§1 Eternal Objects

This section sets forth the structure of the realm of eternal objects, without regard to their content. The eternal objects are the universals in Whitehead's system. They are repeated throughout experience. The actual entities, the particular occasions of experience, are never repeated. The lowest grade, which I will call the 1st grade, consists of the eternal objects which do not presuppose any other eternal objects, but rather have direct ingression into actual occasions. The 2nd grade of eternal objects consists of those eternal objects which have as relata only eternal objects of the 1st grade ~~and actual occasions~~. The nth grade of eternal objects consists of those eternal objects which have as relata only eternal objects of the n-1th, n-2th, ... and 1st grades, ~~and actual occasions~~. 1

An actual occasion consists of two poles. A mental pole and a physical pole. The mental pole consists of a number of finite abstractive hierarchies; the physical pole consists of one infinite abstractive hierarchy. 2

[illegible]

"An 'abstractive hierarchy based upon g,' where g is a group of simple eternal objects, is [illegible] a set of eternal objects which satisfy the following conditions,

(i) the members of g belong to it, and are the only simple eternal objects [illegible] in the hierarchy.

(ii) the components of any complex eternal object in the hierarchy are also in the hierarchy, and

(iii) any set of eternal objects belonging to the hierarchy, whether all of the same grade or whether differing among themselves as to grade, are jointly among the components or derivative components of at least one eternal object which also belongs to the hierarchy."[3] Finite abstractive hierarchies stop at a finite grade of complexity; Infinite abstractive hierarchies have members of every grade of complexity.[4] ~~The physical pole of an actual occasion is also the physical prehensions of that occasion; the mental pole is the conceptual prehensions.~~ The physical pole has as its origin the simple physical feelings of the actual occasion. The mental pole has as its origin the simple conceptual occasions of the actual occasion.

§ Propositions.

A proposition is the possibility of actual in the actual world of some actual occasion fulfilling some eternal object. Whitehead defines two kinds of propositions. "A '*singular*' proposition is the potentiality of an actual world including a definite set of actual entities in a nexus of reactions involving the hypothetical ingression of a definite set of eternal objects."[10]

'A '*general*' proposition only differs from a 'singular' proposition by the generalization of 'one definite set of actual entities' into 'any set belonging to a certain sort of sets.' If the sort of sets include all sets with potentiality for that nexus of reactions, the proposition is called '*universal*'."[11]

A proposition which is the possibility of the ingression of the eternal object R, into actual occasions A, B, and C would be symbolized R(A, B, C). The universal proposition which is the possibility of the ingression of R into all sets with that possibility would be symbolized (X, Y, Z). R(X, Y, Z). Also, if the incompatibility of propositions is introduced, then the notions of and, or, not, if ... then, if and only if, etc are definable.

The set of actual occasions involved in the proposition are the *logical subjects* of the proposition. The eternal objects involved are the *predicates* of the proposition. One complex eternal object is formed by the predicates; this is *the complex predicate*.[12]

The locus of a proposition is the set of all actual occasions whose actual worlds include the logical subjects of the proposition.[13]

If the locus of a proposition includes as a member a particular actual occasion, then the proposition is true or false with regard to that occasion. If it is realized in the actual world of that occasion, it is true; if it is not realized it is false.[14]

As mentioned before, Whitehead says every proposition presupposes an indicative system of relations. It will now be shown how such an indicative system would be used. The proposition in question will be about actual occasions in the actual world of A. Its actual world is constituted by occasions B, C, D, E, F, G, H, I for which the indicative system of dual relations in § 3 holds.

The indicative system of relations first allows equality to be defined for that actual occasion.

$$x = y \overset{df}{=} (\exists R_{ij})\, R_{ij}(A,x) \,.\, R_{ij}(A,y),$$

i.e. two actual occasions in the world of A are identical if some member of the indicative system of dual relations relates them both to A.

Next, descriptions can be defined as in *Principia Mathematica*

$$\psi(\iota x)(\phi x) \overset{df}{=} : (\exists y) : \phi x \,.\, \equiv_x x = y : \psi y$$

Then any occasion in A's world can be referred to descriptively with the indicative system. The references are

$(\iota x)(R_{10}(A,x))$	for B
$(\iota x)(R_{20}(A,x))$	for C
$(\iota x)(R_{0-1}(A,x))$	for D
$(\iota x)(R_{1-1}(A,x))$	for E
$(\iota x)(R_{2-1}(A,x))$	for F
$(\iota x)(R_{0-2}(A,x))$	for G
$(\iota x)(R_{1-2}(A,x))$	for H
$(\iota x)(R_{2-2}(A,x))$	for I

Thus the only 'name' required in the expression of a proposition is the name of the occasion in which the proposition is located.

§11 Triangles + Quadrilaterals

A segment is an *instantaneous straight segment* if all the points incident in it are in one instantaneous straight line. A segment is a *sequential straight segment* if all the points in it are incident in one sequential straight line. A segment is a *straight segment* if it is an instantaneous straight segment or a sequential straight segment. The straight between points A and B will be symbolized AB. A *straight line* is an instantaneous straight line or a sequential straight line. Two straight segments are *parallel* if the straight lines, in which their points are, are parallel. Two straight segments are *normal* if the straight lines in which their points are incident are normal.

A geometrical element is a *quadrilateral with vertices A, B, C, and D*, if it is prime in respect to one the these conditions:

i) the straight segments AB, BC, CD, and DA are incident in it, or
ii) " " " AB, BD, DC, and CA " " " ", "
iii) " " " AC, CB, BD, and DA " " " ",

and with respect to the condition that no three of the points A, B, C and D are all incident in any one straight segment, and to the condition that non of the segments

A straight segment is a *side* of a quadrilateral if its endpoints are vertices of that quadrilateral. Two sides of a quadrilateral are *opposite* if no points are incident in both of the two sides. Two sides of a quadrilateral are *adjacent* if they are not opposite. A quadrilateral is a *parallelogram* if its opposite sides are parallel. A quadrilateral is a *rectangle* if its adjacent sides are normal.

a ~~[illegible]~~ geometrical element is a triangle ~~[illegible]~~ ~~[illegible]~~ with vertices A, B, and C if it is prime with respect to the condition that AB, BC, and CA are incident in it. The segments AB, BC, and CA are the sides of the triangle. The altitude of a triangle with respect to a given side is the geometrical element prime with respect to the condition that the vertex of the triangle not an endpoint of the given side is incident in it, it is normal to the given side, and some point incident in it is in the straight line in which the points of the given side are incident.

Notes – Part I

~~[illegible]~~

1 SMW p 150
2 SMW pp 153-154
3 SMW p 151
4 SMW p 152
5 PR p 224
6 PR p 224
7 PR pp 224-225
8 PR p 225
9 PR p 225

§5

~~10 PR p 346~~
~~11 PR p 346~~
~~12 PR p 347~~
~~13 PR p 348~~
~~14 PR p 348~~

§36

10 PR p 215
11 PR p 215
12 PR p 215
13 PR p 216
14 PR p 216
15 PM p *14

K PR p 334

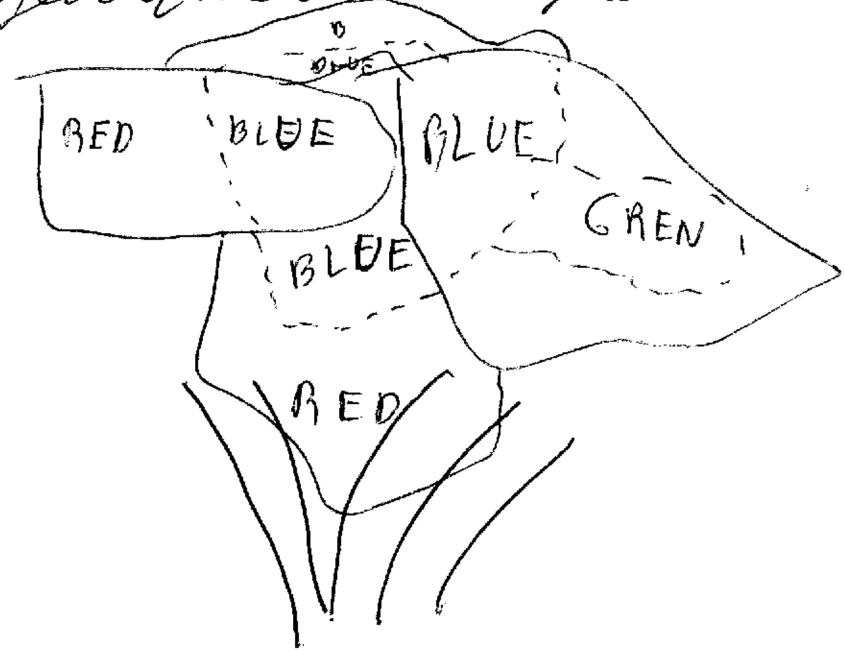
Notes – Part II

1 PR p 73
2 PR p 375
3 PR p 73
4 PR p 376
5 cf. Palter p 28.
6 AI pp 195-96.
7 PR p 77.
8 PR p 77.
9 PR p 82
10 PR p 334
11 PR p 336
12 PR p 346
13 PR pp 348-49.
14 cf Palter pp 45-47
15 Palter pp 44-47
16 PR pp 349-53
17 cf Palter p 56
18 cf Palter pp 57-59
19 cf Palter p 56
20 cf Palter p 59
21 cf Palter p 60
22 cf Palter p 60
23 Palter p 60.
24 cf Palter p 61 The definition for a rect there fails to eliminate the case in which the set is empty.
25 cf Palter pp 63, 65.
26 cf Palter p 62 [illegible]
27 cf Palter p 69
28 cf Palter p 69
29 cf Palter p 70
30 Palter p 71
31 cf Palter pp 71-72
32 cf Palter p 73
33 [Reserved for Normality]
34 cf Palter p 76

35	Palter	p 77
36	Palter	pp 79-80
37	Palter	80
38	Palter	p 81
39	Palter	p 81
40	Palter	p 81
41	Palter	p 82
42	Palter	p 83
43	Palter	p 85
44	Palter	p 83.

The physical pole of an actual entity is upon an infinate hierarchy based upon a set of simple eternal objects. The mental pole is various finite hierarchies based upon other sets of eternal objects. (SMW pp153-154).

Sensa are the lowest grade of eternal object. They do not relate eternal objects of any lower grade, but provide the matter for such relation. Eternal objects of higher grade are patterns, which are the manner in which the matter in a lower grade is contrasted. (PR pp135-136). Thus, (SMW p150) The lowest grade of eternal objects are sensa. The 2nd lowest grade consist of eternal objects which only have sensa as relata. The 3rd lowest grade only has sensa and eternal objects of the 2nd lowest grade.



§1 Introduction

The task [illegible] set for this [illegible] to treat certain problems in logic and the philosophy of science in terms of the metaphysics developed [illegible]

[illegible]

ideas. I will attempt [illegible] these [illegible] traditional form, and applied [illegible] metaphysics then they [illegible] as ever, and the metaphysics [illegible]. However, it will be seen that in so far as [illegible] have been [illegible] modifications [illegible] so that they [illegible] dealing with problems of a very different [illegible] metaphysics will be seen [illegible] quite adequately. In addition [illegible] view of Whitehead [illegible] traditional [illegible] disappear. They [illegible] solved. The [illegible] would [illegible] systems of this nature.

§4 Transmission.

The following is a suggestion of a specific rule which helps understand much of Whitehead's thought and also uses the previous ideas. It is first presented as a specific example, which can then be generalized. I will use eternal objects as follows:

$C(x)$	x is a color
$r(x)$	x is red
$b(x)$	x is blue
$w(x)$	x is white
$y(x)$	x is yellow
$P_{m,n}(x,y)$	color x is in a position relative to color y obtained as follows, assuming the relation between the occasions in the chart hold as in the last section.

A	B	C
D	E	F
G	H	I

$$R_{m,n}(x) \stackrel{df}{=} \exists y, z, \; C(y) . C(z) . P_{m,n}(y,z)(x)$$

Part I - General

X §1 Eternal Objects
X §2 Relations and General Principles
X §3 Indicative Systems of Dual Relations
X §4 Propositions
[redacted]

Part II – The Extensive Continuum

X §1 The Modes of Objectification
X §2 The Extensive Continuum
X §3 Extensive Connection
X §4 Extensive Abstraction
X §5 Durations and Moments
X §6 Instants, Instantaneous Planes, and Instantaneous Straight lines
X §7 Cogredience
X §8 Stations
X §9 Sequential Straight lines, and Vagrant Planes.
~~§10 [illegible]~~
~~Cartesian Coordinate Systems and Kinematics~~
~~[illegible]~~
§10 Normality
X §11 ~~[illegible]~~ Triangles + Quadrilaterals
~~[illegible]~~
X §12 Congruence
X §13 Cartesian Coordinate Systems + Kinematics

General Part I
X §1 Eternal Objects
X §2 Relations & General Principles
X §3 Indicative Systems of Dual Relations
X §4 Propositions

\ §5 Analysis of the physical pole of the concrete actual occasion
X §6 Extensive Connection & Extensive abstraction
§7 Durations & Cogredience
~~[illegible]~~
§8 ~~[illegible]~~ Flat Loci
§9 Moments
§10 Congruence & Measurement
§10 Kinematics
§11 Uniform Objects
§12 Material Objects
§13 Motion of Material Objects
§14 Extensive Magnitude of Material Object
§15 Dynamics

Physical Part II

§16 The mental pole of the concrete actual occasion

Mental Part II

§ Primary Feelings
~~[illegible]~~

Part III Genetic

73 80

34, 79, 99, 142-151, 188, 193, 195-212, 298,

~~365-~~91

98, 99, 137, 142, 145, 188, 195-212, 276, 375, 376

Of three moments, no two of which are parallel, have incident in all three a set of points which is neither empty nor identical to the set of points incident in any two of the moments, then this locus of points is defined as an instantaneous straight line.

~~Of the case in which three moments still have incident in them the set all all p~~

In the case in which a third moment has incident in it the point in the instantaneous plane defined by two other moments, the three moments are called co-level.

~~instantaneous straight segment between two point is segment between those points all the points incid~~

A segment between two points is an instantaneous straight segment if all the points incident in it are in some instantaneous straight line

A region is contained in a duration if it is contained by some region in the duration.

A region intersects a moment if some point situated in the region is incident in the moment

A region extends throughout a duration if it is contained in the duration and any moment which inheres in the duration intersects it.

Previously it was mentioned that for any given actual occasion there is one duration in which all the the actual occasions presentationally objectified in the given lie. This is now generalized to the case of regions as the other concepts have been generalized. A region will now be said to be cogredient or stationary in a duration if the actual entity for which it would be the standpoint would have that duration as its presented duration.

Whitehead never gives a list of axiom for cogredience, however Palter gives the following list of properties which he deduces from Whitehead's use of the concept.

1) Every region is cogredient with one and only one duration

2) If an event a is cogredient with a duration then there is an event b such that b is contained by a and b is cogredient with the duration.

3) If an event a is cogredient with a duration then there is an event b such that a is contained by b and b is cogredient with the duration.

4) If an event is cogredient with a duration then the event extends throughout the duration

Normality or perpendicularity must now be defined. A sequential straight line is normal to a moment, if any points in it are incident in the station of some point in some duration of the time system of which the moment is a member

A variant plane, or matrix, is normal to a moment, if any sequential straight line in the variant plane is normal to the moment

These definitions are derived from ones given on page 76 of Palter.

The mutual normality of instantaneous planes and variant planes can also be defined.

Also if l and m are respectively an instantaneous plane and variant plane, normal to each other then the instantaneous straight line in l will be called normal to the intersecting sequential straight line in m

The metric properties of the space are now obtained from the notion of the congruence of two straight segments. The congruence of two straight segments is not defined but is assumed to obey the following axioms.

A peculiar difficulty arises here. One of three things must happen. They are:

(1) No point has a station in any duration.

(2) The possible shapes of regions must be restricted

(3) Some regions do not have cogredience with any duration.

This is a result of the following argument. Around any point in any duration some weird shaped region can be put within that duration such that no straight line extends though that region without intersecting the surface of the region and passing in and out of it. If such a region is cogredient in a duration, then there will be no station for that point in that duration.

I think that the easiest way to solve this problem is to say that some regions do not have cogredience with any duration. Thus these regions do not really have the potentiality of becoming actual occasions, as this property must be retained for them. Regions must be conceived as having the potentiality of being actual entities only in respect to their relations of extensive connection.

A point track is defined as the set of all points which are incident in some station of a given point in a given time system

A matrix, or variant plane, is defined as a locus of points m such that there exist a instantaneous straight line r and a point p nonco-momental with r and every point in m is either

(1) ~~[illegible]~~ in some instantaneous straight line ~~[illegible]~~ which ~~[illegible]~~ passes through P and intersects r,

(2) in some sequential straight line which passes through P and intersects r or

(3) in the instantaneous straight line through P and parallel to r.

The basic element of a four-dimensional ~~non~~-Euclidean geometry have been established. Through the relation of congruence it will now be possible to define a metric so that a ~~[illegible]~~ cartesian coordinate system can be introduced relative to any point, and such that coordinate transformation ~~[illegible]~~ may be made between any two such coordinate systems.

A point bounds a duration if every region in which the point is situated intersects some region in the duration, but no region in which the point is situated is contained by any region in the duration

A duration is bounded by a moment, if all the points incident in the moment bound the duration

~~A time system is the set of all durations~~

A time system is defined by a family of parallel durations and the moments defined by it

Here, a moment would inhere in a duration if some momental set in the momement included that duration

An instantaneous plane is the locus of all points which are incident in both of two non-parallel moments

~~A stationary abstractive set is defined as an abstractive set prime to the condition each of its members extends over events which (1) are cohered in by some assigned.~~

~~A stationary abstractive set is.~~

An abstractive set is stationary with duration d at point P if it is prime with respect to the condition that each of its members extends over regions which (1) P is situated in d and (2) are cogredient in d

The station of point p in duration d is ~~the set of all abstractive sets which are stationary with~~ the geometrical element associated with an abstractive set which is stationary with d at point p.

The following Theorems are stated by Whitehead and can be proven.

Theorem 1. If a is cogredient with d and d covers a duration e, then e intersect a in an region b such that a covers b and b is cogredient with e

Theorem 2. If d and e are duration of the same time system such that d covers e and if the point P lies in e, and s and t are station of P in d and e respectively, then s covers t.

§ Extensive Connection + Extensive Abstraction

In this section, Whitehead's method of extensive abstraction is presented. Through its use, propositions about points, lines, etc can be analysed into propositions about regions and their extensive connection. To be consistent with Whitehead's definition of proposition, propositions about regions must be analyzable into propositions about actual occasions. For the present, this will be assumed. The following is an elucidation of Part IV of *Process and Reality*.

The following models illustrate what is meant by the extensive connection of *regions*.

No region is externally connected with itself. The term connection will commonly be used for external connection.

The following definitions are made:

Def. 1. Regions A and B are *mediately connected* if they are both connected to a third region, and regions A and B are not identical. This is not an important definition since any two distinct regions are mediately connected.

Def 2. Region A *includes* region B if every region connected with region B is connected with region A, and A and B are not identical.

Def 3. Regions A and B *overlap* if there is a third region which they both include.

Def 4. A set of regions, x, is a dissection of a region A, if

(i) all its members are included in A,
(ii) no two of its members overlap,
(iii) any region included A, but not a member of the set, either is included in one member of the set, or overlaps more than one member of the set.

~~[illegible]~~

Def 5. A region is an <u>intersect</u> of two overlapping regions, A and B, if
(i) either it is included in both A and B, or it is one of the two regions and is included in the other, and
(ii) no region also included in both A and B, can overlap it without being included in it

Def 6. If there ~~is~~ one, and only one, intersect of two regions, A and B, those regions overlap with ~~[illegible]~~ <u>unique intersect</u>. If there is more than one intersect, they overlap with <u>multiple intersection</u>.

Def 7. Regions A and B are <u>externally connected</u> if ~~[illegible]~~ (i) they are connected, and
(ii) they do not overlap.

Def 8. ~~A~~ Region B is <u>tangentially</u> included in a region A, if
(i) B is included in A, and
(ii) there are regions which are externally connected with both A and B.

Def 9. ~~A~~ Region B is non-tangentially included in a region A if it is included in A, but not non-tangentially included.

Definition 10 ~~[illegible]~~ An *abstractive set* is a set of regions such that:
(i) any two members of the set are such that one of them includes the other non-tangentially,
(ii) there is no region included in every member of the set

Def 11. An abstractive set α *covers* an abstractive set β, if every member of the set α includes some member of the set β.

Def 12. Two abstractive sets are *equivalent* if each covers the other.

Def 13 A *geometrical element* is a complete group of abstractive sets equivalent to each other, and not equivalent to any abstractive set outside the group.

~~Def 14. The geometrical element to which~~
Def 14 ~~The~~ A geometrical element is *associated* with an abstractive set if the abstractive set is a member of the geometrical element.

Def 15 ~~The~~ The geometrical element a is *incident* in the geometrical element b, if every member of b covers every member of a, but a and b are not identical,

Def 16. A geometrical element is ~~[illegible]~~ a *point*, if there is no geometrical element incident in it.

Def 16.1 The members of a geometrical element are <u>prime</u> in reference to assigned conditions, if

(i) every member of that geometrical element satisfies those conditions

(ii) if any abstractive set, satisfies those conditions, every member of its associated geometrical element satisfies them;

(iii) there is no geometrical element, with members satisfying those conditions, which is also incident in the given geometrical element.

Def 17. ~~[illegible]~~ An abstractive set is <u>punctual</u> if it is a member of a point.

Def 18. A geometrical element is ~~called~~ a <u>segment between two points P and Q</u> if its members are prime in reference to the condition that ~~[illegible]~~ the points P and Q are incident in it

<u>Def 19</u> If a geometrical element is a ~~segment~~ segment between two points, those points are ~~called~~ the <u>end points</u> of the segment

<u>Def 20</u> An abstractive set is ~~[illegible]~~ <u>segmental</u> if it is a member of a segment.

Axiom 1. No region is connected with itself.

Axiom 2. If A is connected with B, then B is connected with A.

Axiom 3. No region is connected with all other regions.

Axiom 4 Any two regions are mediately connected.

Axiom 5. If region A include region B, region A and B are connected.

~~Axiom 6 Every region contains two disconnected regions.~~

Axiom 5 There are many dissection of any given region,

Axiom 6 ~~[illegible]~~ If every region connected with B is connected with A and every region connected with A is connected with B then A and B are the same region.

~~Axiom 7. A dissection of a region [illegible] a dissection of any other region~~

Thm 1. Connection is not transitive. [ax 4 + ax 3]

Thm 2. Inclusion is transitive [Def 3]

Proof: Suppose B is included A and C is included in B.
Then by Def, every region connected with C is connected with B and every region connected with B is connected with A
∴ every region connected with C is connected with A ∴ C is included in A

Thm 3. Inclusion is asymmetrical.
[ax 6 + Def 2]

Thm 4 Every region includes other regions and a pair of regions thus included in one region are not necessarily connected with each other. [ax 5 + Def 4]

Thm 5 Overlapping is symmetrical [Def 3]

Thm 6 If one region includes another, the two regions overlap. [Thm 4, Thm 2, Def 3]

Thm 7 Two regions which overlap are connected
[Def 3, ax 5, Def 2]

§2 Extensive Connection

Extensive connection is a binary relation between regions. It is undefined, but the following diagrams ~~accompany~~. illustrate the extensive connection (commonly called connection) of regions

§ III Transmission

The following is a suggestion of a specific rule which helps understand much of Whitehead's thought and also uses the previous ideas. It is first presented in a specific example and then can be generalized.

The following eternal objects will be assumed.

Of the 1st grade.

$r(x)$ = x is red
$b(x)$ = x is blue
$w(x)$ = x is white
$y(x)$ = x is yellow

Of the 2nd grade

$C(X)$ x is a color (a general principle)

$P_{mn}(X,Y)$ the colors x and y are in [illegible] position relative to the subject defined by the [illegible] subscripts as follows. The [illegible] colors appear in the pattern

The first index tells how many squares to the right (left) if it is a positive (negative) number. The second index tells how many squares above (below) if it is a positive negative number.

[illegible]

P_{mn} establishes a relative position between two colors [illegible] say [illegible] say red and blue. $P_{m,n}(r, b)$ is itself a new eternal object capable of ingression into actual entities A and B. This would be written $P_{m,n}(r, b)(A, B)$. It seems desirable so in general this will be abbreviated $P_{m,n}(r, b, A, B)$. In this the actual occasion A is red, B is blue and they are in the [illegible] relative position defined by P_{mn} relative to the subject actual entity. Using the existential quantifier it is now possible to define the relative position of two occasions, regardless of color.

$$R_{m,n}(A,B) \overset{df}{=} \exists x,y : C(x) . C(y) . P_{m,n}(x,y,A,B)$$

This relation is the one used in the example in §3 and is a indicative system of dual relations.

~~[illegible]~~

~~I will now define the following general [illegible]. They are eternal objects of the 2nd grade. The symbols for them are listed on the left; they are defined by their instances which are listed on the right.~~

~~[illegible] $R_{0,2}$, R_{2}, [illegible]~~

I will now define the following Vector characters

$V_1(A)$, which may be read A is prehended with the vector character 1

$$\overset{df}{=} \exists s,t,u,v,w,x,y,z: R_{1,0}(A,s) . R_{2,0}(A,t) .$$
$$R_{0,-1}(A,u) , R_{1,-1}(A,v) , R_{2,-1}(A,w) , R_{0,-2}(A,x) .$$
$$R_{1,-2}(A,y) . R_{2,-2}(A,z)$$

$$V_2(A) \overset{df}{=} \exists B: V_1(B) . R_{1,0}(B,A)$$

$$V_3(A) \overset{df}{=} \exists B: V_1(B) , R_{2,0}(B,A)$$

$$V_4(A) \overset{df}{=} \exists B: V_1(B) . R_{0,-1}(B,A)$$

$$V_5(A) \overset{df}{=} \exists B: V_1(B) . R_{1,-1}(B,A)$$

$$V_6(A) \overset{df}{=} \exists B: V_1(B) . R_{2,-1}(B,A)$$

$$V_7(A) \overset{df}{=} \exists B: V_1(B) . R_{0,-2}(B,A)$$

$$V_8(A) \overset{df}{=} \exists B: V_1(B) . R_{1,-2}(B,A)$$

$$V_9(A) \overset{df}{=} \exists B: V_1(B) . R_{2,-2}(B,A)$$

The following is the principle of transmission.

If, relative to actual occasion B, $V_1(C)$ and $r(C)$ and, relative to occasion A, $V_1(B)$; then, relative to occasion A, $r(B)$.

This rule is an expression of the vector character of the transmission which occurs in physical prehensions to which Whitehead often refers. It has one main result. Colors are transmitted in a straight line. Of course, this is a greatly simplified case in comparison with the actual transmission of light. This is because of the relation P_{mn} which is its foundation. The one main problem with this example is that there is a finite level of complexity. This is because each occasion in this example prehends a finite number (9) of other occasions and each of these transmits a finite number (1) of sensa (1st grade eternal objects) in accordance with the principle of transmission.

It is an essential feature of Whitehead's system that only a finite number of occasions are immediately prehended by an actual occasion. It is also an essential feature of this system that the prehensions are integrated into a continuous whole, with infinite complexity. Therefore each prehension will transmit through an infinite number of vector characters. An account of Whitehead's theory of extensive connection is now required.

To generalize the principle of transmission it the procedure that appears to be necessary is to regard the prehensive sensitivity an actual occasion as filling a region, the region being the standpoint of that occasion. Each prehension fills a definite subregion of this region. Each subregion is filled with sensa distributed with their vector characters. Suppose the region of actual entity B is filled with a certain pattern of sensa, and A prehends B and this prehension in a specific subregion of its standpoint. Then this subregion of A will as a be a reproduction of the corresponding subregion of B.

§1 Regions

The extensive continuum is based upon the objectification of the contemporary world in any given actual occasion. Contemporary [redacted] occasions are causally independent, although they are interrelated because they arise from a [redacted] past, common, at least in part. [redacted] Whitehead deduces a special kind of relation between [redacted] contemporary occasions, to explain their mutual objectification, which would seem to be eliminated by their independence, and bases the extensive continuum upon the peculiar nature of this relation.

"The mutual independence of contemporary occasions lies strictly within the sphere of their teleological self-creation. The occasions originate from a common past and their objective immortality operates within a common future. Thus indirectly, via the immanence of the past and the immanence of the future, the occasions are connected. But the immediate activity of self-creation is separate and private, so far as contemporaries are concerned.

"There is thus a certain indirect immanence of contemporary occasions in each other. For if A and B be contemporaries, and C be in the past of both of them, then A and B are each in a sense immanent in C, in the way in which the future can be immanent in its past. But C is objectively immortal in both A and B. Thus in this indirect sense, A is immanent in B, and B is immanent in A." 1

. according to Whitehead, as a result of the mutual immanence of actual occasions, "Our direct perception of the contemporary world is thus reduced to extension, defining
(i) our own geometrical perspectives, and
(ii) possibilities of mutual perspectives for other contemporary entities inter se, and
(iii) possibilities of division. These possibilities of division constitute the world as a continuum." 2

Thus, although the contemporary world of an actual occasion is in fact divided as a multiplicity of actual entities, as perceived by that actual occasion, the contemporary world is continuous – divisible but not divided. 3

"The real potentialities relative to all standpoints are coordinated as diverse determinations of one extensive continuum. This extensive continuum is one relational complex in which all potential objectifications find their niche. It underlies the whole world past, present, future." 4 But the extensive continuum is the perception of contemporary (present) occasions.

Part II

1 AI pp 195-196
2 PR p 77
3 PR p 77
4 PR p 82

Part II – The Extensive Continuum

§1 ~~[illegible]~~ Regions
§2 Extensive Connection
§3 Extensive Abstraction
§4 Durations
§5 Cogredience

§1 Regions

~~Analysis of the Physical Pole~~

~~[illegible]~~ The physical pole of ~~an~~ a concrete actual entity ~~[illegible]~~ is describable by ~~[illegible]~~ propositions about about regions. Propositions about regions must be ~~[illegible]~~ capable of analysis into propositions about actual entities if Whitehead's definition of propositions is to hold. How this analysis is to take place never is completely indicated by Whitehead. This section will assume such an analysis is possible.

The notion of region will not be defined. Any actual occasion has a certain region which is its standpoint. However there are ~~[illegible]~~ many regions which are not the standpoint of any actual occasion, although any region has the ~~[illegible]~~ pure possibility of being the standpoint of an actual occasion.

~~[illegible]~~

Wolfe Mays, *The Philosophy of Whitehead*

p13 "Two kinds of entities are postulated, those making up the general scheme of order (or God) underlying the universe, and which guarantee induction, and the physical events (or the World) related within this structure. Further, he contends that the world of physics, described in terms of the transference of energy in the electromagnetic field, has analogous properties to the sensory and emotional elements immediately experienced by us, as he describes the physical quanta of energy as primitive throbs of emotional intensity. For Whitehead the world is made up of co-ordinated systems of events or societies, some of which give rise to complex wholes manifesting new properties — life and mind, for example, are considered to be Gestalt properties of such systems of events. And since in his view psychological systems have in some respects similar properties to physical ones, there can, he assumes, be causal interaction between them."

pp13/14. "he asserts that the experienced sensory qualities are obtained by a process of statistical averaging from the physiological and physical activities involved in perception".

p14 "Whitehead further believes that in ordinary life we use our sensory data as symbols for the actual events in the physical nature. We are enabled to do this, he argues, since (1) they both partake in the same general scheme of order, and (2) our sensory data are causally related to the physical events in the immediate past which have given rise to them."

p54 Related concepts noted:

a) realm of eternal objects (the general system of the relatedness of all possibility)

b) extensive continuum (one relational complex in which all potential objectifications find their niche)

c) Platonic Receptacle (general interconnectedness of things)

d) Primordial Nature of God

p 66 "Whitehead attempts to formulate the conceptual structure of experience in purely logical terms. He does this by replacing certain of its general features by logical entities, variables taking the place of the basic qualitative elements. When dealing with direct experience in terms of this scheme, we can think of the variables as having been replaced by particular values in sensory experience."

p75. "Whitehead was not putting forth a Platonic realism, but was rather applying certain concepts from symbolic logic, for example, the concept of the propositional function and the variable, to elucidate the structure of experience. In this connection, we should perhaps say straight away that by the realm of eternal objects Whitehead is really referring to an abstract logical structure derivative from the relation of extensive connection holding between events."

An Enquiry Concerning the Principles of Natural Knowledge
(Notes)

§1.5 "The fundamental assumption to be elaborated in the course of this enquiry is that the ultimate facts of nature, in terms of which all physical and biological explanation must be expressed, are events connected by their spatio-temporal relations, and that these relations are in the main reducible to the property of events that they can contain (or extend over) other events which are parts of them."

§2.1 "The philosophical principle of the relativity of space means that the properties of space are merely a way of expressing relations between things ordinarily said to be 'in space'. Namely, when two things are said to be 'both in space' what is meant is that they are mutually related in a certain definite way which is termed 'spatial.' It is an immediate consequence of this theory that all spatial entities such as points, straight lines and planes are merely complexes of relations between things or of possible relations between things."