the division of labour is intricate and spontaneous.

Experimentalism not administration

Decision making in the face of complexity, learning by doing, self-organising systems, evolutionary emergence are all processes that entail “error”, administration in both public and private sectors punishes error.

The wealthiest societies have the highest average
age

The productivity of unique creation and the quality of decision making capacity both increase, all other things being equal, with experience and better information – this is the wisdom economy – the know why society.

Network Fluidity

easy entry, exit, birth and death of networks

Wisdom

learning-by-doing, experimentation, reflection, validation of knowledge, diversity

Complexity

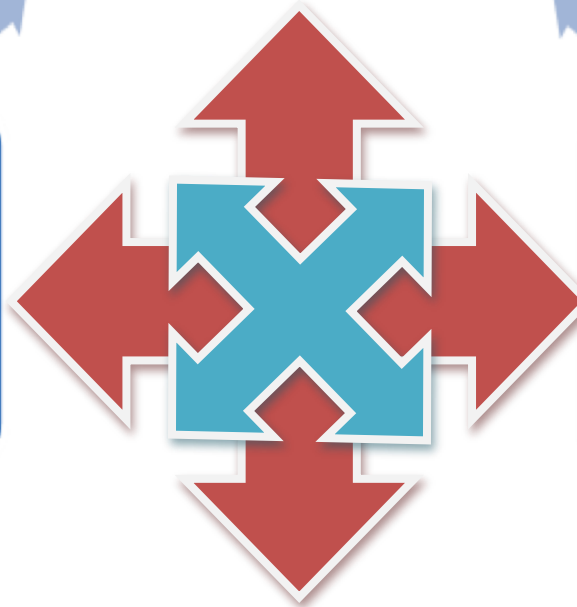
information is conserved, depth and breadth simultaneously

Creativity

ongoing discovery and refinement as part of collective intelligence (banal creativity, self-actualisation socially)

Spontaneity

risk, intentionality and systematic evaluation of opportunity without planning



Conditions for Murmuration

- Cyber-citizenship
 - Identity rights, owning privacy
- Competency banks
 - Validating what people know, mapping community assets
- New property rights & contracts
 - Transaction infrastructure for property, services and learning, intellectual property rights

Embracing Complexity

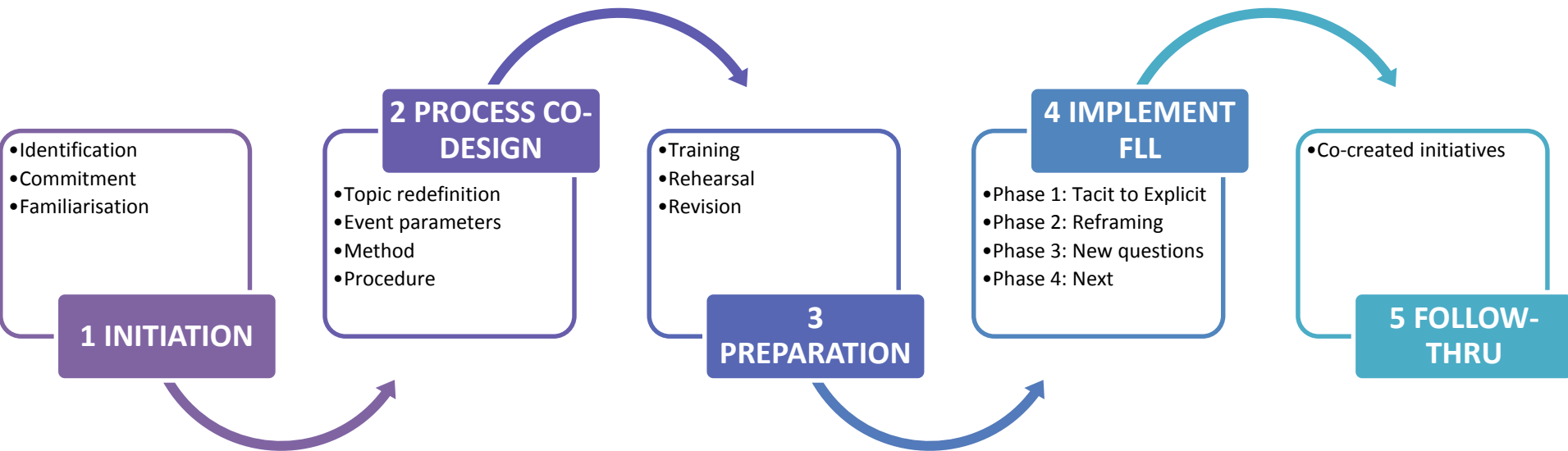


Imagining Changes in the Conditions of Change

Thank you.



Full FLL-N Prototype



Global Futures Literacy Network

- Anticipatory Systems Conferences
- Futures Literacy Centres
- UNESCO Chairs in Future Studies/FL
 - Finland, Greece, Italy, Malaysia, Netherlands, Tunisia, United Kingdom, Uruguay
 - Under development: Chile, France, Morocco, Poland, Russia, Thailand and more...
- Imagining Africa's Futures cutting-edge prototyping research project
- Joint action-research/action-learning with 'local champions' around the world (UNFCCC)


Repetition and Difference in the System Conditions of Complex Systems: Locating Agency

		Repetition of system conditions		Difference in system conditions		
Change arising from causal sources		Local repetition	General repetition	Incremental difference internal	Novel difference internal	Non-contiguous external
Non-volitional causal factors (no conscious agency)	Inertia	<h2 style="margin: 0;">Not much to be done about all of this.</h2>				
	Reflex adaptation					
	Chance					
	Ignorance					
Volitional causal factors (conscious agency)	Preservation through continuity	Success in achieving stasis without change		Endogenous change – within system reform to maintain system conditions		Co-existence
	Preservation through discontinuity	Success in achieving stasis with change				Disruptive coexistence
	Exploiting novelty					Transformation

1 Sensing and making-sense of Futures Literacy

Towards a Futures Literacy
Framework (FLF)

Riel Miller

Discipline of Anticipation (DoA) (Anticipatory Systems (AS))				Epistemological (Knowledge Creation Processes (KCP))	
	System	Purpose	Type	General-Scalable (GS) (statistics, common denominators, universals, repetition)	Specific – Unique (SU) (novelty, ephemerality, spontaneity, improvisation, difference)
O n t o l o g i c a l	Conscious Closed	Anticipation for-the-Future (AfF)	AS 1 Preparation & AS 2 Planning 	AA1	AA2
	Conscious semi-closed/open	Anticipation for-the-Future (AfF)		AA3	AA4
		Anticipation for-emergence (AfE)	AS 3 Novelty (Not-doing)	AA5	AA6
Non-Conscious Anticipation				Anticipatory Assumptions in biology, physics, mathematics, sociology, etc.	

Futures Studies

Figure 1.1 A framework for describing and researching Futures Literacy

- AA1: Forecasting
- AA2: 'Destiny'
- AA3: Creative reform
- AA4: Self-improvement
- AA5: Strategic novelty
- AA6: Wisdom and “not-doing”

Discipline of Anticipation (DoA) (Anticipatory Systems (AS))		Epistemological (Knowledge Creation Processes (KCP))	
		General-Scalable (GS) (statistics, common denominators, universals, repetition)	Specific-Unique (SU) (novelty, ephemerality, spontaneity, improvisation, difference)
	Purpose	Type/System	
Ontological	Anticipation for-the-Future (AfF)	AS 1 Preparation & AS 2 Planning/ Closed	AA1 FLL-F
		AS 1 Preparation & AS 2 Planning/ Semi-closed	AA3 FLL-I
	Anticipation for-emergence (AfE)	AS 3 Novelty/ Semi-open	AA5
			AA2 AA4 FLL-N AA6 FLL

Figure 1.2 Mapping different implementations of the FLL on the FLF

“The purpose of
looking at the
future is to disturb
the present.”

Gaston Berger