

- Relation vs. relationship
 - In order to understand writing, you must first believe \exists
- Cognitive Set Theory Order (5) meaning behind it

- Identity : intrinsic, extrinsic, referential, isomorphic
- A referential universe and its referent
universe must be isomorphic. Extrinsic : they are universes and thus part of no other things.
Intrinsic : they are atoms and thus partless.
- Mereological logic is better than first-order logic for describing abstract things that are atomic.
There are mereological analogs for existential quantification.
- Mereology \Rightarrow properties. Set theory \Rightarrow classes.
- Nouns are adjectives that have been applied to space.
A noun is an overlap of adjectival partitions.
Similarly, verbs are adverbs applied to time.
- Ternary form : concept, copula, definition.
Copula (E) \Rightarrow to be \Rightarrow naming.
- Function composition vs. intersection
- Relations are indep of time.
- Naming associates a symbol (or word) with a concept or collection of concepts.
- Binary tree form : nounphrase + verbphrase
- Dynamically-constructed concept
- Modality : possible and actual worlds
- Verb tense modifies the shape of the object in 4th dim
- A transitive verb with unspecified DO is two-dimensional.

Cognitive Set Theory Order (4)

- Given an N-dimensional perceptual universe, a concept (i.e. a collection of percepts) May have dimension of either $N+1$ or 1 depending on whether the percepts are dereferenced or not.
- Convention: concepts (collections) are always of greater dimension than the percepts they ref (but not necessarily of greater rank)
- A collection of a single named concept has an additional (trivial) dimension compared to the concept itself. Trivial dimensions have no freedom and provide no info. An atom has an arbitrary number of trivial dimensions.
- Is-a = Is-referenced-by.
- Perception creates meronomies. Conception creates taxonomies.
- Only conception increases dimensionality.
- There are many different paths to the same concept in a hierarchy. The length of the path determines the order of the concept.
- All percepts are unique, but they are unified during conception by glossing over the insignificant differences. Thus, percepts become identical.

- Context / POV
- Dimensionality may be encoded via Neural interconnectedness

Cognitive Set Theory Order (3: Summaries)

Informal Summary: Percepts = continuous?

Undifferentiated Percept Concepts = atomic

Self/Other Dichotomy Open/Closed Dividing Line

Significant Per Classes Concept = {percepts}

Per-Con Isomorphism Dichotomization / Collection

Good and Bad Concepts Visualizing a Name

Words Reveal Percepts Referential Level (Order)

Space and Dimensionality Percepts vs. Symbols/Nouns

Count Nouns Collect Proper Re-cognizing (understanding)

Higher-Dimensional Modeling Naming (is-a) (a, the)

Communication is an action

Formal Summary: that transmits symbolic info

Dichotomy: $O \rightarrow P$ (perhaps all info is sym)

Collection: $P \rightarrow C$ Contiguity / Connection

Transitive Parthood Universe = continuous/contig

Intransitive Membership Overlap / Discontinuity \Rightarrow Con

$pt()$ is dichotomizer Conceptual Order Percepts (as refs)

$\exists pt(x) \Rightarrow \exists \neg pt(x)$ Concepts are 1D are atomic

Set braces def domain Percepts exist in a metric

Extension elements space whose D may be

must have intension $>$, $<$, or = physical D

(well-foundedness) An N-dim space can be made by

Per = Neuronal mapping connecting an atom to 2^N neighbors

Copula (is-a)
Subset

Cognitive Set Theory Order (2)

Paradox	Intuition	Integration	Distributed Concept
Metaphor		Changing Dimension	Concepts of Concepts
English Linguistics		1. Intransitive Verb	Redefinition
Phrases		2. Transitive Verb	Animal Cognition
Parts of Speech	Ob-Per Isomorphism	Symbolic Thought	
Noun, Verb, Gerund	Psychophysics	Symbol = set of exp	
Sentences = Events	Ob ≠ Per (Blind Spots)	Signs are causal	
Semantic Completeness	Top-Down Perception	Recursive Naming	
Dimensionally Incomplete	Bottom-Up Perception	High-Dimensional	
Time: Percept or Concept?	Models Influence Per	Abstract Concepts	
Natural Kinds	Inverted Qualia	Abstraction of Time	
Piaget	Dreams / Hallucination	Naming Modality	
Object Permanence	Noncategorical Percept	• Writing / Speech	
Self / Other	Categorical Concept	• Word / Picture / Sound	
Actions on Objects	Learning	• Any Representation	
Exponential Language Growth	Behaviorism (extrinsic)	Visualization (ASL)	
The Conceptual Self	Conditioning (Pavlov)	Bodily Thought	
Quantifiers	Punishment + Reward	First-Order Concept	
Articles + Dereference	Neural Network (histric)	Vicious Circle	
1. Proper Nouns	Perceptron	Events or Definitions	
2. Count Nouns	Separating Hyperplane	Questions	
3. Mass Nouns	Sigmoid	Contingent / Necessary	
Differentiation	Radial Basis Function	Existential Quant	

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Systems Data
Theories Info Feeling
Models Know Thought

Order of Topics in Cognitive Set Theory

Everything	Interval Dim	Quantum Physics
Whole	Hierarchy	Reduced Perceptual Dimension
Ineffability	Mereonony	Objective Domain
Universes	Taxonomy	Causation
Domains	Discontiguous	External/Internal Causes
Emergentism	Ontological Priority	Volition / Determinism
Something	Part Modality Orthogonal Dim	Subjective Domain
Reductionism	Nothing	Eternal Soul
Dichotomy	Reference	Determined Body
Collection	Ref Order	Both Free and Not
Partition	Encoding	External Perception
Dimension	Existence	Internal Perception
Atoms	• Necessary	The Curse of Dimensionality
Properties	• Contingent	Object - Percept Correspondence
• Intrinsic	Identity	Hallucinations
• Extrinsic	• Spatial	Perception + Conception Interfere
• Relativistic	• Temporal	Perceptual Habituation (eyes)
Set Theory	• Referential	Gestalt Laws, Attention
Mereology	• Isomorphic	Feedback Perception Model
Boundary	Physical U	Concept Categorization
Truth	Four-space	Concept - Set - Reference
Nominal Dim	Relativity	Decision Boundaries
Ordinal Dim	Events	Language of Thought

Cognition → Natural Philosophy and Physics →
 Information and Communication → Logic and Math

Philosophy of Computation Order

Domain	Objective	Perceptual	Conceptual
Computer	Data	Information	Knowledge
Language	Syntax	Pragmatics	Semantics
Logic	Validity	Interpretation	Truth
Physics	System	Theory	Model
Math	I	oo	O
Metaphysics	Body	Feeling	Thought
Cognition*	Object	Percept	Concept
Signals			
Cognition	Gestalt laws, object permanence, self/other, categorization		
Metaphysics	Identity, change, substance, form		
Physics	Particles, waves, quanta		
Information	Shannon, entropy		
Signals			
Language			
Logic			
Math			

Infant Cognitive Development

O Birth

- Pain and Pleasure.
- Good and Evil (an extension of Pain P)
- Morality (and moral explanations for phenomena)
- Self-preoccupation (and egocentrism)
- Reflexes (sucking, visual focus, palmar grasp)
- Phenomena, visual patterns
- Face preference
 - Top-heaviness
 - Congruency
 - Negative contrast polarity (eyes)
 - Configural information processing

concept: Notion, definition, set, class, type, kind, sort,
fuzzy concept: collection, category
defuzzification, *
primitive: Perception of (Space and Time) and Causality at birth
Occlusion perception (objects) - 2-4 months
Object permanence - 8 months (realism)
Properties - 12 months
*Categorization / Classification - 3 months for basics,
6-12 month for specifics
that require experience
Class inclusion (hierarchical thought) - 7-11 years
Relations

Differentiation of self from surroundings - birth

First notion of self - awareness - 18 months

Full consciousness of the self from first-person
and third-person POV - 4-5 years

→ * Subject and Object, * Identity

* Syntax and Semantics (language acquisition
also at 18 months)

Modality

Syntax and Semantics (and Pragmatics)

- Sign and Referent (and Interpretant)

Synecdoche

Abstraction and Specification (General / Particular)

- Universals and Particulars
- Hypernym and Hyponym
- Superset and Subset (and Elements)
- Superclass and Subclass (type)
- Deduction and Induction

Space and Time (DoD and Calculus?)

Map and Territory

Causality (in logic, entailment) - First cause

- Determinism and Indeterminism (Chance)

Identity (and Sameness) and Individuation

- Continuant and Occurrent

Intension and Extension

- Type and Token - Theory and Observation
- A priori and A posteriori - Hierarchy

Categorization (Ideas) and Classification (Entities)

* Essence (Form) and Existence (Substance)

Physical

- Being and Becoming (also Non-Being / Void)

Mental

- Essential and Accidental Properties

Formal

- Reality and Actuality

Subject and Object (Thought and Extension)

Subject / Member / Referent
(function terms)
are processes or algorithms.
FUNCTIONS are deterministic.

Subset / Member / Referent
(function terms)
are processes or algorithms.
FUNCTIONS are non-deterministic.
Set and
Relations

Set and
Relations

Set and
Relations

	Cognitive categorization (Susan Carey)	
William	Upper Ontology (Peirce, Rogers)	
	Metaphysics	
	Pre-information-Theoretic Physics	
James		Transcend w/ Metalanguage
	Everything Something Nothing	Duality $0 = 1$
3 domains	1 00 0	Qualia
	Actuality Reality / Necessity Potentiality / Possibility	
Manifold	Physical	Perceptual Conceptual
Earth	Object	Percept Concept
	Pragmatic	Symbolic / Syntactic Semantic
	Existence	Experience Essence
	Multiplicity / Plurality	Unity Nullity
?	System	Theory Model
	Substance	Aistheta Form
	Secondness	Firstness Thirdness
	Brute Events	Ideas Habits
	Referent	Sign / Symbol Interpretant
	The One	The Soul The Intellect
	Data	Information Knowledge
	Metaphysics	Logic Epistemology
	Extension	Word INTENSION
	Contingency	Tautology Contradiction
	Token / Instance	CLASS Type
	Continuous	Discrete Dimension - Efficient
	Concepts	supervene percepts which supervene objects