Fourth International Conference on Future Education

FUTURE EDUCATION BELGRADE 2019

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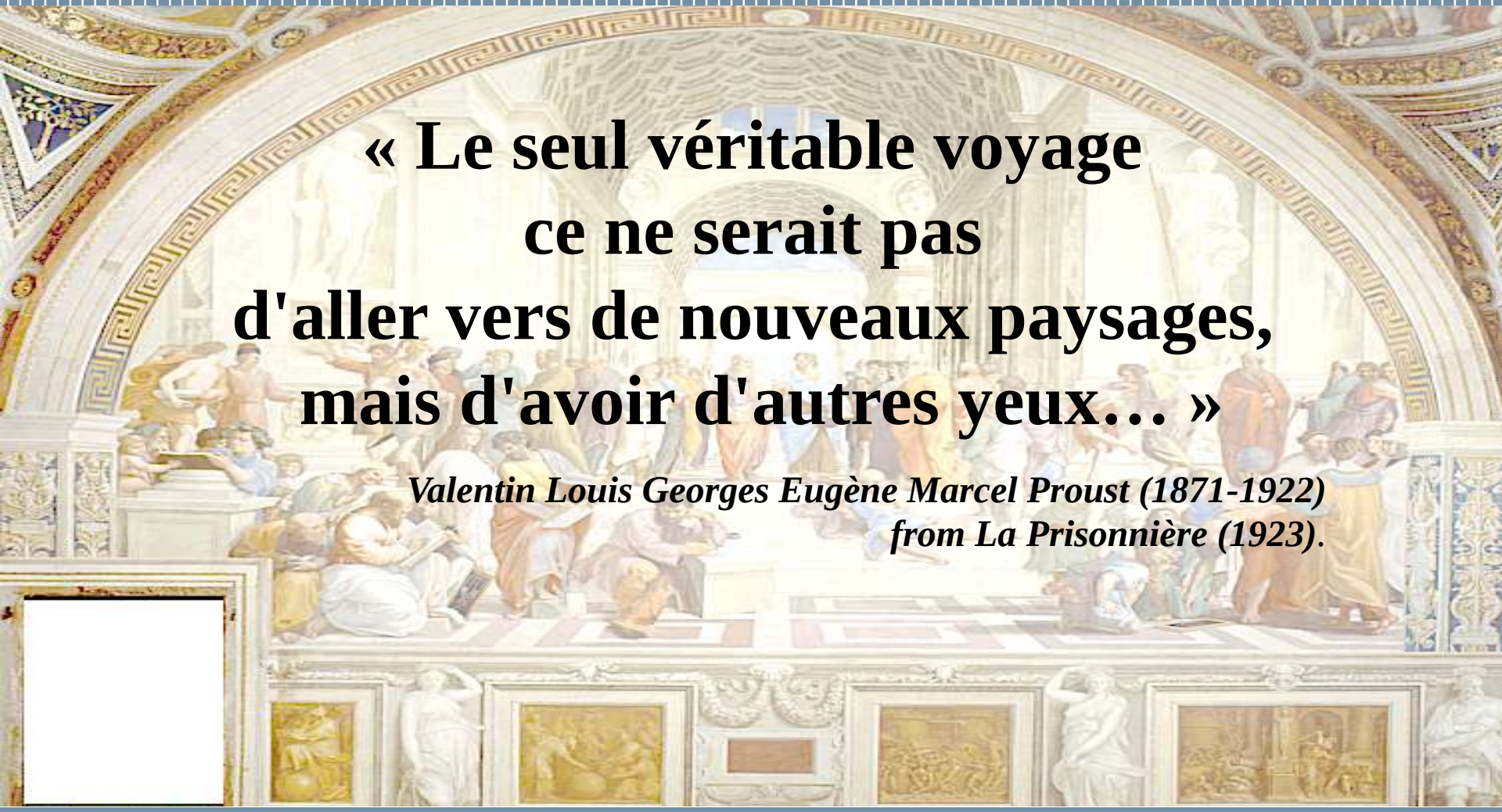
Impact of Digital Transformation on Creative Leadership Skills

Rodolfo A. Fiorini



« Le seul véritable voyage
ce ne serait pas
d'aller vers de nouveaux paysages,
mais d'avoir d'autres yeux… »

Valentin Louis Georges Eugène Marcel Proust (1871-1922)
from La Prisonnière (1923).

Presentation Outline

1. Digital Transformation (12)

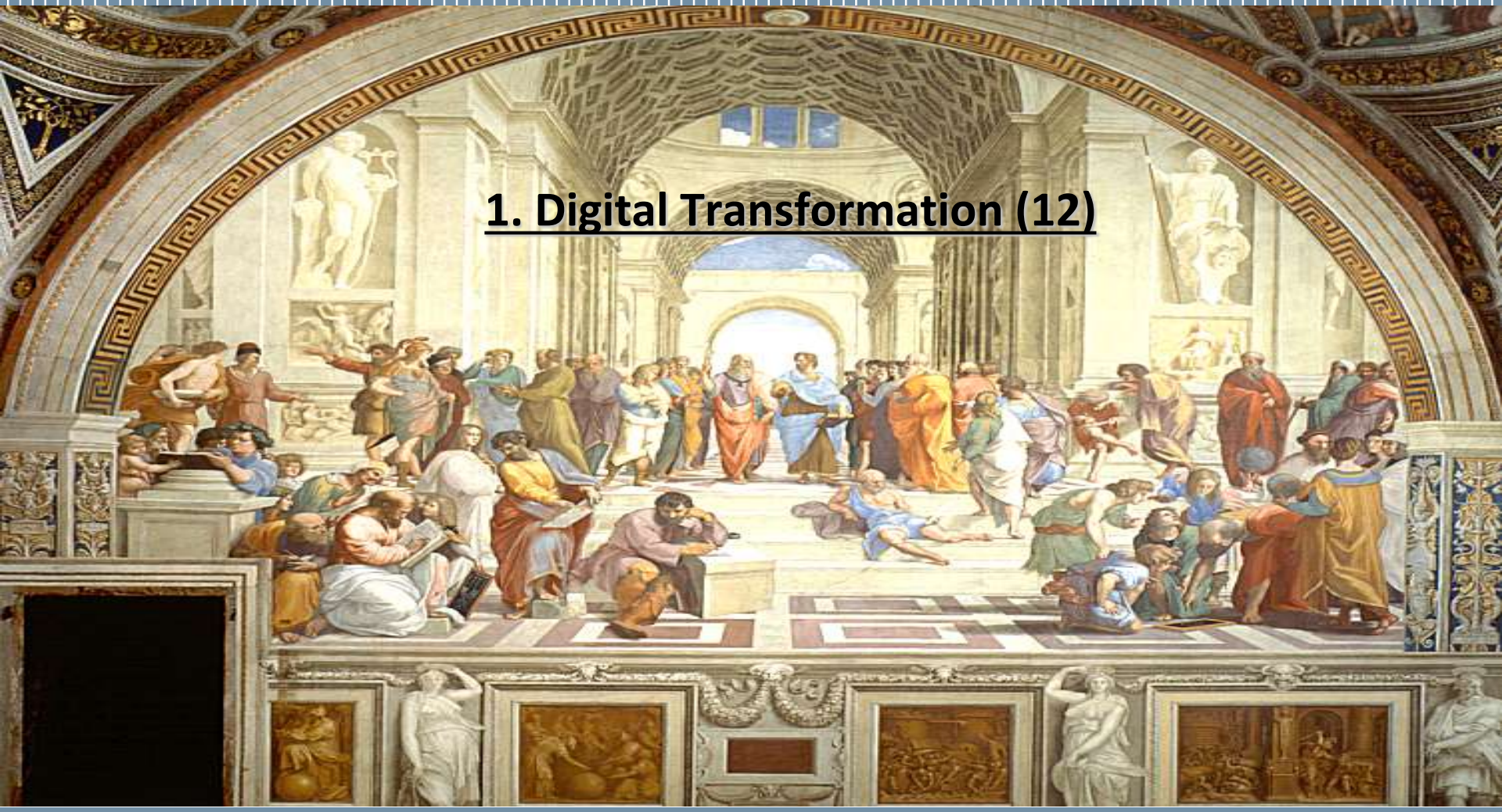
2. Systems Transformation (08)

3. Creative Leadership Skills (10)

4. Disruptive Impact on Creativity Skills (14)

5. Conclusion (07)

Impact of Digital Transformation on Creative Leadership Skills



1. Digital Transformation (12)

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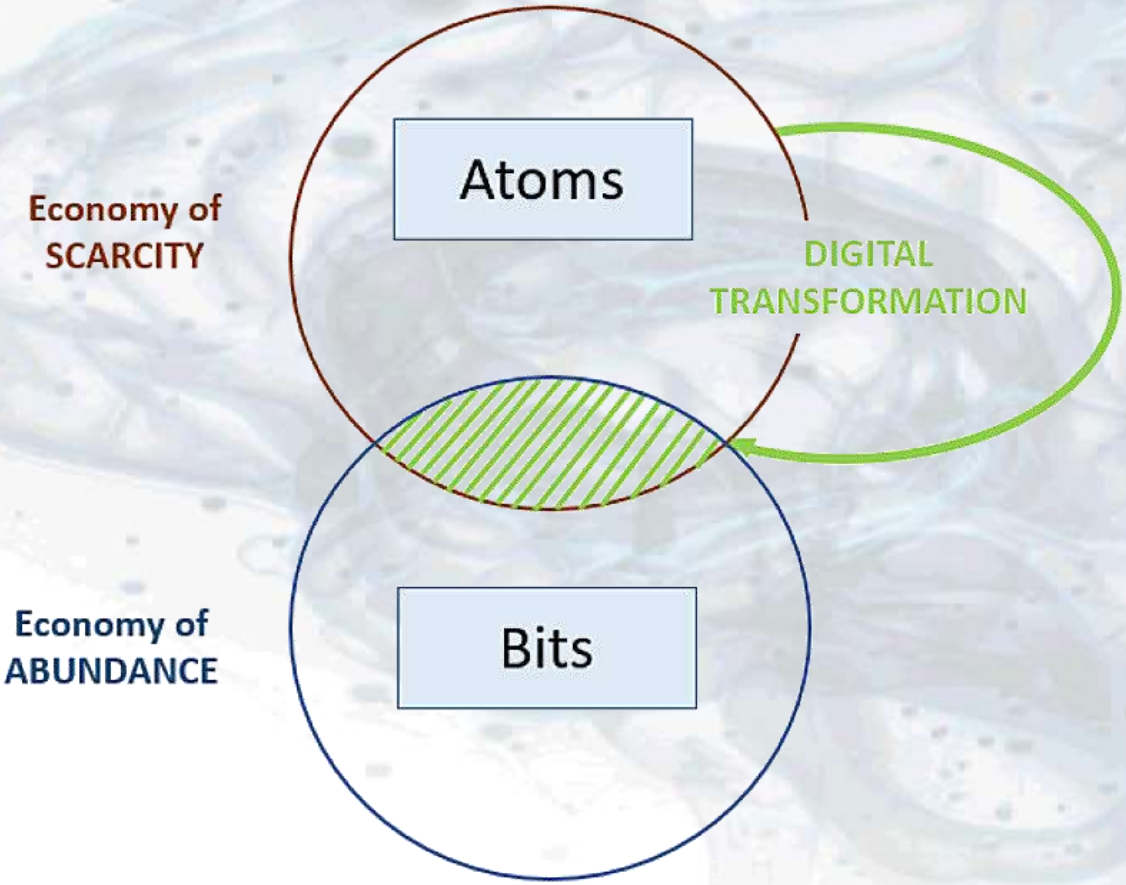
From Economy of SCARCITY To Economy of ABUNDANCE



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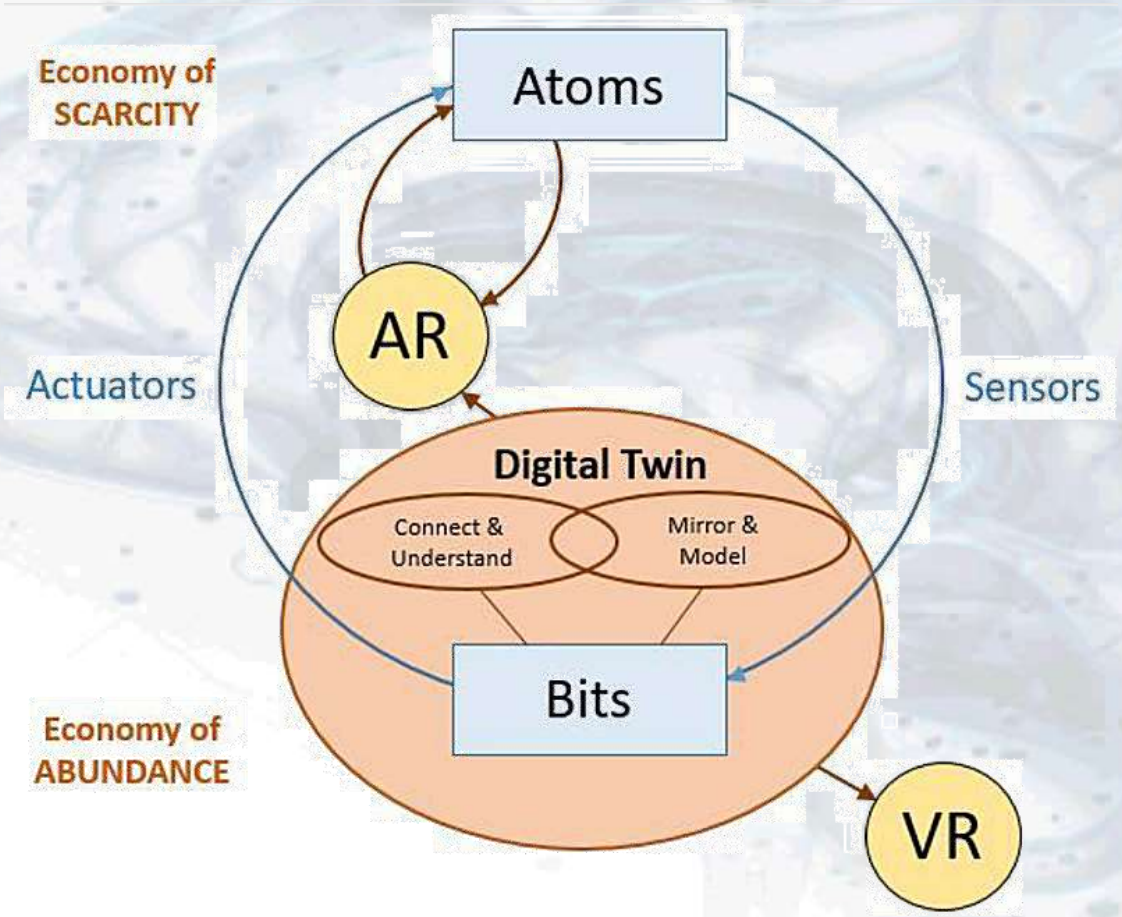
From Economy of SCARCITY To Economy of ABUNDANCE



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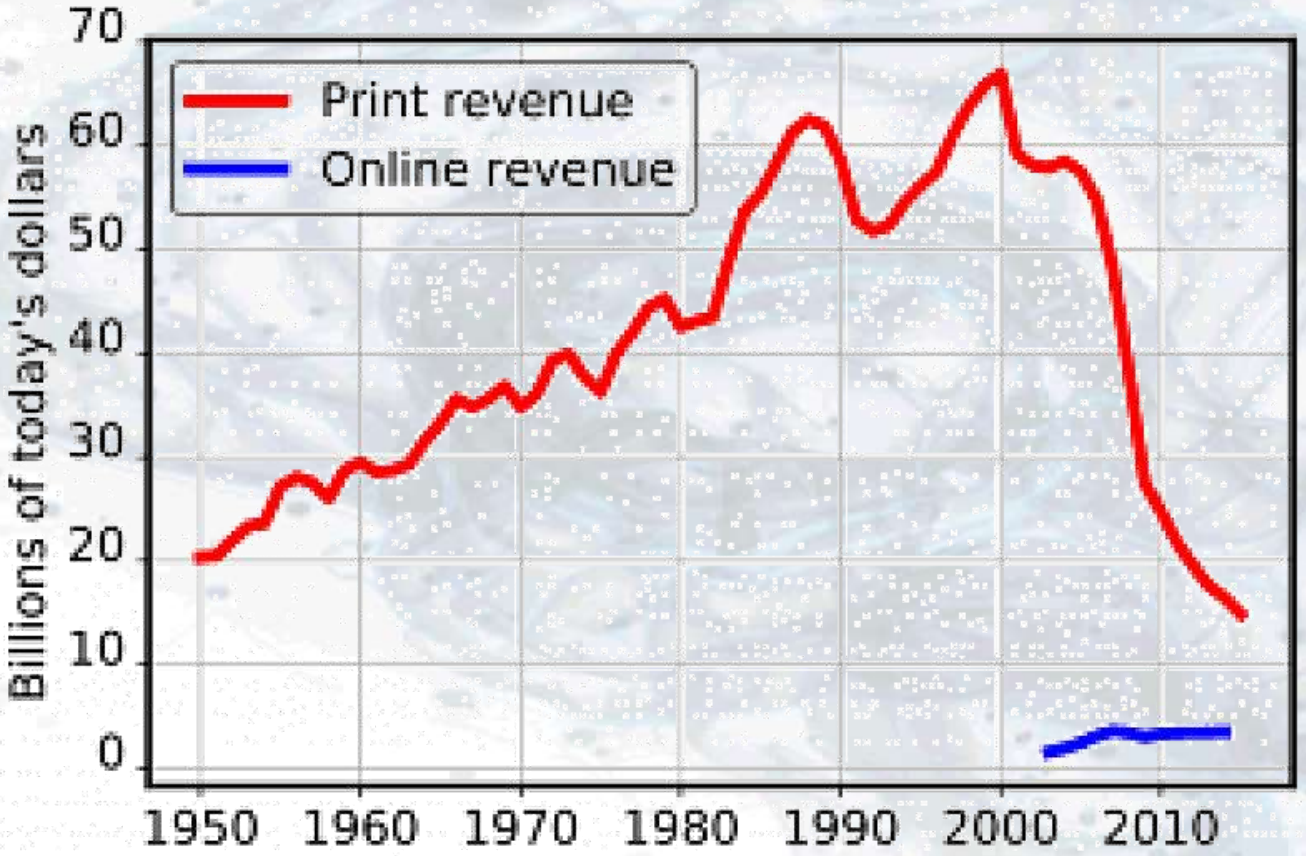
Digital Transformation Market Impact (Newspaper)



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Digital Transformation Market Impact (Digital Cameras)

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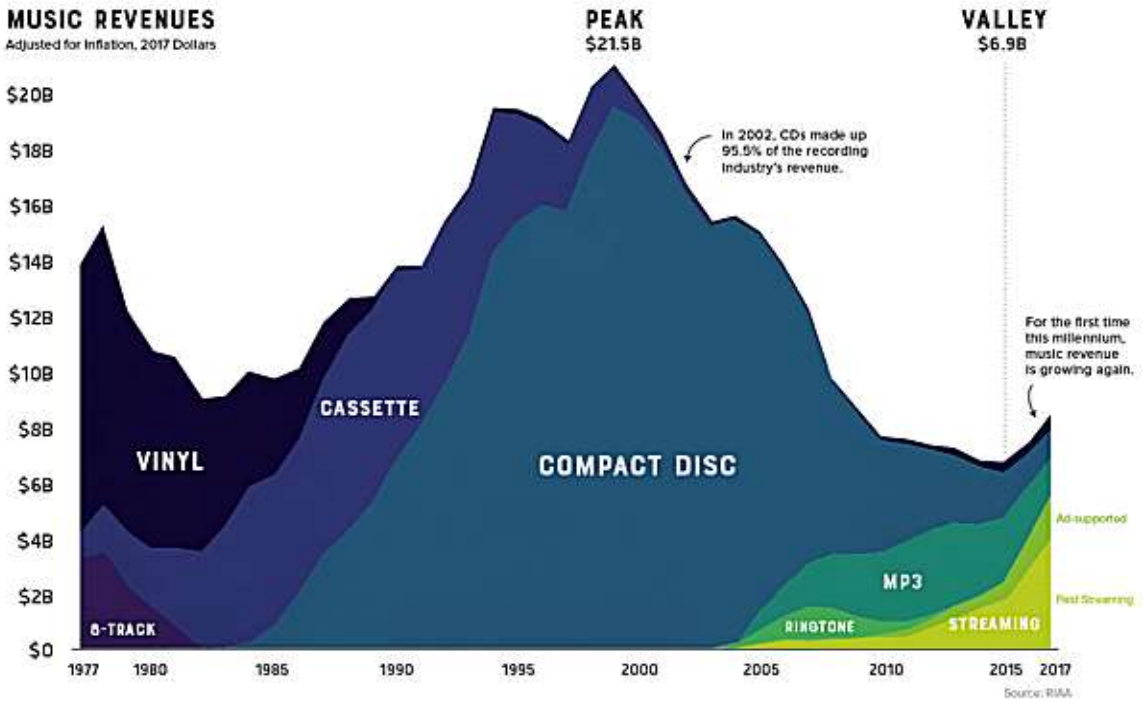
Digital Transformation Market Impact (Music)

- Offer vs Demand
- Scarcity is Gold!
- Abundance is commodity!
- The Market Value **decreases**



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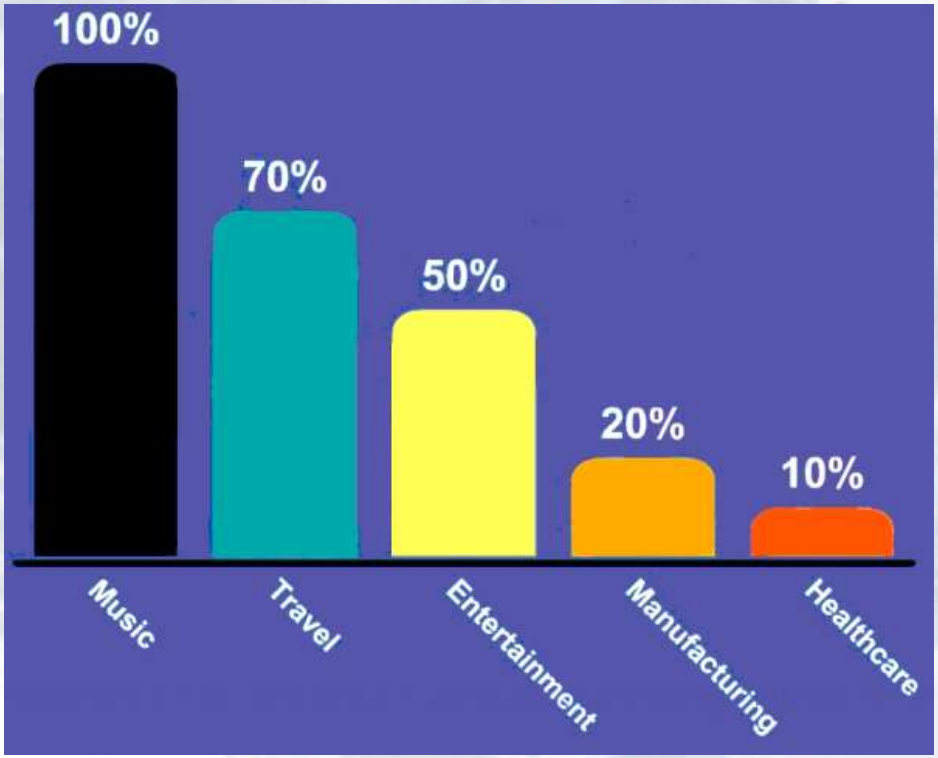
Digital Transformation Current Markets

- Different penetration
  - by sector
  - by geography



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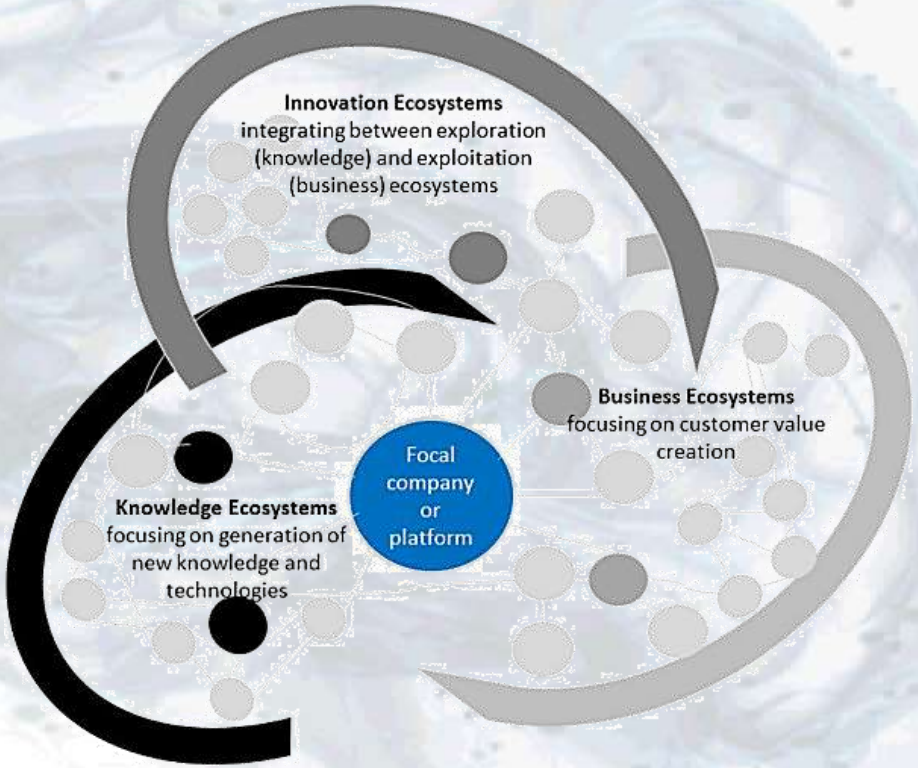
Ecosystem Growth

Ecosystem Creation
- seeding
- attracting
- supporting

Ecosystem type
- ambient based
- platform centered
- product centered

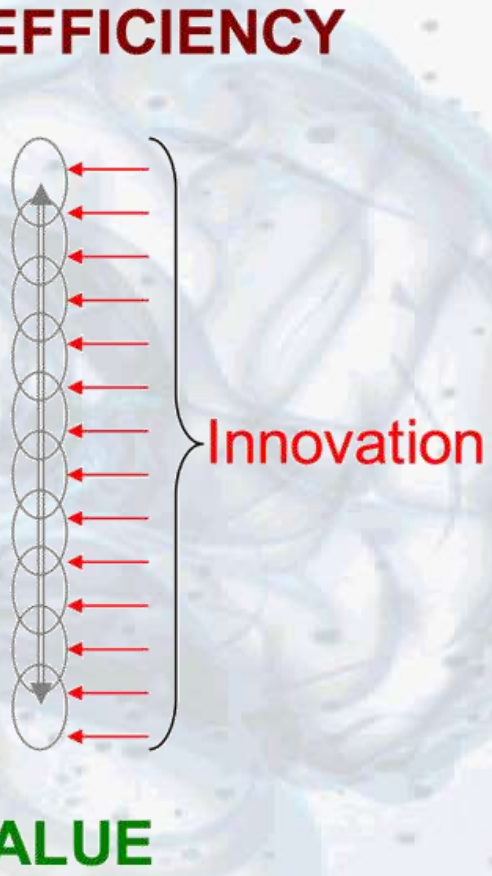


https://vttserviceodyssey.com/2015/09/02/the-rules-of-the-game-how-to-survive-and-thrive-in-business-innovation-and-knowledge-ecosystems/

Value Chain Evolution

Since XVIII Century

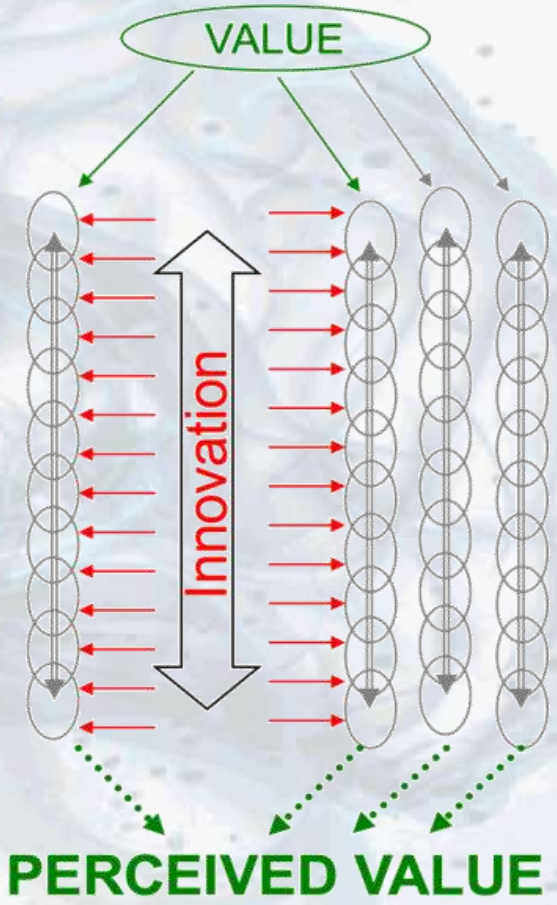
- What is a Value Chain?
- Why and how does it evolve?
- Little incentive to evolution
- Efficiency vs Value



Value Chain Evolution

Since the Turn of this Century

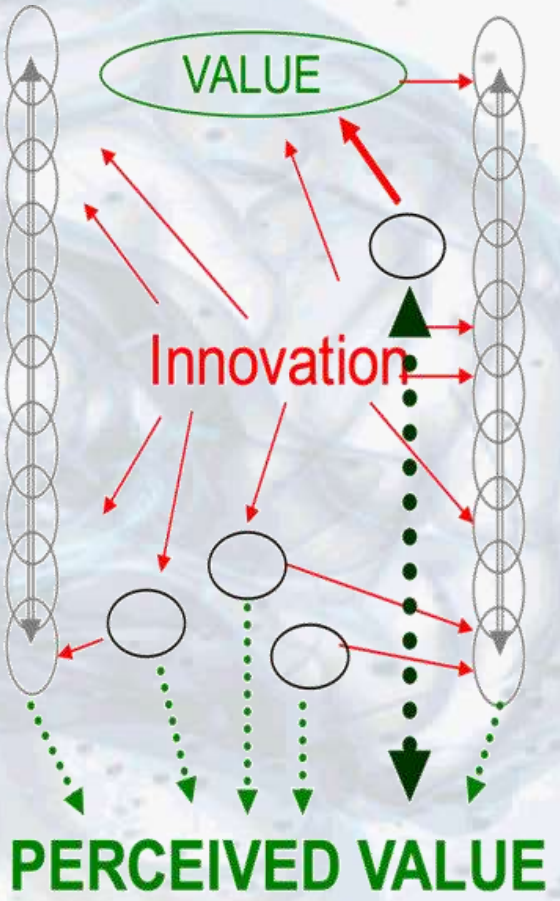
- Concurrent Innovation
- Strong Deployment Control
- Shared Control on Root
- Scale Advantage
- Competition is on Price



Value Chain Evolution

Now and Tomorrow

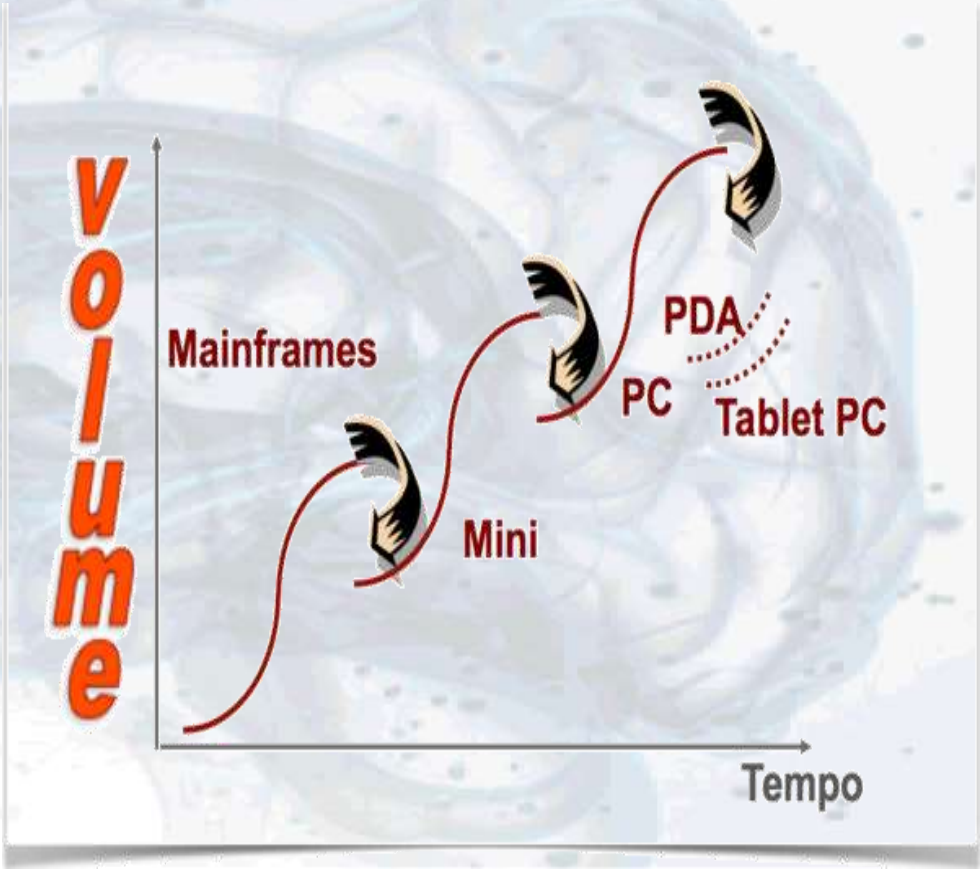
- Out of field Innovation
- Marginal/No Deployment Control
- Mashed Value Creation
- Intermediation Advantage
- Competition is on Biz Models



Macro Change Example

Computer Market

- dramatic cost reduction expanded the market
- from Mainframes to Mini led to the disappearance of Univac, Bull, Siemens …
- from Mini to PC distroyed DEC, Wang …
- post-PC era: crises hit IBM, HP, Dell,…



Take Away

- Value Chains are macro processes
- Competition happens within and across Value Chains
- Competition decreases margins
- Competition shift efficiency benefit to the end customer
- Disruption changes the value chain

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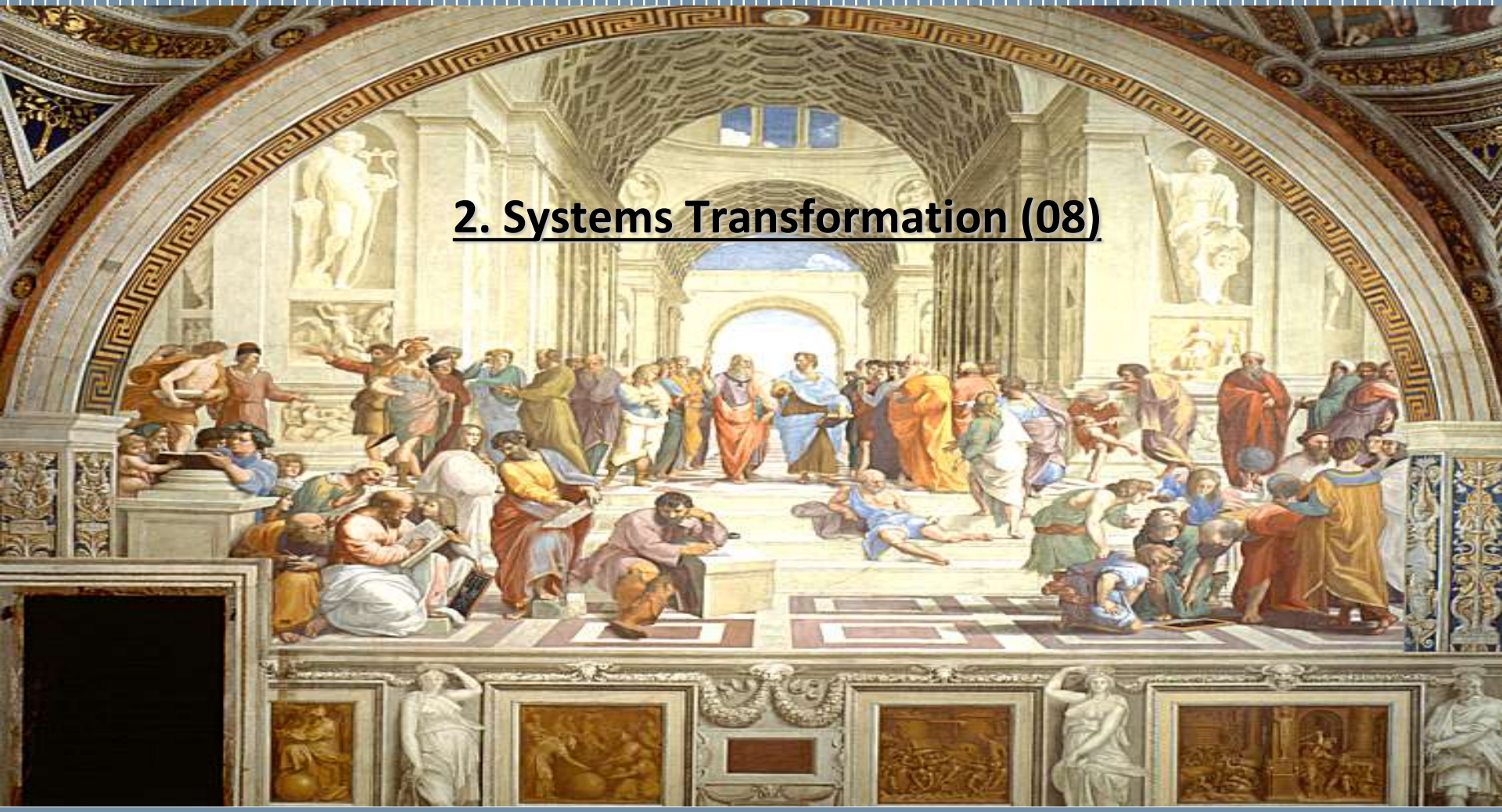

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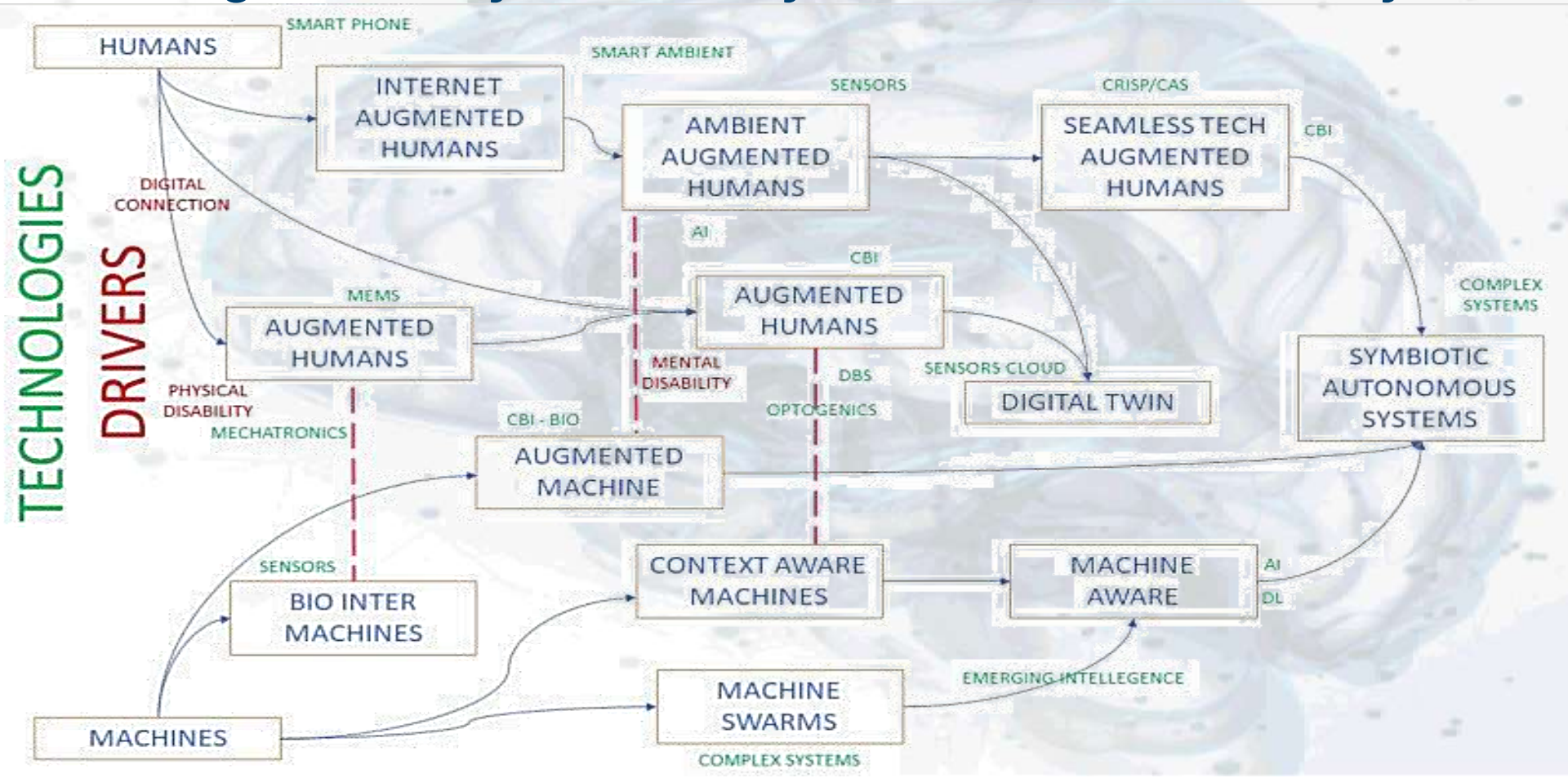
From Augmented Systems to Symbiotic Autonomous Systems



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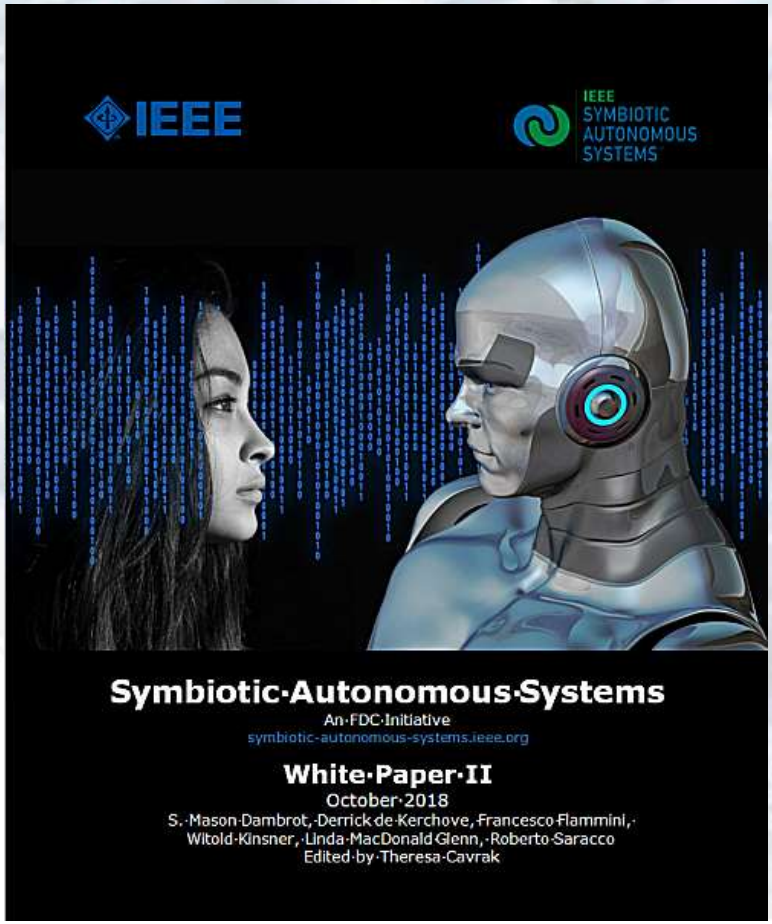
IEEE Symbiotic Autonomous Systems Initiative



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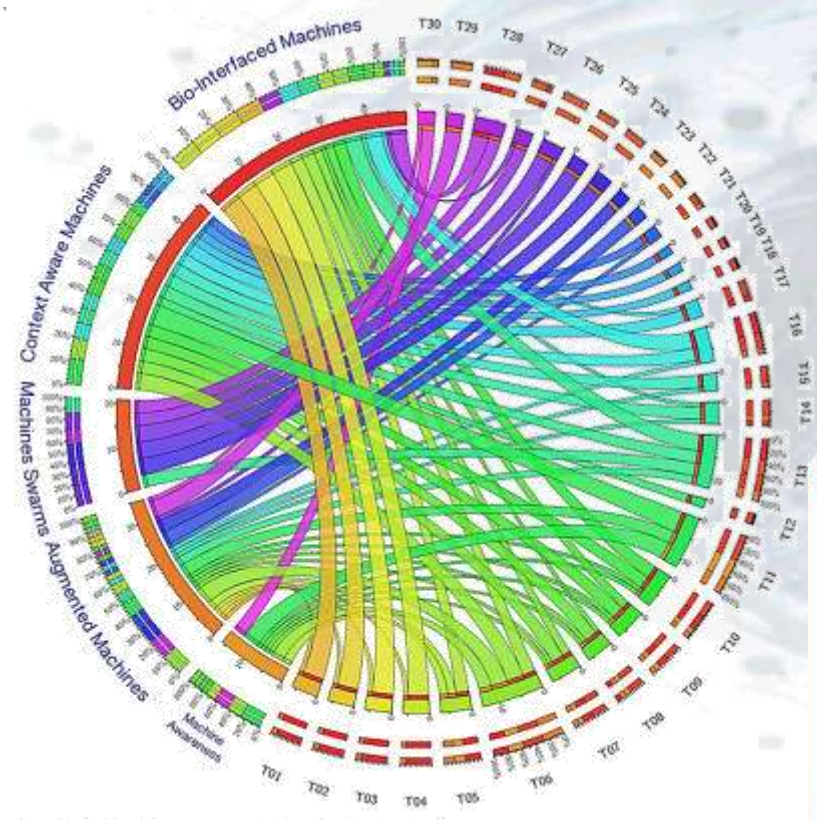
Augmented Machines Technologies



T01	Bio-nanotechnologies	T11	AGI	T21	Biometric Clues Detection
T02	Nano-biotechnologies	T12	LIDAR	T22	Affective Computing
T03	Optoelectronics	T13	Sensors	T23	Self-Replication
T04	Optogenetics	T14	Image Recognition Understanding	T24	Small Worlds
T05	Signal Processing	T15	3D Recognition	T25	Complex Systems
T06	Artificial Intelligence	T16	Pattern Recognition/Understanding	T26	Self-Orchestration
T07	Deep Neural Networks	T17	Intention Recognition	T27	Low-Latency Communications, 5G
T08	Recurrent Neural Networks	T18	Sound Signature	T28	LPWAN
T09	Convolutional Neural Networks	T19	Empathic Machines	T29	Autonomous Machines
T10	Machine Learning	T20	Social Robots	T30	Sentient Machines

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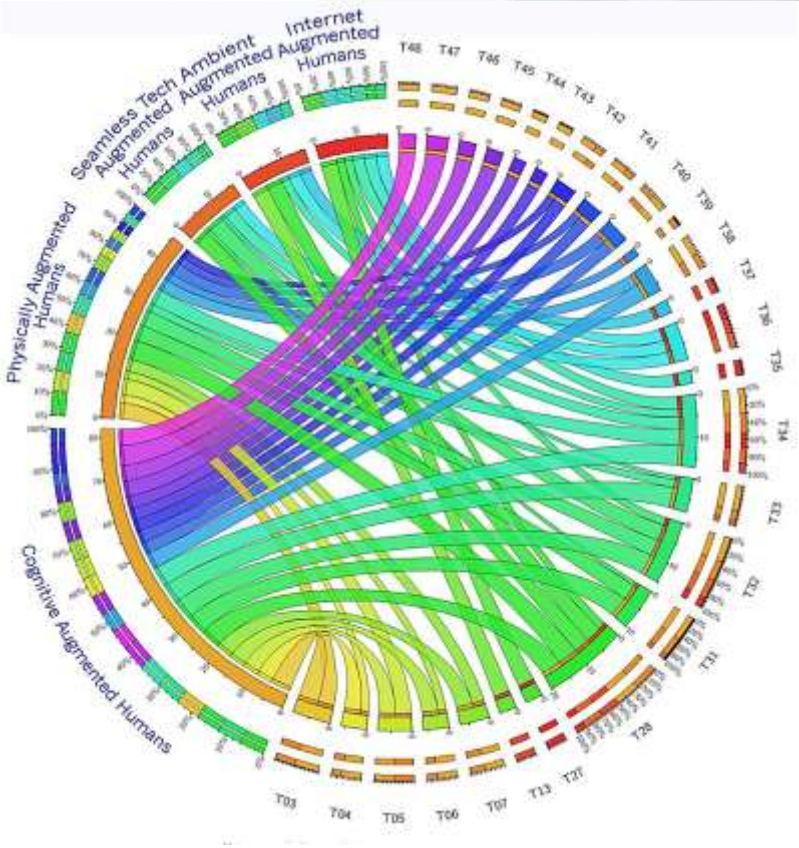
Augmented Humans Technologies



T03	Optoelectronics	T32	Smart Materials for long term Implants	T41	DNA modification
T04	Optogenetics	T33	Neuroimaging	T42	RNA modification
T05	Signal Processing	T34	BCI	T43	Deep Brain Stimulation
T06	Artificial Intelligence	T35	Virtual Reality	T44	Transcranial magnetic stimulation
T07	Deep Neural Networks	T36	Haptic	T45	Cognitive prosthetics
T13	Sensors	T37	Smart Materials	T46	Neural Engineering System Design
T27	Low-Latency Communications, 5G	T38	Implantable chips	T47	Smartphones
T28	LPWAN	T39	Exoskeletons	T48	Symbiotic Intelligence
T31	Fluorescent proteins	T40	CRISPR/Cas9		

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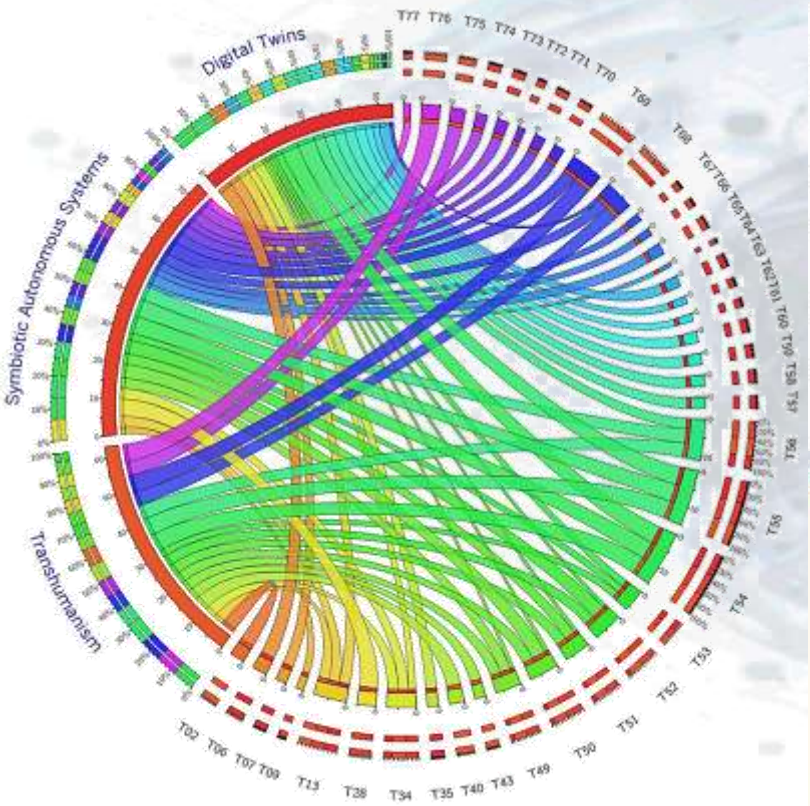
Symbioses Fostering Technologies



T02	Nano-biotechnologies	T52	Symbiotic Life Design	T65	Shared Intelligence
T06	Artificial Intelligence	T53	5G-6G	T66	Augmented Data Discovery
T07	Deep Neural Networks	T54	Security	T67	Prescriptive Analytics
T09	Convolutional Neural Networks	T55	Cybersecurity	T68	BrainInternet
T13	Sensors	T56	Cyber-physical Security	T69	Artificial Human Super Intelligence
T28	LPWAN	T57	Virtual Twin	T70	Conversational Analytics
T34	BCI	T58	IoT	T71	Embedded Analytics
T35	Virtual Reality	T59	Sensors Network	T72	IoT Edge Analytics
T40	CRISPR/Cas9	T60	Sensors Cloud	T73	Advanced Anomaly Detection
T43	Deep Brain Stimulation	T61	Avatar	T74	Citizens Data Science
T49	Neuralink	T62	Real Time Simulation & Data analysis	T75	Artificial Super Intelligence ASI
T50	Nanobots	T63	Augmented Reality	T76	Genomic Engineering
T51	Microbots	T64	Counterfactual quantum communications	T77	Human in the loop - crowdsourcing

The Symbiotic Relationship With Tools Leads To HUMANS 2.0 and Beyond

Augmented Humans

Humans 2.0

Transhumanism

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Seven Grand Challenges

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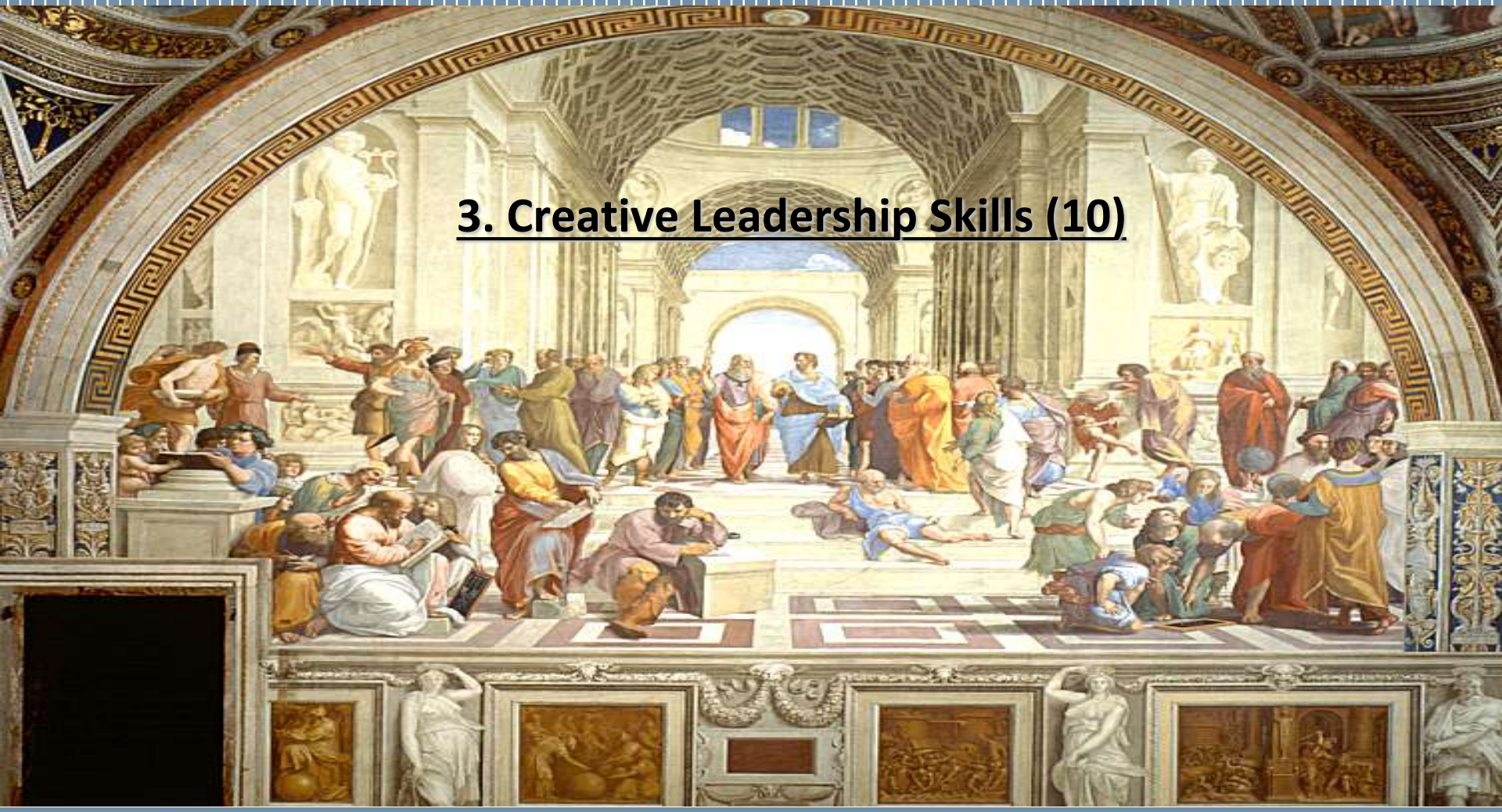

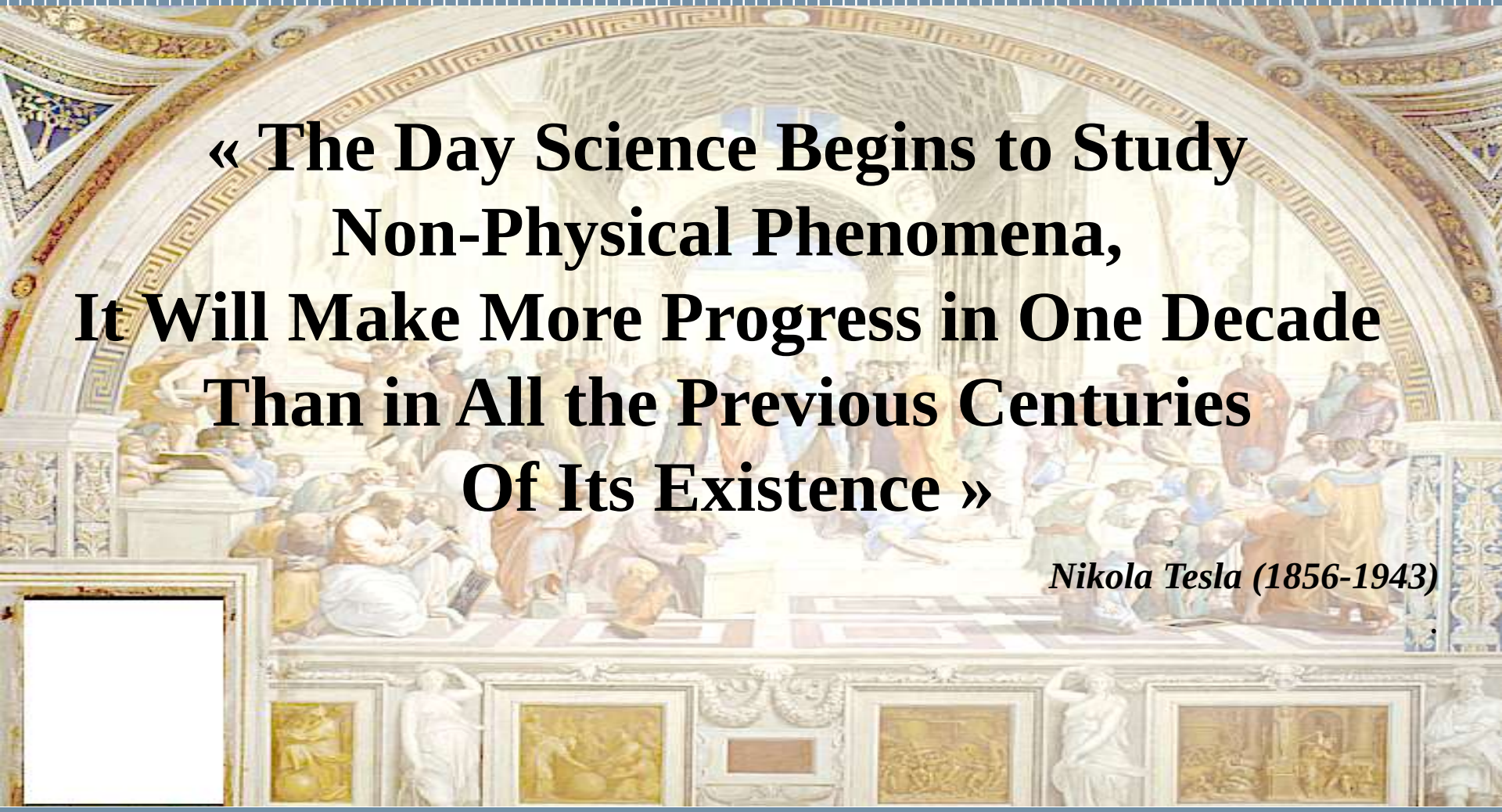

« The Day Science Begins to Study Non-Physical Phenomena, It Will Make More Progress in One Decade Than in All the Previous Centuries Of Its Existence »

Nikola Tesla (1856-1943)

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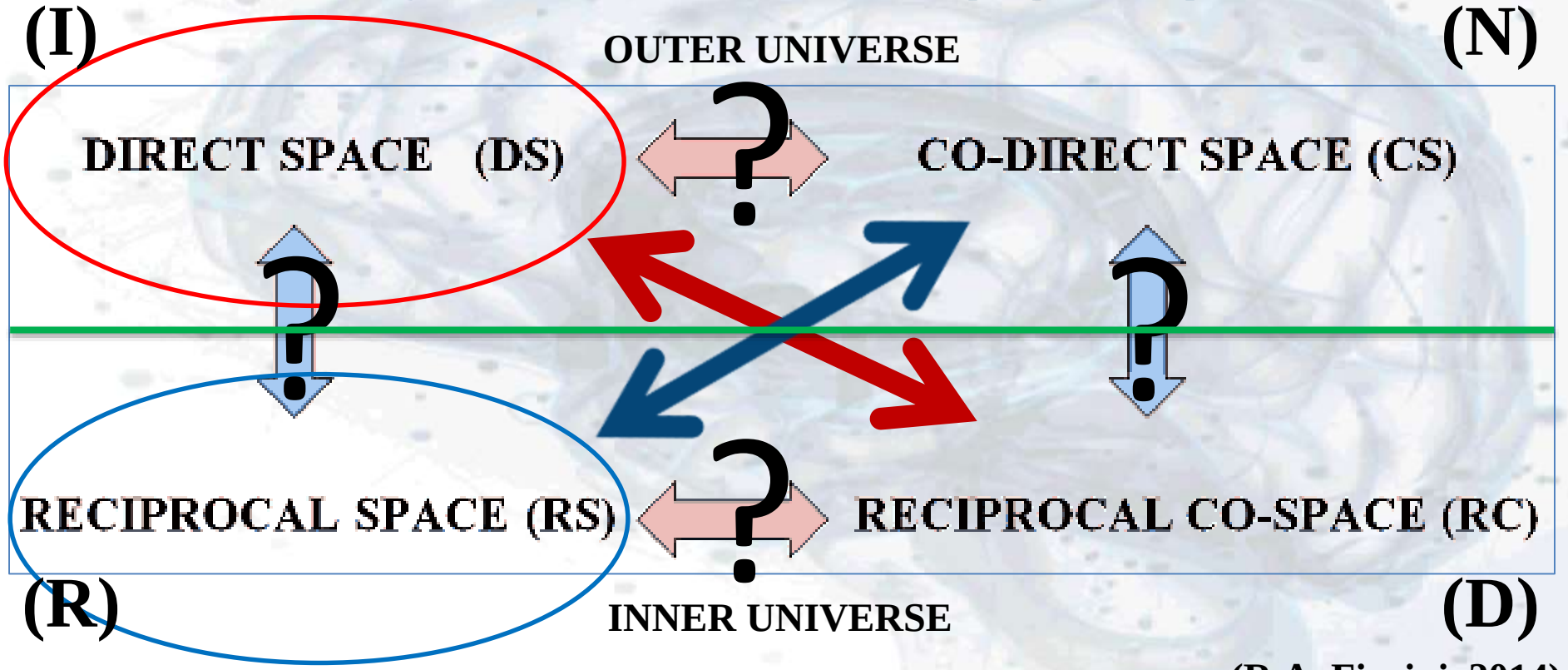
INNER vs. OUTER UNIVERSE (IOU) Mapping By KLEIN Four-Group (CICT)



(R.A. Fiorini, 2014)

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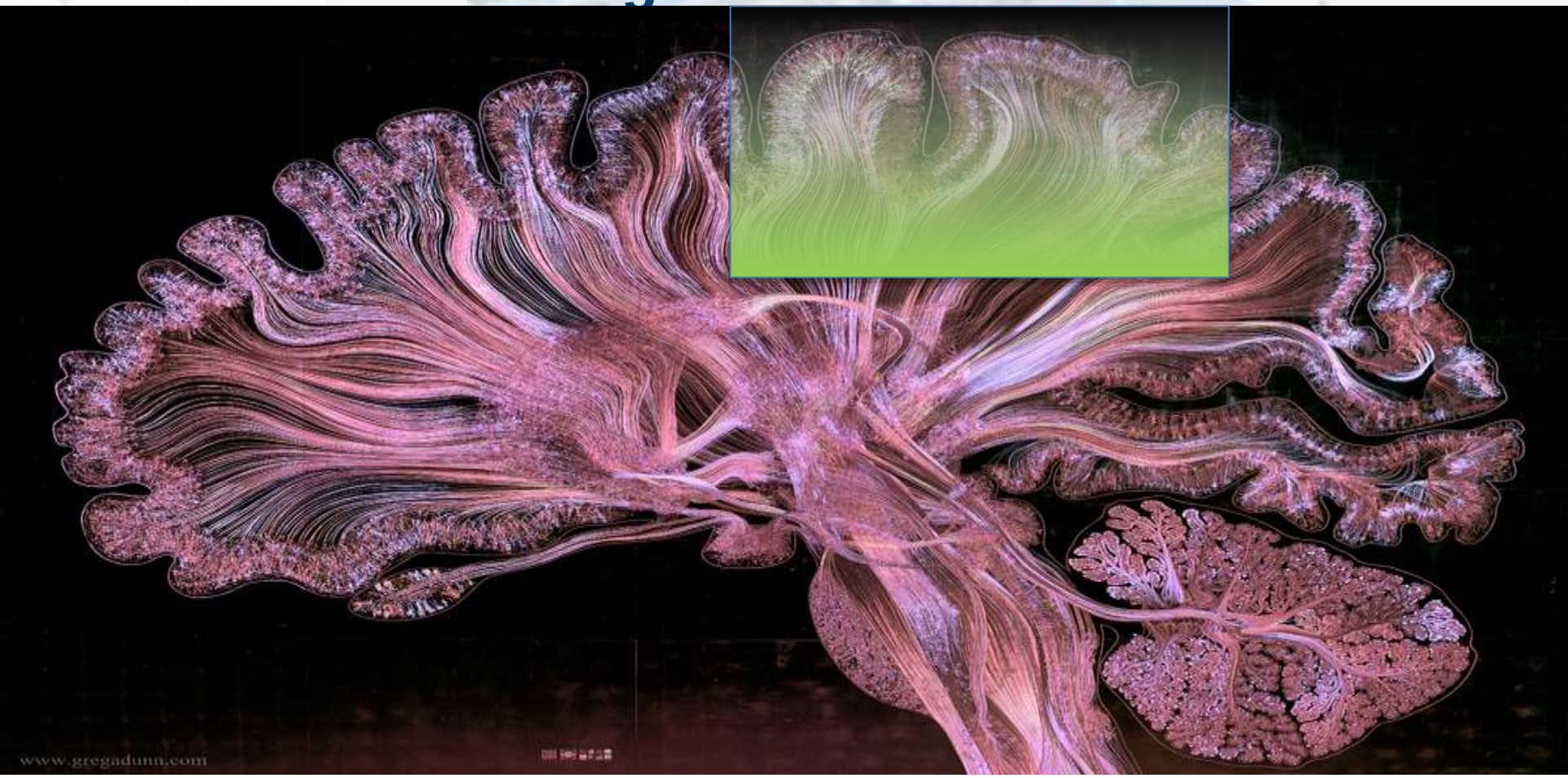
Continuous Learning From Outer to Inner Universe



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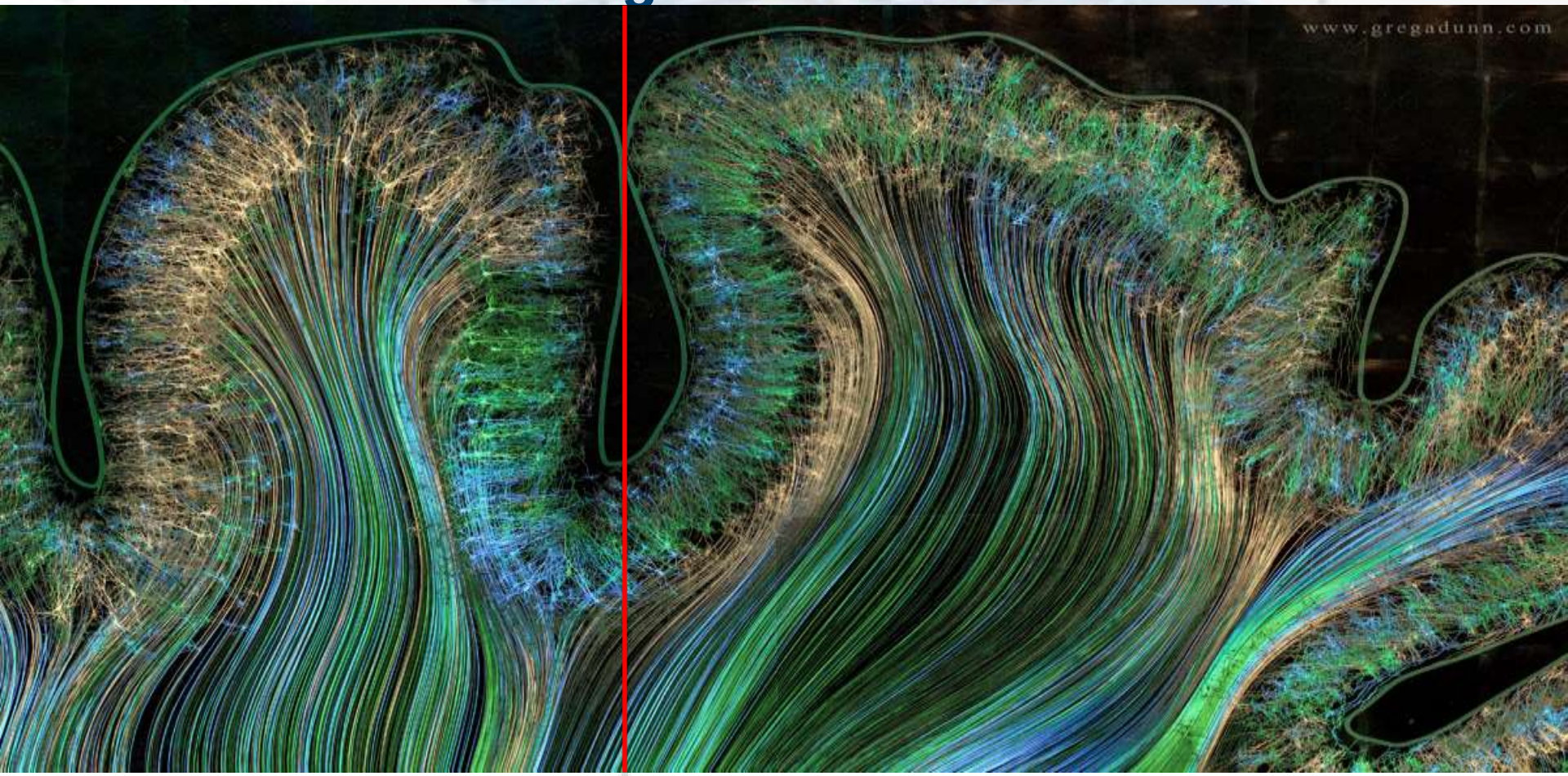
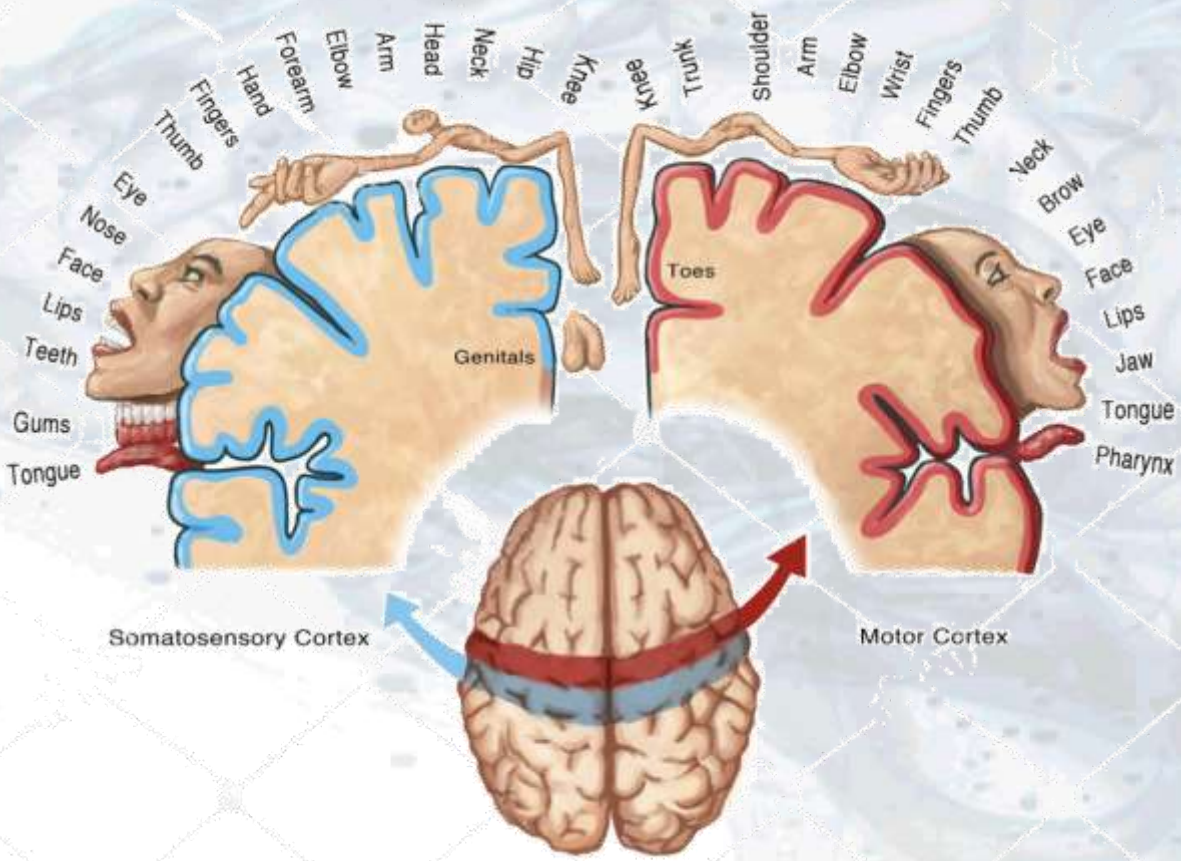
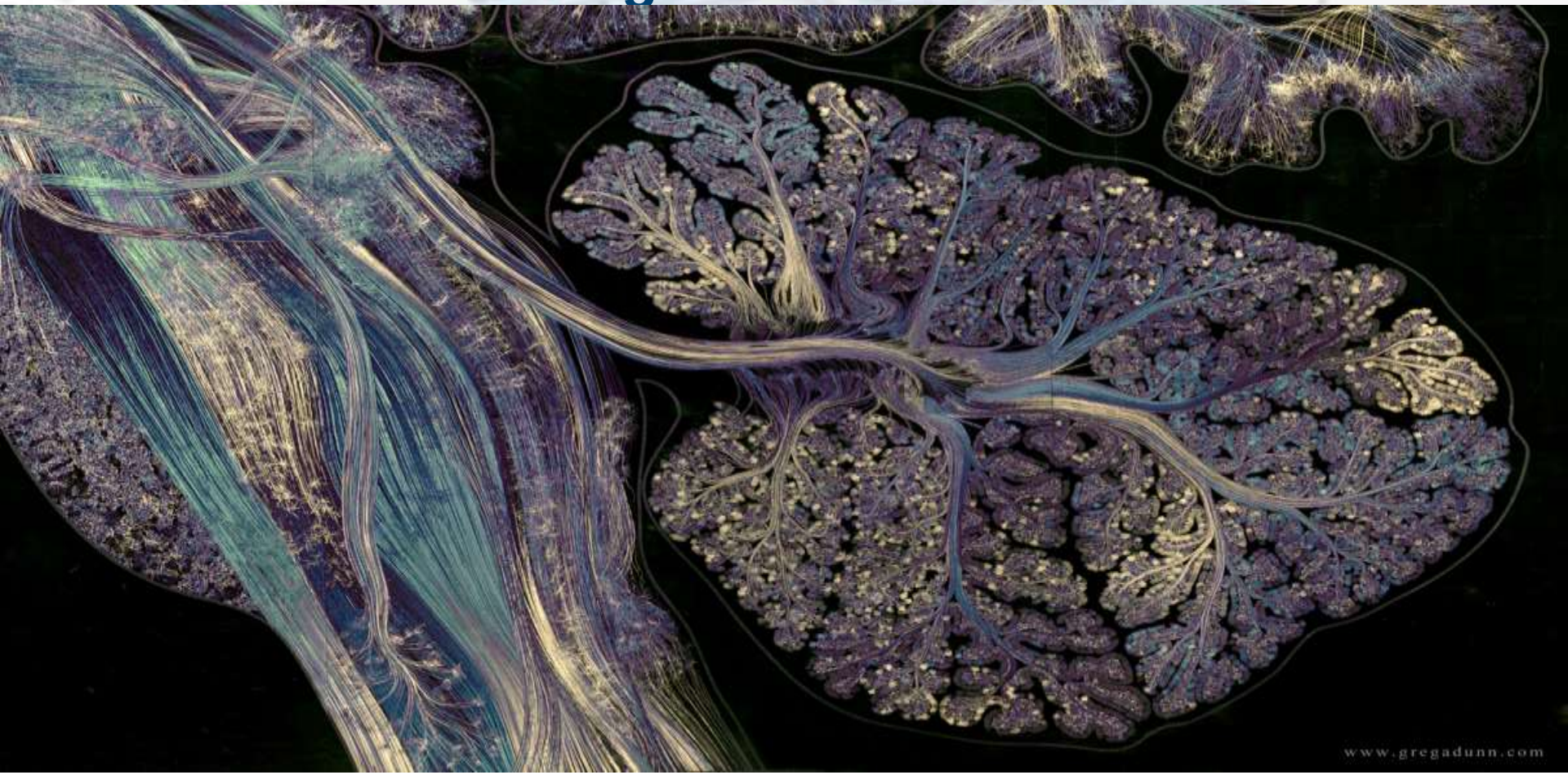
Continuous Learning From Outer to Inner Universe

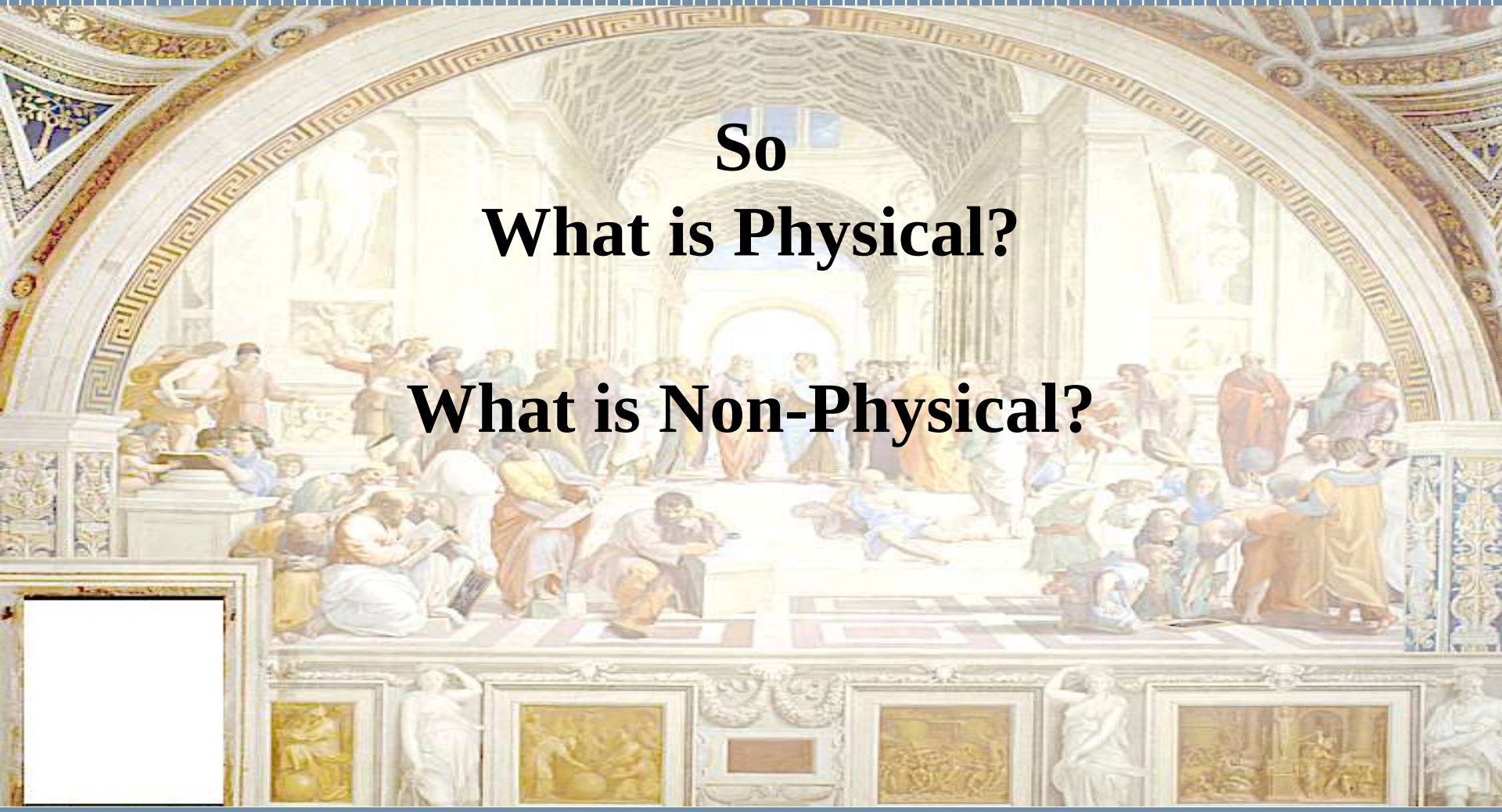


Homunculus (Penfield & Rasmussen, 1950)



Continuous Learning From Outer to Inner Universe




So
What is Physical?
What is Non-Physical?

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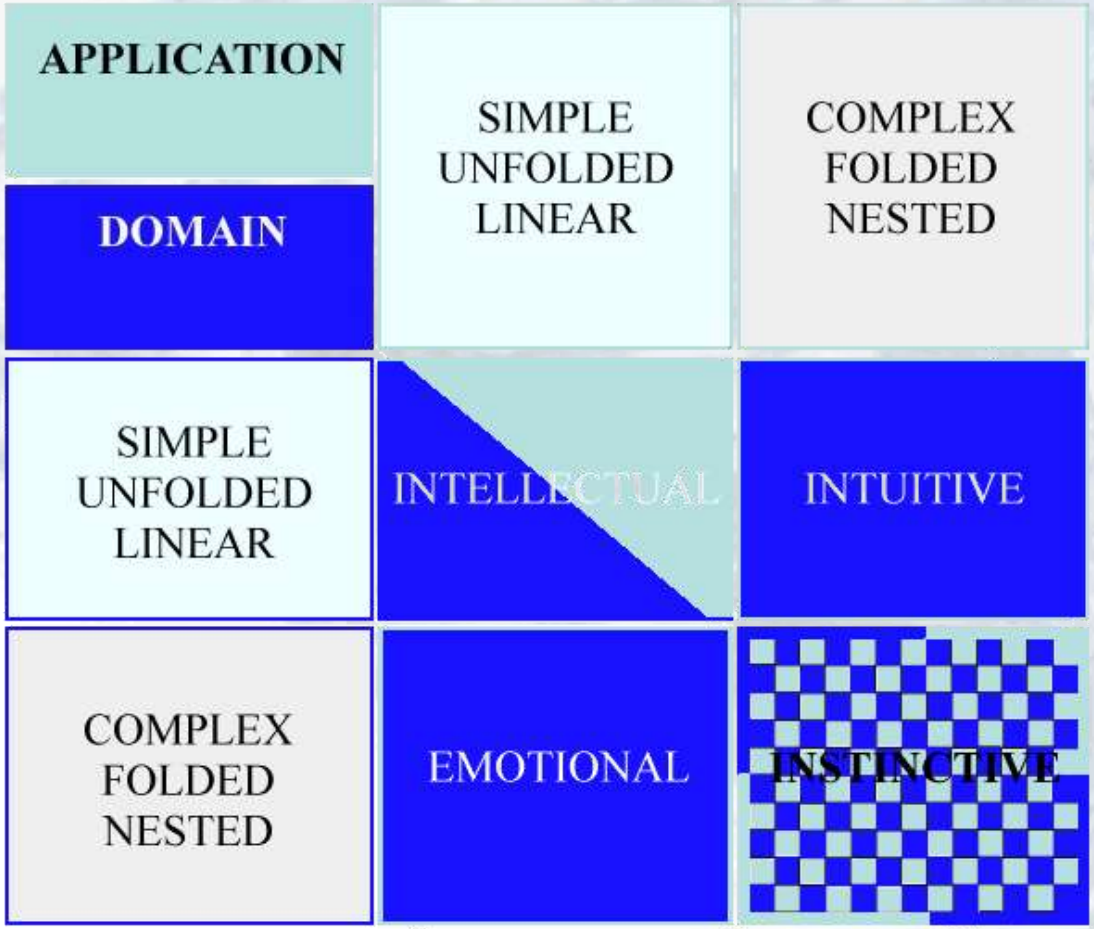
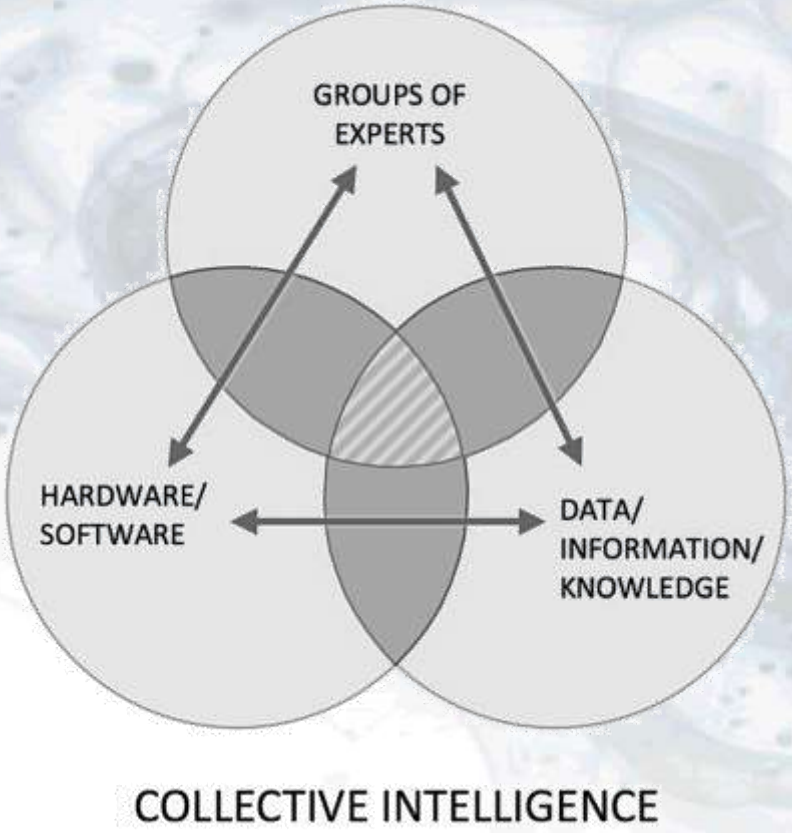
Living Human Brain Four-Quadrant Scheme (FQS)

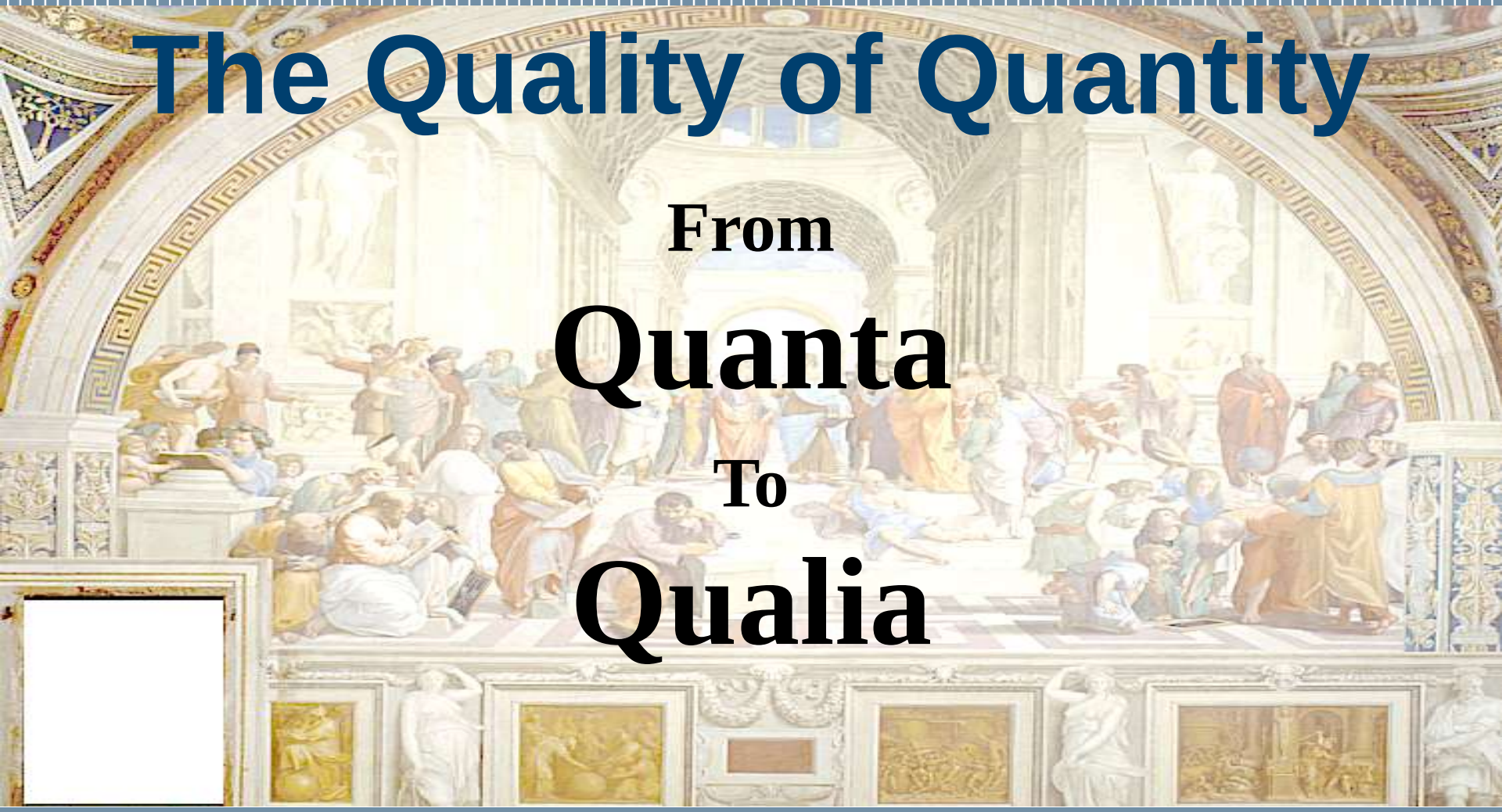


R. A. Fiorini 2013

Collective Intelligence to Overcome Individual Limitations for Common Wellbeing



The Quality of Quantity



From

Quanta

To

Qualia

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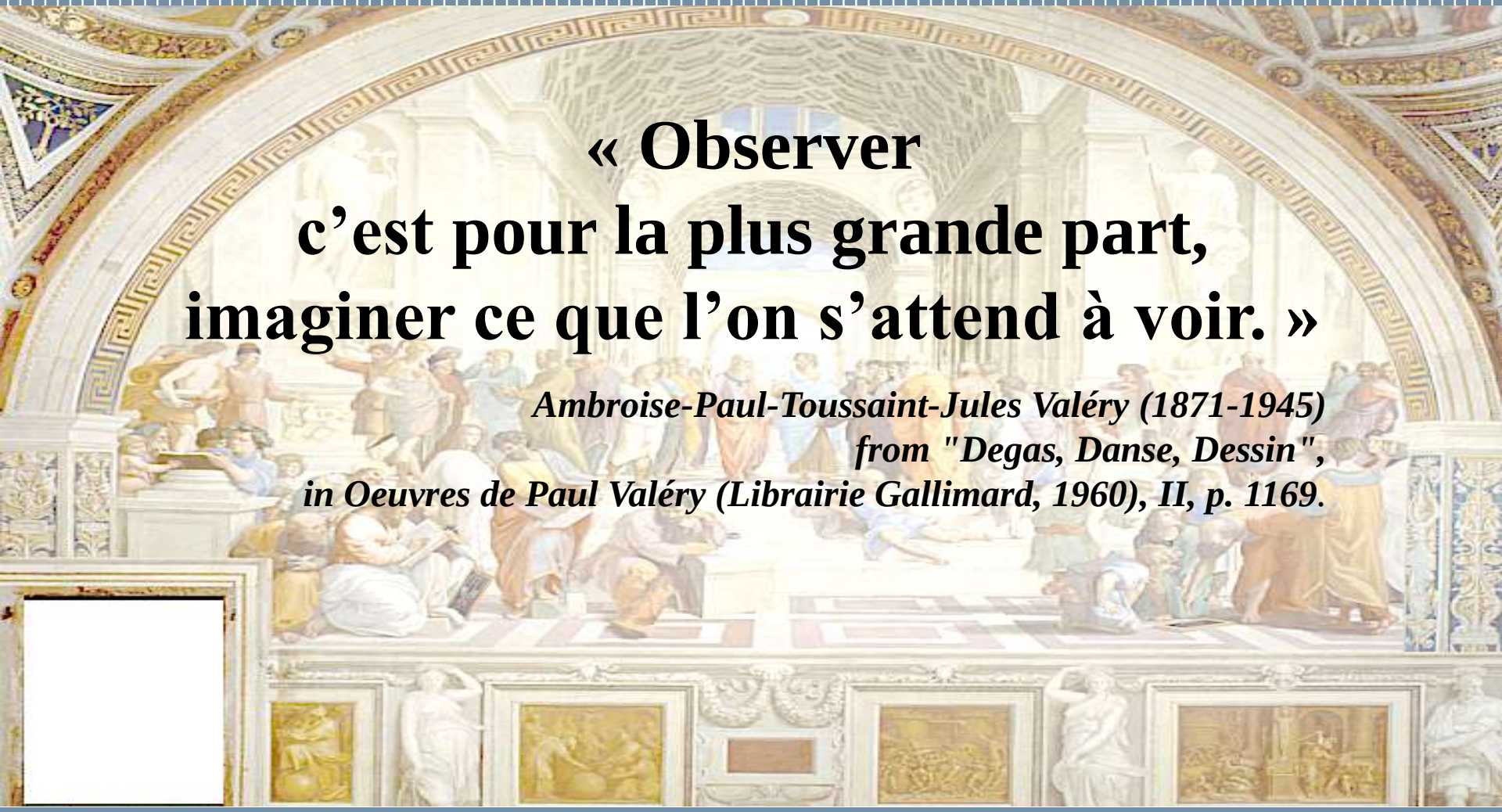
4. Disruptive Impact on Creativity Skills (14)



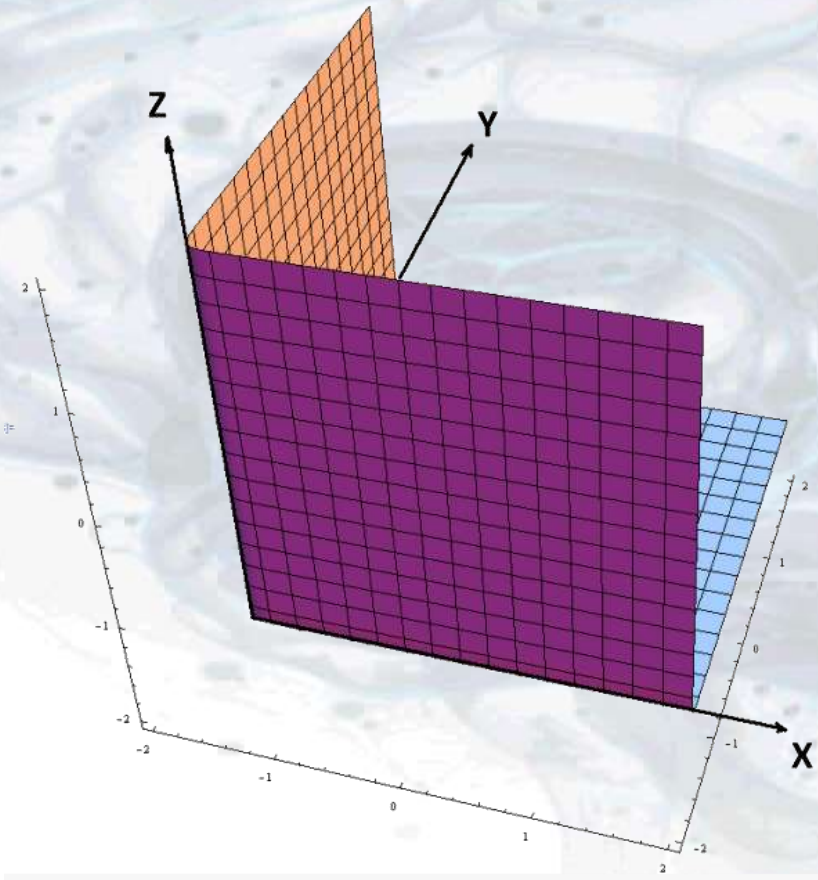
« Observer
c'est pour la plus grande part,
imaginer ce que l'on s'attend à voir. »

Ambroise-Paul-Toussaint-Jules Valéry (1871-1945)
from "Degas, Danse, Dessin",
in Oeuvres de Paul Valéry (Librairie Gallimard, 1960), II, p. 1169.

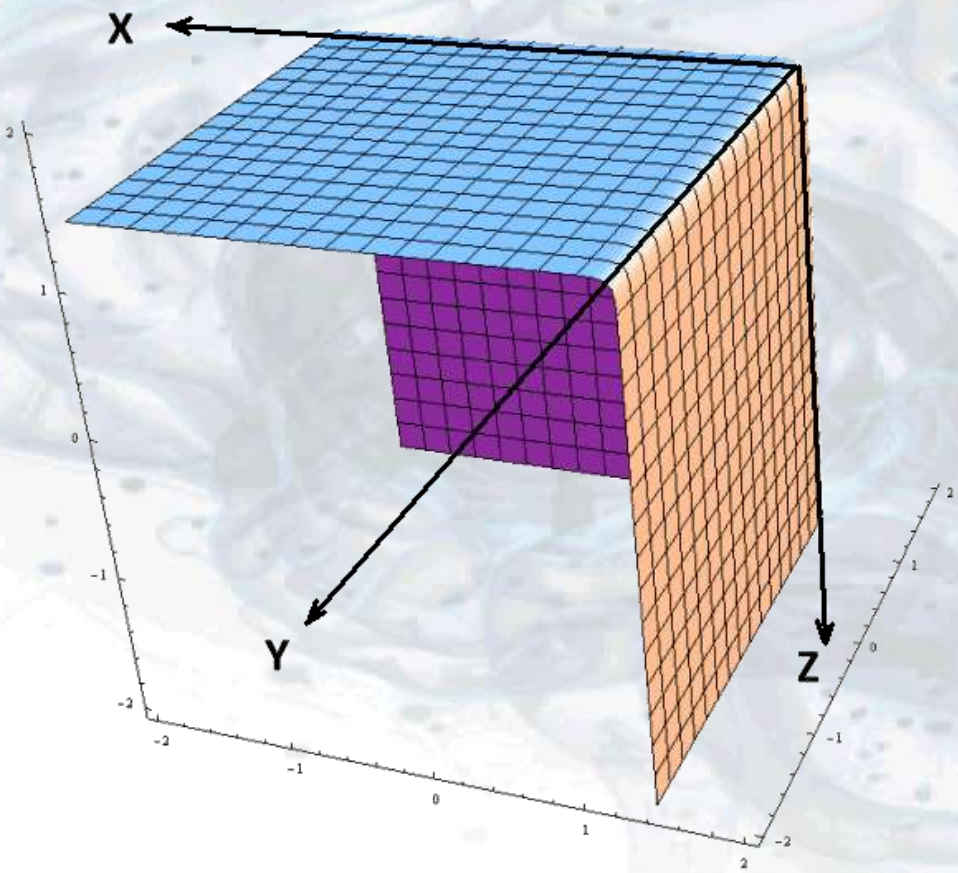
What is this?

Colorado River in Utah, USA

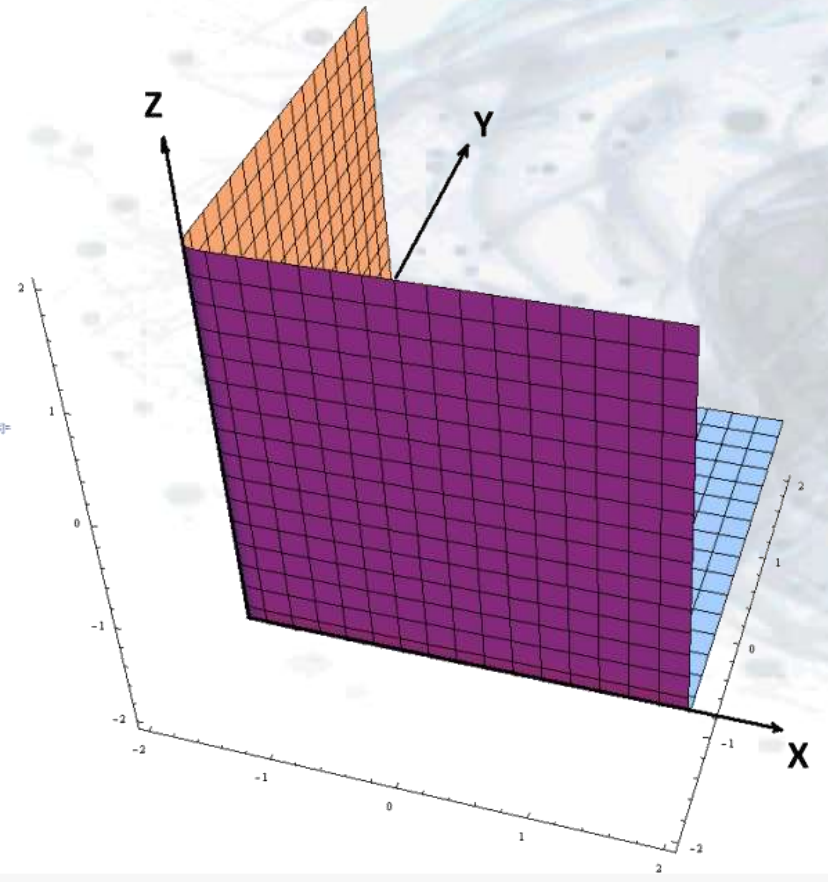
The Usual Visual Expected Reference

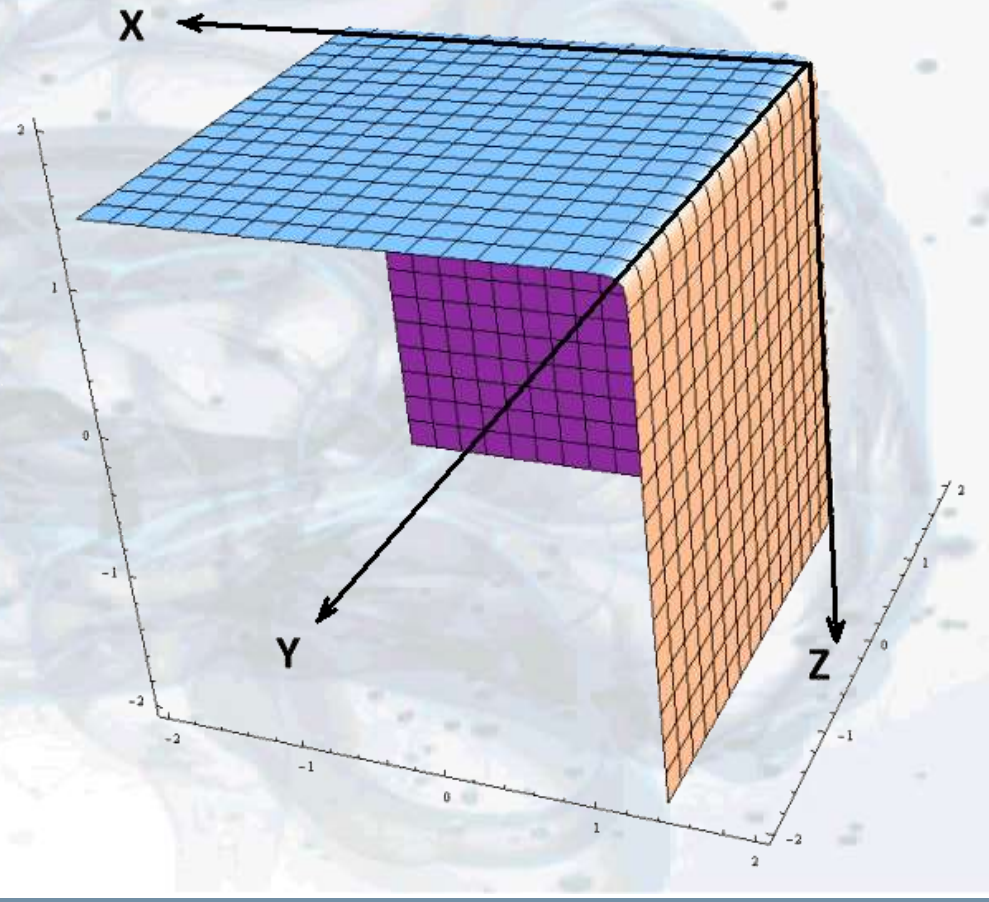


The Unexpected Visual Reference



We Need Both of Them!





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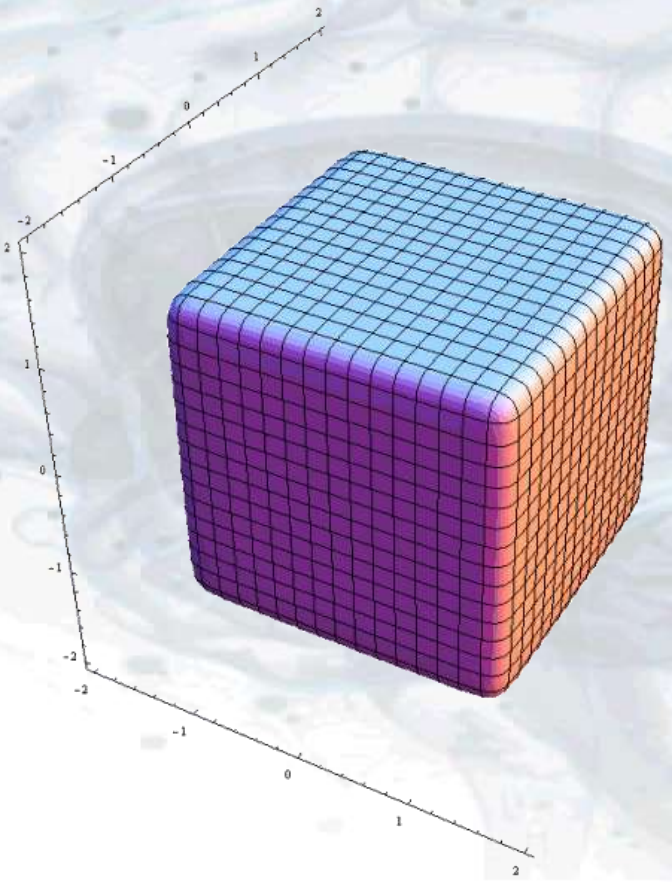

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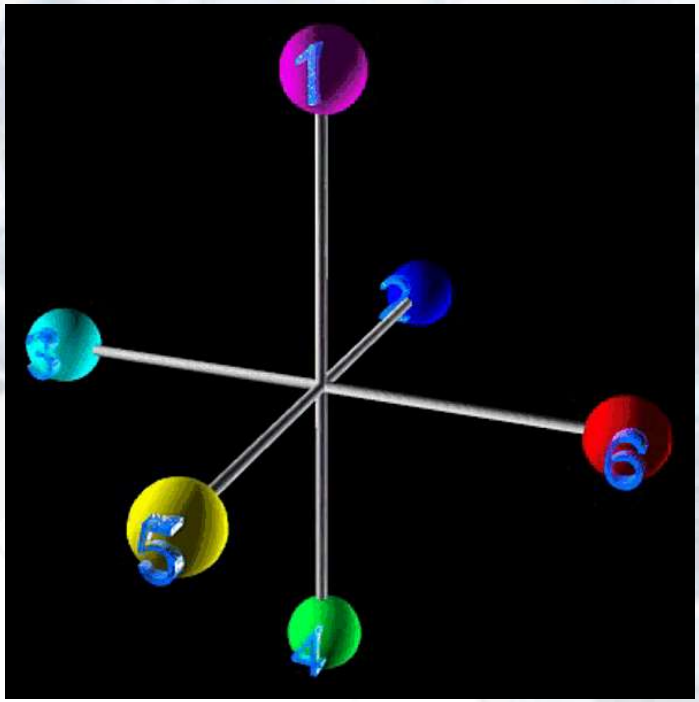
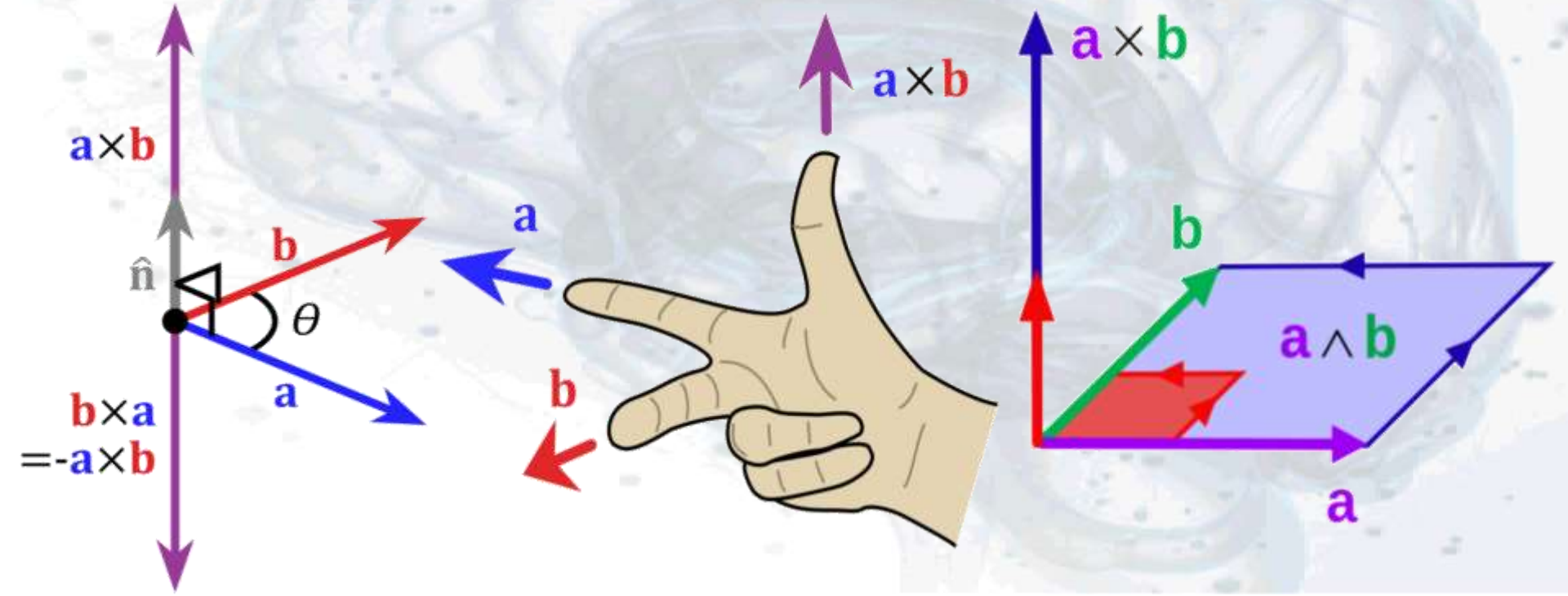


Rotations implicitly define associated line orientations and oriented lines implicitly define associated oriented rotations. It is also immediate that those relations are associated to the bi-vector skew-symmetric outer product part of the geometric product related to vectors x (a) and y (b) in GA.



Number of Components given by Liebniz's Combinatorial Partitioning Formula (the number of ways to choose *k* objects from a set of size *n*)

$$\binom{n}{k} = \frac{n!}{k!(n-k)!}$$

Number of Components given by Liebniz's Combinatorial Partitioning Formula (the number of ways to choose *k* objects from a set of size *n*)

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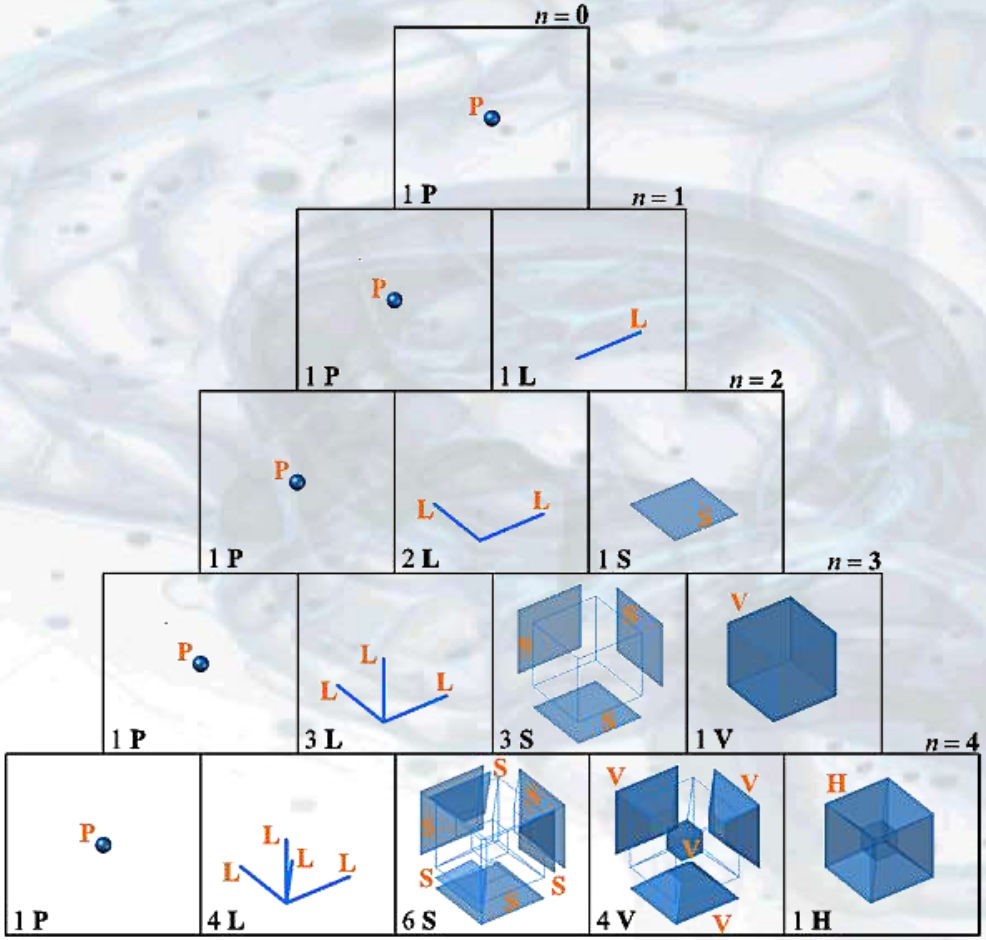
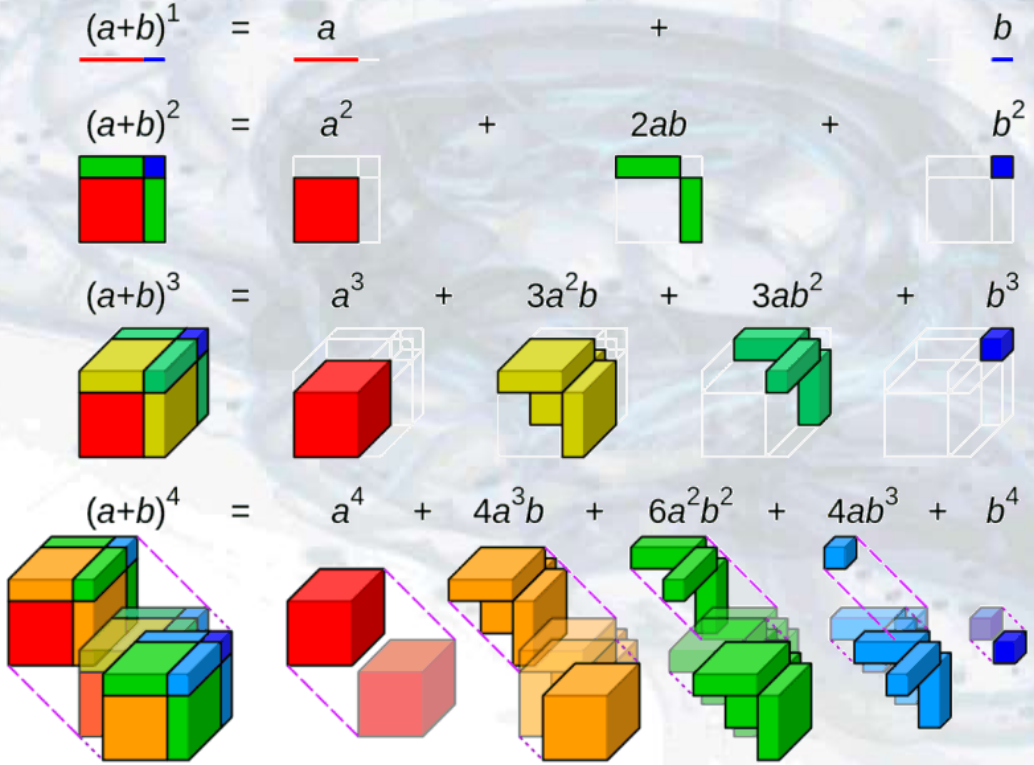
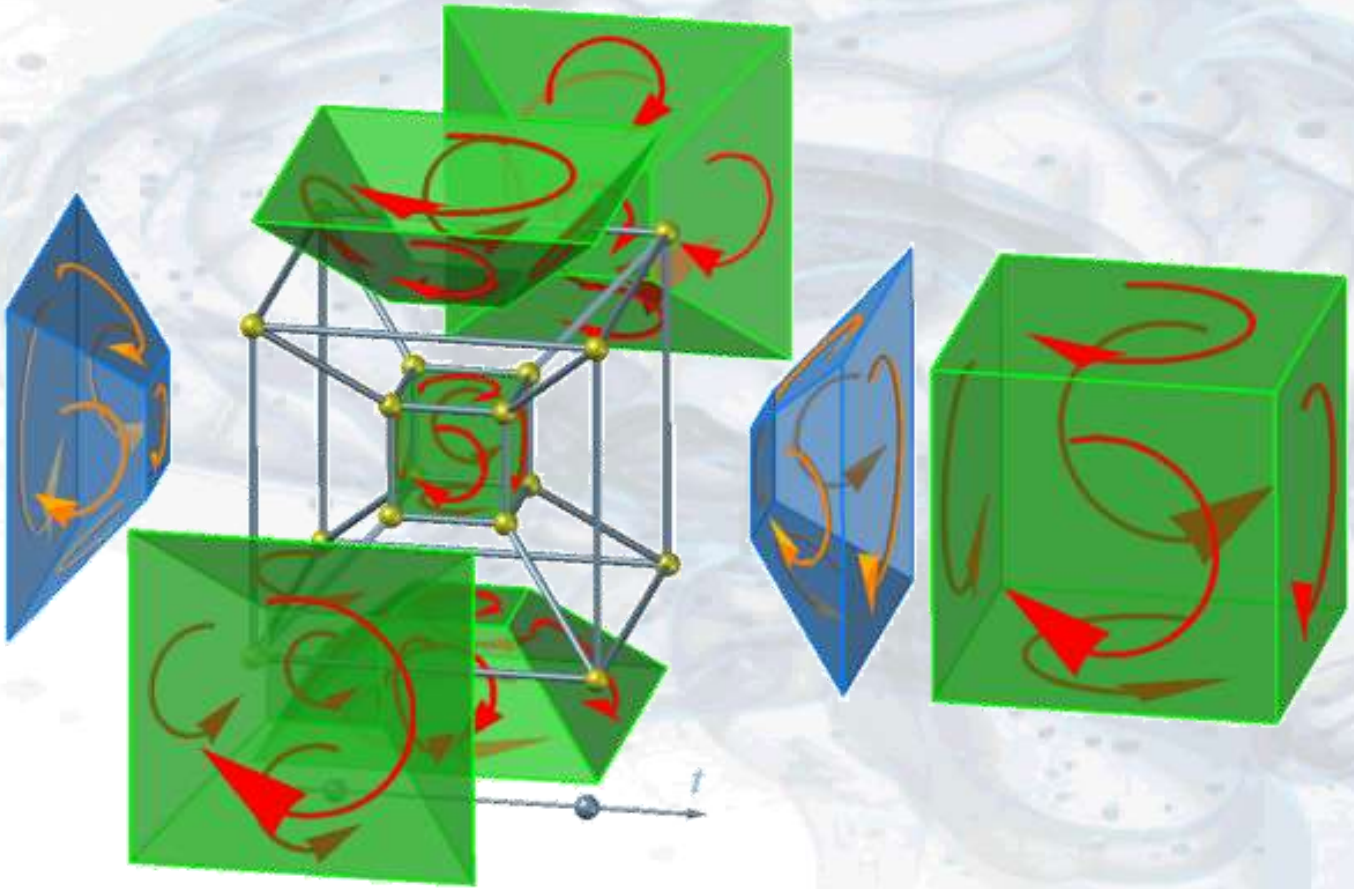
Combinatorial Side of Orientation



Number of Components given by Liebniz's Combinatorial Partitioning Formula (the number of ways to choose *k* objects from a set of size *n*)



Spacetime Tesseract



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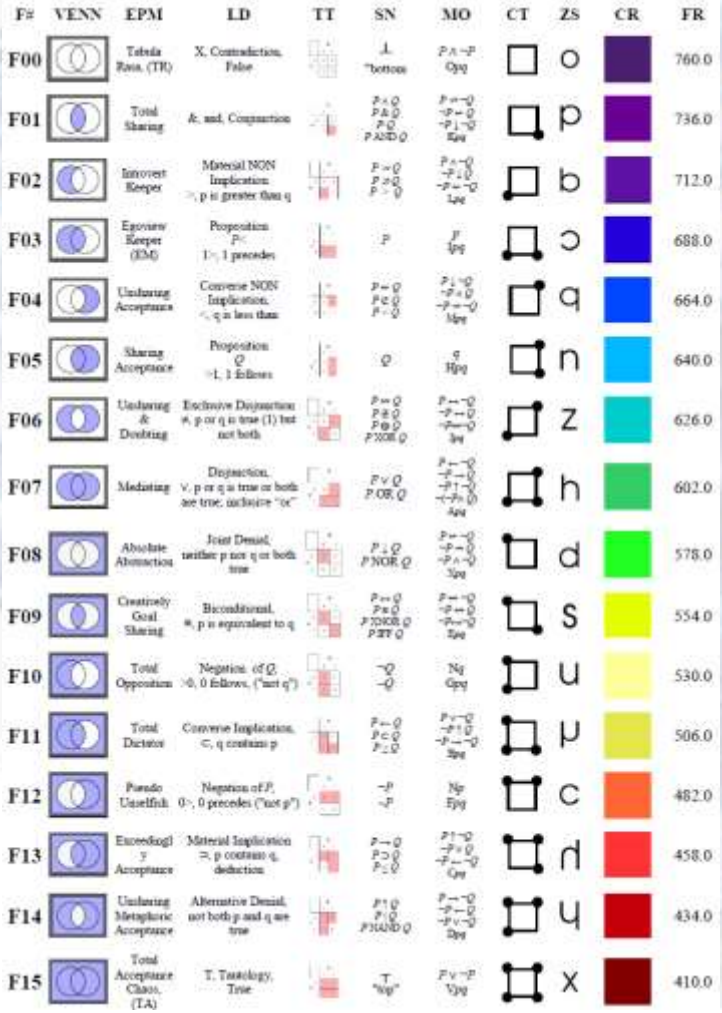


F#	VENN	EPM	LD	TT	SN	MO	CT	ZS	CR	FR
F00		Tabula Rasa, (TR)	X, Contradiction, False		⊥ "bottom"	$P \wedge \neg P$ Opq		o		760.0
F01		Total Sharing	&, and, Conjunction		$P \wedge Q$ $P \& Q$ PQ P AND Q	$P \rightarrow Q$ $\neg P \rightarrow Q$ $\neg P \downarrow \neg Q$ Kpq		p		736.0
F02		Introvert Keeper	Material NON Implication >, p is greater than q		$P \not\rightarrow Q$ $P \not\supset Q$ $P > Q$	$P \wedge \neg Q$ $\neg P \downarrow Q$ $\neg P \leftarrow \neg Q$ Lpq		b		712.0
F03		Egoview Keeper (EM)	Proposition P< 1>, 1 precedes		P	P Ipq		ɔ		688.0
F04		Unsharing Acceptance	Converse NON Implication, <, q is less than		$P \not\leftarrow Q$ $P \not\subset Q$ $P < Q$	$P \downarrow \neg Q$ $\neg P \wedge Q$ $\neg P \rightarrow \neg Q$ Mpq		q		664.0
F05		Sharing Acceptance	Proposition Q >1, 1 follows		Q	Q Hpq		n		640.0
F06		Unsharing & Doubting	Exclusive Disjunction ≠, p or q is true (1) but not both		$P \leftrightarrow Q$ $P \not\equiv Q$ $P \oplus Q$ P XOR Q	$P \leftarrow \neg Q$ $\neg P \leftrightarrow Q$ $\neg P \rightarrow \neg Q$ Jpq		z		626.0
F07		Mediating	Disjunction, ∨, p or q is true or both are true, inclusive "or"		$P \vee Q$ P OR Q	$P \leftarrow \neg Q$ $\neg P \rightarrow Q$ $\neg P \uparrow \neg Q$ $\neg(\neg P \downarrow Q)$ Apq		h		602.0
F08		Absolute Abstraction	Joint Denial, neither p nor q or both true		$P \downarrow Q$ P NOR Q	$P \leftarrow \neg Q$ $\neg P \leftarrow Q$ $\neg P \wedge \neg Q$ Xpq		d		578.0
F09		Creatively Goal Sharing	Biconditional, ≡, p is equivalent to q		$P \leftrightarrow Q$ $P \equiv Q$ P IFF Q P IFF Q	$P \leftarrow \neg Q$ $\neg P \leftrightarrow Q$ $\neg P \leftarrow \neg Q$ Epq		s		554.0
F10		Total Opposition	Negation of Q, <0, 0 follows, ("not q")		$\neg Q$ $\sim Q$	Nq Cpq		u		530.0
F11		Total Dictator	Converse Implication, ⊂, q contains p		$P \leftarrow Q$ $P \subset Q$ $P \supset Q$	$P \downarrow \neg Q$ $\neg P \uparrow Q$ $\neg P \rightarrow \neg Q$ Bpq		μ		506.0
F12		Pseudo Unselfish	Negation of P, 0>, 0 precedes ("not p")		$\neg P$ $\sim P$	Np Epq		c		482.0
F13		Exceedingly Acceptance	Material Implication ⊃, p contains q, deduction		$P \rightarrow Q$ $P \supset Q$ $P \subset Q$	$P \uparrow \neg Q$ $\neg P \leftarrow Q$ $\neg P \rightarrow \neg Q$ Cpq		ɗ		458.0
F14		Unsharing Metaphoric Acceptance	Alternative Denial, not both p and q are true		$P \uparrow Q$ $P \mid Q$ P NAND Q	$P \rightarrow \neg Q$ $\neg P \rightarrow Q$ $\neg P \vee \neg Q$ Dpq		ɥ		434.0
F15		Total Acceptance Chaos, (TA)	T, Tautology, True		$\top$ "top"	$P \vee \neg P$ Vpq		x		410.0

(R.A. Fiorini 2015)

Impact of Digital Transformation on Creative Leadership Skills

5. Conclusion (07)

Classical Mathematics Major Limitations

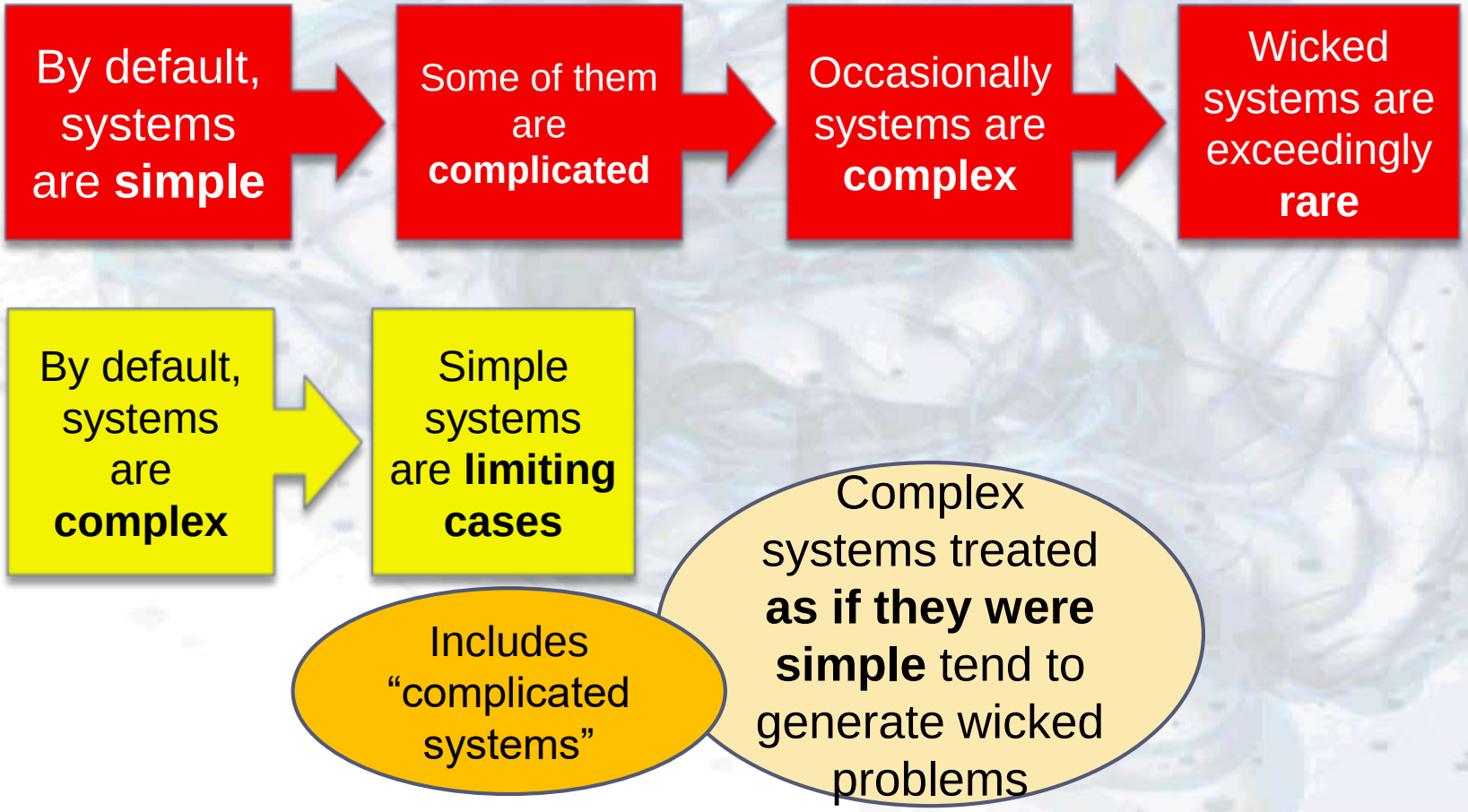
Continuum Hypotesis Assumption

Infinite Precision by Default

No Self-Orienting Structure

No Information Conservation

The Two Modelling Understandings



The Quality of Quantity

Big Data

vs

Deep Unity

Big Data vs. Deep Unity

Two Irreducible Independent Operative Spaces

Big Data (Half-Plane Space)

- Inert matter best operational representation compromise.
- A Representation Space endowed with full Flexibility (mapping complexity to simplicity to give space to Imagination).
- Simplified system dynamics framework (Newtonian Approach).
- To model any geometrical space and monitor system dynamics behavior only.
- A Spectator can become a system innatural perturbation.

Deep Unity (OECS Space)

- Livig matter best representation operational compromise.
- An Outer Representation Space one-to-one linked to its Inner Representation Space.
- Natural system dynamics framework (Quantum Field Theory Approach).
- To model projective relativistic geometry and to anticipate emergent system dynamics.
- An Observer can become a system natural co-artifex.

Impact of Digital Transformation on Creative Leadership Skills

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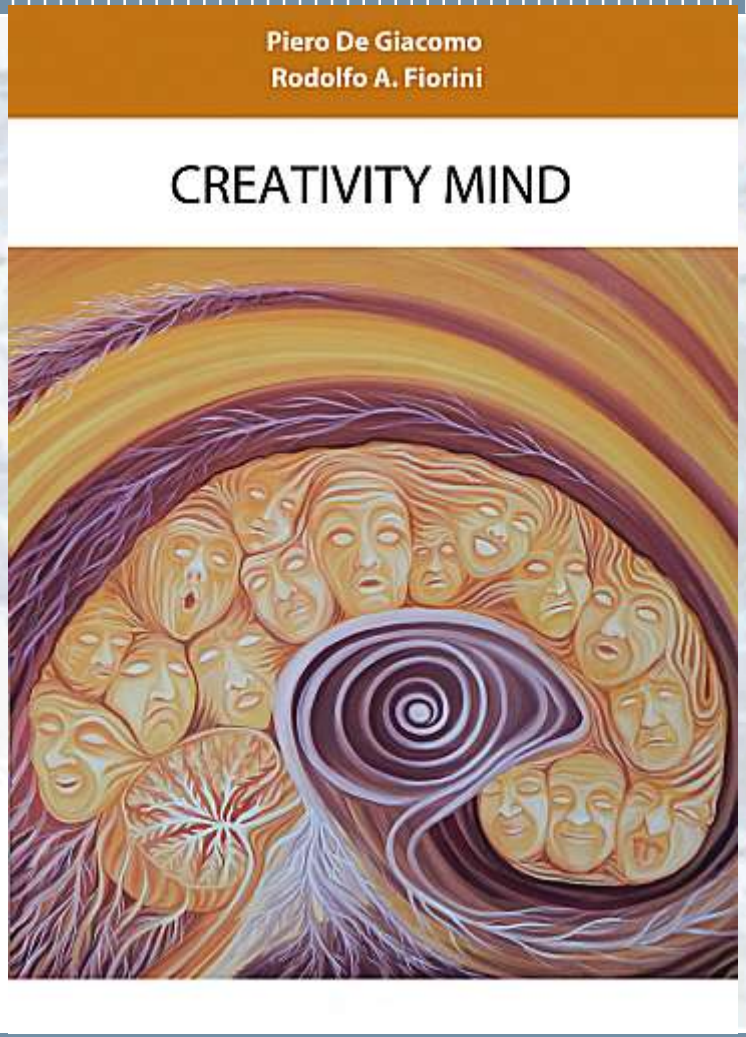

Neuralizer Work In Progress


Thank You for
Your Attention