

Whitehead's "Philosophy of Organism" Cosmology as a Fixed Schema Network Graph

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Alfred North Whitehead's book *Process and Reality: An Essay in Cosmology* originally printed in 1929, are the published form of the Gifford Lectures which he gave in 1927-28 at the University of Edinburgh. The book is divided into five parts:

- I. **The Speculative Scheme:** introduces his speculative approach to philosophy and proceeds to lay out his "Categoreal Scheme" for a "philosophy of organism". *A preliminary but sufficient analysis of the complete categoreal scheme is the goal of this document.*
- II. **Discussions and Applications:** a placement of the work into historical and philosophical contexts.
- III. **The Theory of Prehensions:** an unpacking of the categoreal scheme presented in Part I. *Select excerpts from this part are also cited in this document.*
- IV. **The Theory of Extension:** a presentation of an updated "extensive continuum" which would come to be regarded as a system of mereology and measurement. *Whitehead draws very little¹ direct connection to the topics covered in the extensive continuum of Part IV from within the enumeration of the categoreal scheme in Part I. There are general efforts to bridge the gap between the Theory of Prehensions and the Theory of Extension found in Part III but this goes beyond the scope of this preliminary analysis. The connections between the extensive continuum and the categoreal scheme are not considered in this document but do represent an interesting topic worthy of further discussion.*
- V. **Final Interpretation:** a concluding Philosophical and Theological discussion and points.

Whitehead's work was considered quite novel in its day and has since been applied in areas as diverse as mereology, process philosophy, process theology, ecology and philosophy of science.

The assertion of this document is that it is both appropriate and useful to characterize the cosmological scheme that Whitehead presented as a *network graph having a fixed schema*. Familiarity with the idea of a network graph was comparatively rare in Whitehead's time when compared to our own. This meant that he worked under a burden that he would not have had if he were living today: he had to *establish* both the terminology and the rules of a graph-based model of thinking for his readers.

Given the familiarity that thinkers of today now have with network graph models, I believe it would be helpful to recast Whitehead's cosmological system in this contemporary terminology. Then, rather than making modern readers who would benefit from Whitehead's ideas stumble over his neologisms, we can more quickly illuminate the important points he was making.

¹ see Whitehead's discussion of "position" in the category of explanation (xx) for one possible connection.

It will be demonstrated that Whitehead had a lot more to say than “everything is a graph”. Rather, everything is a *particular kind of graph*. It is a graph with a *fixed schema and rules*. “Schema” for anyone familiar with graph databases, will be taken to mean a catalog of the types of a graph’s elements. These elements are typically its vertices and edges, also called respectively, its nodes and relationships. These elements have *types* that are typically concepts like “vertex of type ‘person’” or “edge of type ‘parent-of’”. When we map Whitehead’s cosmology to a network graph we find much more abstract concepts like “edge of type ‘consciousness’”. And unlike a typical graph schema in which users are free to alter it by defining new concepts such as “edge of type ‘child-of’”, Whitehead’s cosmology-as-graph has a **finite set of types**. This means that the fundamental type system is *fixed*, permitting no new simple types. And yet he also acknowledges the derivation of complex types, which are combinations of simple types, and which leads to an infinite explosion of potential complex types. This finite-yet-infinite type system is significant from a computational perspective because the rules of typing remain fixed even as the expansion of types occurs. These “rules of typing” only become clear once one unpacks Whitehead’s categorial scheme through the lens of seeing it as a network graph. And remember that the intended scope of application of this Whiteheadian graph is genuinely, and sincerely, cosmological.

The subsequent discussion employs tables having three columns. The first column contains a Whiteheadian term from Process and Reality. The second column consists of excerpts from Process and Reality. These are either transcribed in order of appearance of according to the indicated page numbers in square brackets from the “corrected edition” edited by David Ray Griffin and Donald W. Sherburne and published by The Free Press in 1978. The third column is a network graph term or explanation that either maps to or interprets the Whiteheadian term. The reader is thus directed and encouraged to evaluate the accuracy and significance of the proposed correspondence.

The Categories of Existence

“There are eight Categories of Existence:” [p.22]

(i) Actual Entity	Final Reality/Actual Occasion/Feeling	A vertex
(ii) Prehension	Concrete Fact of Relatedness	An edge
(iii) Nexus	Public Matter of Fact	A graph , or some set of connected vertices within a graph.
(iv) Subjective Form	Private Matter of Fact	An Edge that connects two vertices
(v) Eternal Object	Pure Potential for the Specific Determination of Fact, or Form of Definiteness	A symbol
(vi) Proposition	Matter of Fact in Potential Determination, or Impure Potentials for the Specific Determination of Matters of Fact, or Theory	A defined symbol.
(vii) Multiplicity	Pure Disjunction of Diverse Entities	A vertex type (as a vertex label or a type assignment property)
(viii) Contrast	Mode of Synthesis of Entities in one Prehension, or Patterned Entity	A subgraph of vertices having some complex significance.

In the categories of existence we see that Whitehead has introduced all of the required elements for a network graph: vertices, edges, symbols and their definitions, vertex types and subgraphs.

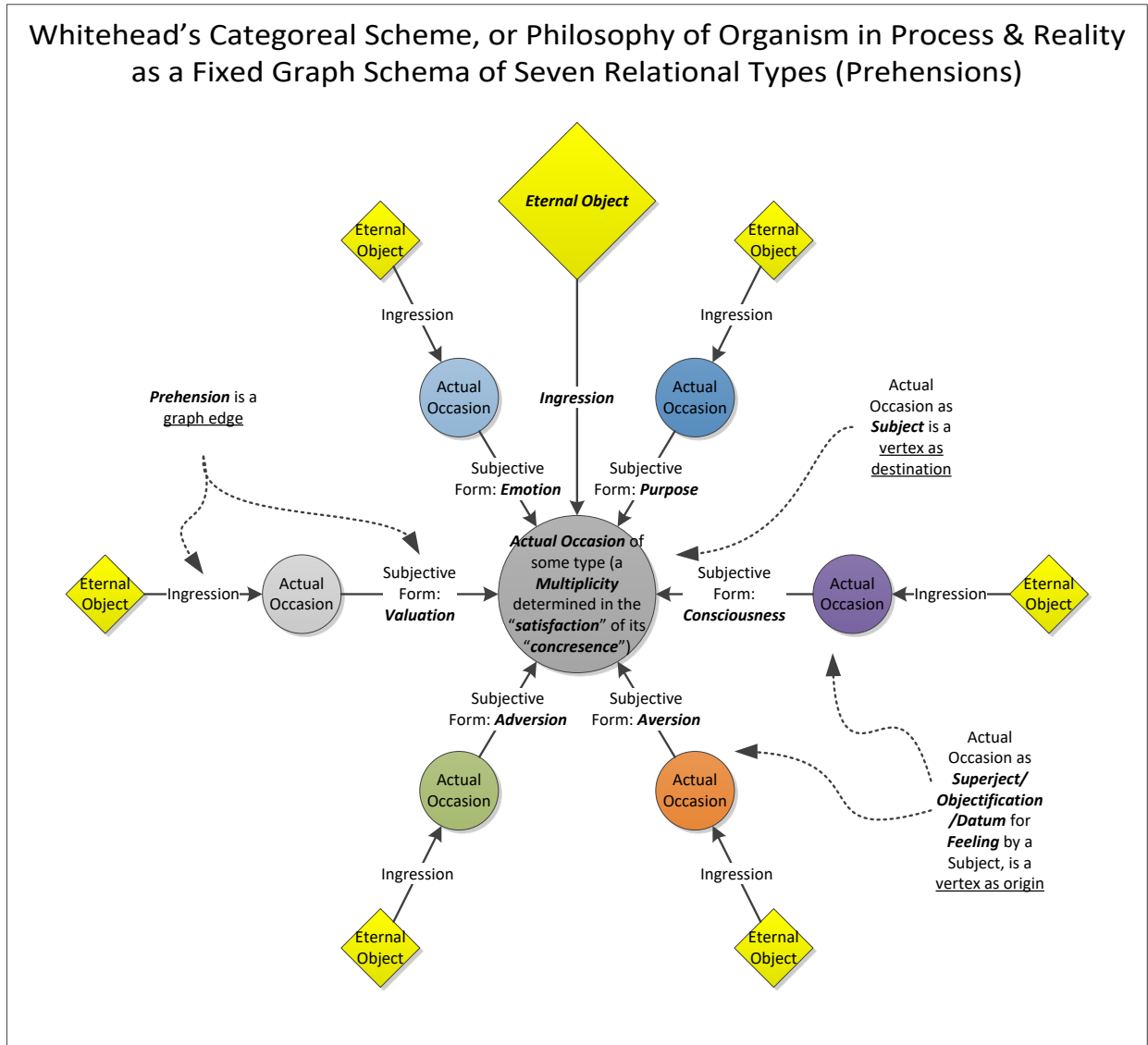


Figure 1: A graph schema labeled with Whiteheadian categories. This diagram is not an example of a graph, but rather, is a blueprint describing the potential elements that would appear in such an example or instance of a graph. Whitehead names around ten "subjective forms" in his initial presentation of his categoreal scheme. The six subjective forms shown here come from the category of explanation (xiii). Four others appear in the category of explanation (xviii) and they may be either additional types or sub-types of the six shown here.

Some Additional Related Terms

These are some important additional terms that Whitehead employs in discussing his categoreal system that also deserve some initial attention. These are essentially synonyms and hyponyms for the terms already introduced in the categories of existence.

Feeling	Feelings are 'vectors'; for they feel what is there and transform it into what is here [p. 87]	An incoming edge from a origin vertex
Subject	See category of Explanation (viii)	vertex as destination
Superject	See category of Explanation (viii)	vertex as origin
Datum	See Category of Explanation (xi)	vertex as origin
Primary Feelings: Conceptual Feelings (mental pole) and Simple Causal Feelings (physical pole)	See Category of Explanation (xi). "Conceptual feelings and simple causal feelings constitute the two main species of 'primary' feelings. All other feelings of whatever complexity arise out of a process of integration which starts with a phase of these primary feelings." [p. 239] "In each concrescence there is a twofold aspect of the creative urge. In one aspect there is the origination of simple causal feelings; and in the other aspect there is the origination of conceptual feelings. These contrasted aspects will be called the physical and the mental poles of an actual entity." [p. 239] "A conceptual feeling is feeling an eternal object in the primary metaphysical character of being an 'object,' that is to say, feeling its capacity for being a realized determinant of process." [p.239]	There are two primary species of incoming edges from the perspective of a destination vertex: 1) an edge whose origin is a symbol (called the 'mental pole') 2) an edge whose origin is another vertex (collectively called the 'physical pole')
Ingression	See Category of Explanation (vii)	An Edge from "eternal object" symbol to "proposition" vertex
Society	a nexus of actual entities [p. 89]	A set of vertices that signifies some unified entity.
Subjective Aim	"The doctrine of the inherence of the subject in the process of its production requires that in the primary phase of the subjective process there be a conceptual feeling of subjective aim: the physical and other feelings originate as steps towards realizing this conceptual aim through their treatment of initial data. This basic conceptual feeling suffers simplification in the successive phases of the concrescence. It starts with conditioned alternatives, and by successive decisions is reduced to coherence." [p. 224]	Vertex creation is constrained in order to satisfy or conform to a functional goal which may be captured as a type . This type may be explicit in the graph schema as a label or as a type-assignment property for the vertex.

Concrescence	“The primary character of this process is that it is individual to the actual entity; it expresses how the datum which involves the actual world, becomes a component in the one actual entity. There must therefore be no further reference to other actual entities; the elements available for the explanation are simply, the objective content, eternal objects, and the selective concrescence of feelings whereby an actual entity becomes itself.” [p. 153]	Vertex creation is a process which completes upon a final selection of its incoming edges , and at which point its identity is fixed and its type is determined .
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Most explicit as to the network graph connection is Whitehead’s description of Feelings as ‘vectors’. In the mind of a mathematician, vectors have a magnitude and a direction at some point of origin. This is commonly diagrammed as an arrow whose position and direction is relative to some coordinate space, and whose length corresponds to its magnitude. The visualization of a vector as arrow is a natural way for a mathematician such as Whitehead to explain a concept as yet unknown to his readers: an edge going from one vector to another in a graph.

Categories of Explanation

“There are twenty-seven Categories of Explanation:” [p. 22]

Categories of Explanation (i)	That the actual world is a process, and that the process is the becoming of actual entities . Thus actual entities are creatures; they are also termed 'actual occasions.'	A network graph is the structural form of Whitehead's cosmology. This graph is composed from uniquely identifiable vertices .
Categories of Explanation (ii)	That in the becoming of an actual entity, the <i>potential</i> unity of many entities in disjunctive diversity - actual and non-actual - acquires the <i>real</i> unity of the one actual entity; so that the actual entity is the real concrescence of many potentials .	Vertex creation compels the existence of the vertices that are the origins of its incoming edges. These are a vertex's dependencies .
Categories of Explanation (iii)	That in the becoming of an actual entity, novel prehensions, nexus, subjective forms, propositions, multiplicities, and contrasts, also become but there are no novel eternal objects .	The network graph includes any infinite set of symbols (.ie integers)

Categories of Explanation (iv)	That the potentiality for being an element in a real concrescence of many entities into one actuality is the one general metaphysical character attaching to all entities, actual and non-actual; and that every item in its universe is involved in each concrescence, In other words it belongs to the nature of a 'being' that it is a potential for every 'becoming'. This is the ' principle of relativity '.	A graph is fundamentally capable of iteration by means of its edges between vertices. The principle is that any existing vertex may serve as an origin for an edge to some new destination vertex
Categories of Explanation (v)	That no two actual entities originate from an identical universe; though the difference between the two universes only consists in some actual entities, included in one and not in the other, and in the subordinate entities which each actual entity introduces into the world. The eternal objects are the same for all actual entities. The nexus of actual entities in the universe correlate to a concrescence is termed ' the actual world ' correlate to that concrescence.	A feature of any network graph with uniquely indexed vertices is that, from the perspective of any one abstracted vertex, the remainder of the graph is also unique.
Categories of Explanation (vi)	That each entity in the universe of a given concrescence can, so far as its own nature is concerned, be implicated in that concrescence in one or other of many modes; but in fact it is implicated only in one mode: that the particular mode of implication is only rendered fully determinate by that concrescence, though it is conditioned by the correlate universe. This indetermination, rendered determinate in the real concrescence, is the meaning of 'potentiality'. It is a conditioned determination, and is therefore called a ' real potentiality '.	This category entails the existence of a rule that a vertex's inputs are never modified or edited after its creation , so as to maintain the coherence of its own determinative process.
Categories of Explanation (vii)	That an eternal object can be described only in terms of its potentiality for ' ingression ' into the becoming of actual entities; and that its analysis only discloses other eternal objects. It is a pure potential. The term ingression refers to the particular mode in which the potentiality of an eternal object is realized in a particular actual entity, contributing to the definiteness of that actual entity	Symbols as signs are carriers of meaning but are not meaningful in and of themselves without an act of assignment to some meaning . Complex symbols are derived from combinations of other symbols but similarly only assume meaning when it is assigned (see category of explanation vi).

Categories of Explanation (viii)	That two descriptions are required for an actual entity: (a) one which is analytical of its potentiality for 'objectification' in the becoming of other actual entities, and (b) another which is analytical of the process which constitutes its own becoming. The term ' objectification ' refers to the particular mode in which the potentiality of one actual entity is realized in another actual entity.	The origin and destination of any graph edge are vertices. The idea of a <i>hyperedge</i> is seemingly excluded. (If Whitehead were to consider this it would have been something like the "prehension of a prehension in the absence of any actual occasion/feeling". This would contradict category of explanation xviii and the ontological principle.)
Categories of Explanation (ix)	That how an actual entity becomes constitutes what that actual entity is ; so that the two descriptions of an actual entity are not independent. Its 'being' is constituted by its 'becoming'. This is the ' principle of process '.	A vertex's type is determinable from the <i>pattern of its incoming edges</i> .
Categories of Explanation (x)	That the first analysis of an actual entity, into its most concrete elements, discloses it to be a concrescence of prehensions, which have originated in its process of becoming. All further analysis is an analysis of prehensions. Analysis in terms of prehensions is termed ' division '.	All vertex types are derived from its pattern of incoming edges . There is no other means of vertex typing than edge analysis.
Categories of Explanation (xi)	That every prehension consists of three factors: (a) the 'subject' which is prehending, namely, the actual entity in which that prehension is a concrete element; (b) the 'datum' which is prehended; (c) the 'subjective form' which is how that subject prehends that datum. Prehensions of actual entities- i.e., prehensions whose data involve actual entities - are termed 'physical prehensions'; and prehensions of eternal objects are termed 'conceptual prehensions'. Consciousness is not necessarily involved in the subjective forms of either type of prehension.	A graph edge has a (a) destination (b) origin, and (c) a type. The highest edge types are for edges whose origin is another vertex and whose origin is a symbol (may be thought of as a vertex with a single, conferrable property and value).
Categories of Explanation (xii)	That there are two species of prehensions: (a) ' positive prehensions ' which are termed ' feelings ', and (b) ' negative prehensions ' which are said to ' eliminate from feeling '. Negative prehensions also have subjective forms. A negative prehension holds its datum as inoperative in the progressive	In typical graph models the absence of an edge has no explicit representation . One implementation of a rule to satisfy this category of explanation might permit an edge label such as "ignore". Interpretation of such a labeled edge would trigger it to be considered absent in determining the destination vertex's type.

	concrecence of prehensions constituting the unity of the subject.	
Categories of Explanation (xiii)	That there are many species of subjective forms , such as emotions, valuations, purposes, aversions, aversions, consciousness, etc.	Edges have types , expressed as either an edge property or edge label. No explicit materialization of the type is required so long as it may be inferred in an examination of the graph patterns of connection. See categories of explanation (ix) & (x)
Categories of Explanation (xiv)	That a nexus is a set of actual entities in the unity of the relatedness constituted by their prehensions of each other, or-what is the same thing conversely expressed - constituted by their objectifications in each other.	A subgraph of vertices
Categories of Explanation (xv)	That a proposition is the unity of certain actual entities in their potentiality for forming a nexus , with its potential relatedness partially defined by certain eternal objects which have the unity of one complex eternal object . The actual entities involved are termed the ' logical subjects ', the complex eternal object is the ' predicate '.	A subgraph may represent some collective meaning that may also be assigned a symbol . (This category of explanation would seem to permit hypergraph models in which a vertex represents a subgraph).
Categories of Explanation (xvi)	That a multiplicity consists of many entities, and its unity is constituted by the fact that all its constituent entities severally satisfy at least one condition which no other entity satisfies. Every statement about a particular multiplicity can be expressed as a statement referent either (a) to all its members severally, or (b) to an indefinite some of its members severally, or (c) as a denial of one of these statements. Any statement, incapable of being expressed in this form, is not a statement about a multiplicity, though it may be a statement about an entity closely allied to some multiplicity, i.e., systematically allied to each member of some multiplicity.	A graph may have a type system which categorizes the types of its elements (vertices, edges, labels, properties, etc.). A type should divide the graph elements (or one particular subset of typed elements) into mutually exclusive groupings. A particular element may have multiple types.

Categories of Explanation (xvii)	<p>That whatever is a datum for a feeling has a unity <i>as felt</i>. Thus the many components of a complex datum have a unity: this unity is a 'contrast' of entities. In a sense this means that there are an endless number of categories of existence, since the synthesis of entities into a contrast in general produces a new existential type. For example, a proposition is, in a sense, a 'contrast'. For the practical purposes of 'human understanding', it is sufficient to consider a few basic types of existence, and to lump the more derivative types together under the heading of 'contrasts'. The most important of such 'contrasts' is the 'affirmation-negation' contrast in which a proposition and a nexus obtain synthesis in one datum, the members of the nexus being the 'logical subjects' of the proposition.</p>	<p>A graph's type system may extend past the categorization of elements into the categorization of combinations of typed elements. This typing of combinations turns a finite basic type system into an infinite complex type system.</p>
Categories of Explanation (xviii)	<p>That every condition to which the process of becoming conforms in any particular instance has its reason either in the character of some actual entity in the actual world of that concrescence, or in the character of the subject which is in process of concrescence. This category of explanation is termed the 'ontological principle'. It could also be termed the 'principle of efficient, and final, causation'. This ontological principle means that actual entities are the only reasons; so that to search for a reason is to search for one or more actual entities. It follows that any condition to be satisfied by one actual entity in this process expresses a fact either about the 'real internal constitutions' of some other actual entities, or about the 'subjective aim' conditioning that process. The phrase 'real internal constitution' is to be found in Locke's Essay Concerning Human Understanding (III, III, 15): "And thus the real internal (but generally in substances unknown) constitution of things, whereon their discoverable qualities depend, may be called their</p>	<p>All reasons - which can be thought of as explanations of meaning and their representation - are instantiated in the graph as vertices. There is no meaning, whether as idea or symbol, apart from a vertex in the graph.</p>

	<p>'essence'." Also the terms 'prehension' and 'feeling' are to be compared with the various significations of Locke's term 'idea'. But they are adopted as more general and more neutral terms than 'idea' as used by Locke, who seems to restrict them to conscious mentality. Also the ordinary logical account of 'proposition' expresses only a restricted aspect of their role in the universe, namely, when they are the data of feelings whose subjective forms are those of judgements. It is an essential doctrine in the philosophy of organism that the primary function of a proposition is to be relevant as a lure for feeling. For example, some propositions are the data of feelings with subjective forms such as to constitute those feelings to be the enjoyment of a joke. Other propositions are felt with feelings whose subjective forms are horror, disgust, or indignation. The 'subjective aim', which controls the becoming of a subject, is that subject feeling a proposition with the subjective form of purpose to realize it in that process of self-creation.</p>	
<p>Categories of Explanation (xix)</p>	<p>That the fundamental types of entities are actual entities, and eternal objects; and that the other types of entities only express how all entities of the two fundamental types are in community with each other, in the actual world</p>	<p>The two fundamental vertex types are vertices of meaning and vertices of symbolic representation.</p>
<p>Categories of Explanation (xx)</p>	<p>That to 'function' means to contribute determination to the actual entities in the nexus of some actual world. Thus the determinateness and self-identity of one entity cannot be abstracted from the community of the diverse functionings of all entities. 'Determination' is analysable into 'definiteness' and 'position', where 'definiteness' is the illustration of select eternal objects, and 'position' is relative status in a nexus of actual entities.</p>	<p>The type of a vertex and its resultant functional capacity in the graph are inseparable. The exercise of functional capacity through a vertex's type influences the typing of subsequent vertices and every vertex's type is dependent upon the summary function of its dependencies as determined through their types. The type system is causally effective throughout the entire graph.</p>

Categories of Explanation (xxi)	An entity is actual, when it has significance for itself . By this it is meant that an actual entity functions in respect to its own determination. Thus an actual entity combines self-identity with self-diversity .	A vertex's type is coherent in any relations to itself, and in any relations to every other vertex in the graph.
Categories of Explanation (xxii)	That an actual entity by functioning in respect to itself plays diverse roles in self-formation without losing its self-identity . It is self-creative; and in its process of creation transforms its diversity of roles into one coherent role. Thus 'becoming' is the transformation of incoherence into coherence , and in each particular instance ceases with this attainment.	A vertex may have multiple types . Each type is supported and determined by that vertex's incoming edges and supports the type of itself and of every other vertex in the graph by its outgoing edges.
Categories of Explanation (xxiii)	That this self-functioning is the real internal constitution of an actual entity. It is the 'immediacy' of the actual entity. An actual entity is called the 'subject' of its own immediacy.	Because of coherence in the type system, the creation of any vertex is driven by an intention to conform to this coherence in the type(s) it achieves for itself through the selection of its inputs. These input edges may be self-originating or other-originating
Categories of Explanation (xxiv)	The functioning of one actual entity in the self-creation of another actual entity is the 'objectification' of the former for the latter actual entity. The functioning of an eternal object in the self-creation of an actual entity is the 'ingression' of the eternal object in the actual entity.	The two fundamental types of edges are those that relate two vertices or those that relate a symbol to a vertex .
Categories of Explanation (xxv)	The final phase in the process of concrescence, constituting an actual entity, is one complex, fully determinate feeling. This final phase is termed the 'satisfaction' ; It is fully determinate (a) as to its genesis, (b) as to its objective character for the transcendent creativity, and (c) as to its prehension - positive or negative - of every item in its universe.	The selection of inputs for a vertex is a process that upon completion, is never altered thereafter. Furthermore, its subgraph of dependencies is never altered .
Categories of Explanation (xxvi)	Each element in the genetic process of an actual entity has one self-consistent function, however complex, in the final satisfaction.	Because the subgraph of dependencies for a given vertex is never altered, it is subject to a one-time assignment of type(s) that never changes .

Categories of Explanation (xxvii)	In a process of concrescence, there is a succession of phases in which new prehensions arise by integration of prehensions in antecedent phases. In these integrations 'feelings' contribute their 'subjective forms' and their 'data' to the formation of novel integral prehensions; but 'negative prehensions' contribute only their 'subjective forms'. The process continues till all prehensions are components in the one determinate integral satisfaction.	The absence of an edge input for any vertex is significant from the perspective of the type system, and this significance may be represented by vertices in the graph, but "absence of an edge" means that the significance of these vertices has no determinate effect in the type system.
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Categoreal Obligations

The Category of Subjective Unity	<p>“The many feelings which belong to an incomplete phase in the process of an actual entity, though unintegrated by reason of the incompleteness of the phase, are compatible for integration by reason of the unity of their subject.” [p. 26]</p> <p>“The first category has to do with self-realization. Self-realization is the ultimate fact of facts. An actuality is self-realizing, and whatever is self-realizing is an actuality. An actual entity is at once the subject of self-realization, and the superject which is self-realized.” [p. 222]</p> <p>“This category is one expression of the general principle that the one subject is the final end which conditions each component feeling. Thus the superject is already present as a condition, determining how each feeling conducts its own process.” [p. 223]</p>	Intention Rule: In the process of vertex creation, the end justifies the means. A vertex's type is an intention that the process eventually fulfills.
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<p>The Category of Objective Identity</p>	<p>“There can be no duplication of any element in the objective datum of the ‘satisfaction’ of an actual entity, so far as concerns the function of that element in the ‘satisfaction.’ Here, as always, the term ‘satisfaction’ means the one complex fully determinate feeling which is the completed phase in the process. This category expresses that each element has one self-consistent function, however complex. Logic is the general analysis of self-consistency.” [p. 26]</p> <p>“The second and third categories have to do with objective determination. All entities, including even other actual entities, enter into the self-realization of an actuality in the capacity of determinants of the definiteness of that actuality. By reason of this objective functioning of entities there is truth and falsehood. For every actuality is devoid of a shadow of ambiguity: it is exactly what it is, by reason of its objective definition at the hands of other entities....” [p. 222-223]</p> <p>“This category asserts the essential self-identity of any entity as regards its status in each individualization of the universe. In such a concrescence one thing has one role and cannot assume any duplicity.” [p. 225]</p>	<p>Typing Rule: The finite nature of the simple type system requires that each factor in the determination of a vertex's type is distinct and independent of the other factors. If for instance, one factor is the input of a vertex of a certain type, then only one vertex that will satisfy that factor.</p>
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<p>The Category of Objective Diversity</p>	<p>“There can be no ‘coalescence’ of diverse elements in the objective datum of an actual entity, so far as concerns the functions of those elements in that satisfaction. ‘Coalescence’ here means the notion of diverse elements exercising an absolute identity of function, devoid of the contrasts inherent in their diversities.” [p. 26]</p> <p>“... In abstraction from actualization, truth and falsehood are meaningless: we are in the region of nonsense, a limbo where nothing has any claim to existence. But definition is the soul of actuality: the attainment of a peculiar definiteness is the final cause which animates a particular process; and its attainment halts its process, so that by transcendence it passes into its objective immortality as a new objective condition added to the riches of definiteness attainable, the ‘real potentiality’ of the universe.” [p. 223]</p> <p>“In other words, in a real complex unity each particular component imposes its own particularity on its status. No entity can have an abstract status in a real unity. Its status must be such that only it can fill and only that actuality can supply.” [p. 225]</p>	<p>Dependency Rule: vertex typing requires distinguishable edge types having distinct origin vertices of determined types. (As well as meaning and symbolic assignment)</p>
<p>The Category of Conceptual Valuation</p>	<p>“From each physical feeling there is the derivation of a purely conceptual feeling whose datum is the eternal object determinant of the definiteness of the actual entity, or the nexus, physically felt.”</p>	<p>Symbol Rule: every vertex has a symbol assigned to it.</p>
<p>The Category of Conceptual Reversion</p>	<p>“There is secondary origination of conceptual feelings with data which are partially identical with, and partially diverse from, the eternal objects forming the data in the first phase of the mental pole. The diversity is a relevant diversity determined by the subjective aim. Note that category (iv) concerns conceptual reproduction of physical feeling, and category (v) concerns conceptual diversity from physical feeling.” [p. 26]</p>	<p>Novelty Rule: Symbols are employed in the creation of new symbols.</p>

<p>The Category of Transmutation</p>	<p>“When (...) one and the same conceptual feeling is derived impartially by a prehending subject from its analogous simple physical feelings of various actual entities in its actual world, then in a subsequent phase of the integration of these simple physical feelings together with the derivate conceptual feeling, the prehending subject may transmute the datum of this conceptual feeling into a characteristic of some nexus containing those prehended actual entities among its members or of some part of that nexus. In this way the nexus (or its part), thus characterized, is the objective datum of a feeling entertained by this prehending subject.” [p.27]</p>	<p>Meaning Rule: symbols, once assigned meaning, may participate in the composition of new meanings which may take on new symbols.</p>
<p>The Category of Subjective Harmony</p>	<p>“The valuations of conceptual feelings are mutually determined by the adaptation of those feelings to be contrasted elements congruent with the subjective aim. Category (i) and category (vii) jointly express a pre-established harmony in the process of concrescence of any one subject. Category (i) has to do with data felt, and category (vii) with the subjective forms of the conceptual feelings. This pre-established harmony is an outcome of the fact that no prehension can be considered in abstraction from its subject, although it originates in the process creative of its subject.” [p. 27]</p>	<p>Harmony Rule: The meaning of symbols harmonized with the meaning of the vertices they are assigned to.</p>
<p>The Category of Subjective Intensity</p>	<p>“The subjective aim, whereby there is origination of conceptual feeling, is at intensity of feeling (alpha) in the immediate subject, and (beta) in the relevant future. This double aim – at the immediate present and the relevant future- is less divided than appears on the surface. For the determination of the relevant future, and the anticipatory feeling respecting provision for its grade of intensity, are elements affecting the immediate complex of feeling.” [p. 27]</p>	<p>Version Rule: versioning of a vertex occurs not through editing of an existing vertex, but rather through the incorporation of the existing vertex in the creative process of a novel version of that vertex.</p>

<p>The Category of Freedom & Determination</p>	<p>“The concrescence of each individual actual entity is internally determined and is externally free. This category can be condensed in to the formula, that in each concrescence whatever is determinable is determined, but that there is always a remainder for the decision of the subject-superject of that concrescence... This final decision is the reaction of the unity of the whole to its own internal determination. This reaction is the final modification of emotion, appreciation, and purpose. But the decision of the whole arises out of the determination of the parts, so as to be strictly relevant to it.” [p. 27-28]</p>	<p>Provenance Rule: there exists an aspect of the vertex typing process - captured in the pattern of its inputs - that pertains to the determination of its provenance and/or context.</p>
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