On the Possibility of an Elementary Treatment of the Psyche (Draft and Notes)

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Abstract

Contents

1 Notes

Things that we need to address in this:

- Problems with existing proposals
  - **NOT** a "theory of mind" (In my experience, this usually indicates an attempt to render a legitimate problem 'philosophical' and thereby reduce its solution to the status of myth (cf. [48]), as opposed to actual encoding of a truth. The problem with (contemporary) 'philosophy' is that it treats all problems as 'debatable' except this fact itself.)
  - Other theories (analytical psych the exception in our estimation) do not study the contents of the psyche in an *elementary* fashion; specifically, we do not *deny* the utility of alternate approaches, we only *assert* that the (first-order) theory we propose is the minimal theory necessary to indicate the natural recursive evolution[1] the psyche in terms of the symbolic contents immediately present before the subject. Furthermore, by definition, it is the *unique* theory–it may be that the analogues of the dynamical equations that the system will construct are insufficient to capture the totality of what we intend to indicate. These details may be subjected to transient data, but the fundamental claim of this

[1] i.e., the most primitive exposition as indexed by the form of the internal sense (time, $\chi\rho o\nu o\varsigma$); this phrasing not exactly correct. The contents presented *form* the indicators of the archetype $\chi\rho o\nu o\varsigma$ (cf < Kant CPR >)–in a way, we exhibit their representation as subordinate to the $\lambda o\gamma o\varsigma$, which we discuss below. In this way, we are thinking of something like a functor $\Lambda : \Psi \to \mathscr{L}$, where $\mathscr{L}$ should be thought of as the presentation of the universal psyche under the image of the $\lambda o\gamma o\varsigma$, or in this case it should be thought of as analytic representation of something like a synthetic affective encoding of the universal psyche into a species of symbolic contents which are primitive terms of the archetype of the $\lambda o\gamma o\varsigma$, i.e., that they are supposed to form a synthetic unity which approximates the $\lambda o\gamma o\varsigma$ and in particular that segment of the universal psyche the frame seeks to assimilate by means of understanding.

as the unique solution is transcendental because the property that mediates immediate awareness of the contents which appear before the psyche is *necessarily* unique and *universally* so.
  - compare Skinner, Friston, Newell and Anderson, Buss et al. on evo psych
    * **Skinner (Behaviorism)**: behavioral theory identifies its elementary objects as mechanical actions taken by species which have been previously identified as, say, *living*. In a sense, it is a purely local theory. (Although if we fibrate over time, then it is possible the bundle is *trivial* so that the collection of local actions can always be included trivially in the class of admissible actions so that we can consider the theory 'global' in the usual sense of universal quantification.) It is *possible* that the collection of all possible behaviors to be taken in a given moment is sufficient to facilitate analysis of the living thing; it needs to postulate an objective function (this is obviously analogous to the principle of affective extremization, but not *equivalent*, since as far as I know behaviorism doesn't admit a generalized notion of affect or psychic energy), but I personally cannot see how it could ever give rise to any frame which is capable of satisfying any needs other than the most basic physiological ones, or why it would evre result in the generation of affectively encoding symbolic structures that produce culture in the abstract. I think they try to get around this by declaring the internal data also have 'dimensions of behavior' (in the words of Skinner), but this seems like an *ex post facto* attempt at fixing a problem that is rooted in the *postulates* of the theory. It has to maintain that all 'goals' are reduced to genesis of classes of 'well-adapted' behavior always in the service of copulation and perpetuation of the species. On the other hand, if we interpret this *symbolically*, this perspective almost entirely explains our nature–but it requires that we modify the underlying assumptions. I think if we re-interpret behaviorism as the extensional theory or extroverted form of the theory we propose, we can find agreement between the two.
    * **Friston (Neuroscience)**: Probably the closest to the theory I have in mind, but again the disagreement is essentially over what are to be regarded as the individuals of the theory.
    * **Newell (Cognitive Science)**: Suffers from a similar reduction problem.
    * **Buss (Evolutionary Psychology)**: Suffers from a similar reduction problem. See below.
- *Falsity* of the subject/object dichotomy, but utility–it is the *same* as the masculine/feminine dichotomy.
- Discussion of elementary data as a fundamental notion
- need to justify as criteria evolutionarily compatible, mathematics and religion–in particular, the need to use the emergence of mathematics and religion as *essential* criteria to judge whether a presented theory constitutes an effective elementary theory of the psyche.
- how and in what sense can we use religious symbolism in the context of construction of inferences?
  - indicate that each faculty is in some sense 'always on' so that one has no justification for believing that any specific content is 'walled off' from any given faculty. In particular, every content has a 'religious' component in the sense that it admits evaluation from this aspect of being
  - really, we contend that the affective evaluative capacity renders all experiences 'mystical' or 'magical' or 'numinous'–not in entirety, but as always a potential.
  - Eliade is useful here; he indicates that the *way* we become oriented in the world is through *hierophany*. Actually, it is the universality of this mechanism together with the observation that the understanding functions the same in each field that led us to conjecture the possibility of a 'universal' elementary treatment of the psyche to begin with
  - necessity of dealing with the *subjective* data
- we can view the 'encoding' or the 'rebirth' procedure as an expansion in the personality (i.e. psychic frame) so that we can give an analytic representation of the underlying symbolic content and thereby render the story intelligible to the intellect
- possible that the intellect, or the faculty of the understanding, is responsible for the synthetic generation of symbolic complexes (formed from elementary symbols of the *understanding*) which function as analytical substitutes for the elementary contents generated by alternative faculties
  - for example, a religious experience as an *elementary* content finds its construction out of the elementary *religious* symbols (cite Cassirer here), but it can be 'expanded' (hence the need for a sort of jet notion) in the elementary symbols of an 'adjacent' faculty–and in particular, the faculty governed by the $\lambda o \gamma o \varsigma$.
- if the rebirth process is the fundamental one (i.e. the governing structure of the psyche) then this is the psychomechanistic that characterizes the individuation process–indeed, we would thereby *define* that process to be identical with this
  - we view this perhaps from a 'topos'-theoretic point of view (actually, we might need a generalization) and take a psychic frame as a slice of the universal frame, then consider variational actions on the frame

(to other 'local' frames) and extremize this *along* the universal symbol of rebirth

- Does the mechanism of projection need to correlate to a postulate? How do we account for the fundamental quaternity? Can things like differentiation and integration be *derived*? Or do we need to *begin* with them as the basic 'operations'?
- we will render archetypes in full Greek
  - $\lambda o\gamma o\varsigma$ and $\alpha\upsilon\tau o\varsigma$ are the two we've indicated so far, but there will also be a dual to $\lambda o\gamma o\varsigma$ which we've suggestively labeled $\pi\alpha\theta o\varsigma$
  - these are likely to be construed as the primitive elementary presentations of *masculine* and *feminine* respectively
  - one way to test this in children (young) would be to determine whether on average they develop logico-cognitive skills from their fathers and emotional maturation and 'stability' from their mothers.
  - probably the related split we are looking for which I've usually rendered as: "sacred/profane" might also be viewed as "conscious/unconscious"–but this isn't quite right since "unconscious" – "feminine" is a typical association, when in reality I am looking for something like "good" – "evil", which has no a priori association with masculine or feminine.
- There will be another key archetype, viz. the archetype of the transcendent, which we can call $\theta\epsilon o\varsigma$. After reading further (e.g., [13]), it first appears that this introduction is absurd because the Father is ineffable as one of His essential properties. But *I think* Christ as the Son necessarily implies the ability to introduce such an archetype–it would be the analogue of God-become-Man among men.
- we need the notion of psychic frame, which I think is to be thought of as a 'slice' of the universal psychce, which I *think* can be construed as a topos–more on this below. In fact, we abstract beyond the idea of subject/object and deal with elementary frames, which can be assigned to particular individuals, collections of individuals, or whole species. This allows us to move beyond the simple subject/object dichotomy which we ultimately intend to deny
  - note that we need to touch on the Marburg pov here regarding 'psychologisms'–we completely agree that the study of the pure subjective contents is absurd because to scrutinize it in a way that intends to render its properties transcendent necessarily dissolves the whole content (since by definition, these transcendent contents are also 'objective'); however, we *disagree* that the function and purpose of psychology is to attempt this motion. Specifically, we view psychology as attempting to study those contents which are most immediate before the perceiving subject–it is not obvious that such contents are *purely subjective* (in fact, it is not obvious that *any* contents accessible to the perceiving subject could *ever* have such a property–likewise for objective data as well). There appears to be a connection to the phenomenological perspective here.
- it is *reasonable* to consider audience–but we should never sacrifice Truth in order to 'convince'; we are not in *that* business (i.e. sophistry, also known as *whoring*). The sole purpose of consideration of audience is in an effort to render the message *intelligible* that it might be genuinely *critiqued* or *accepted*. In this sense, I would imagine my audience members to be made up of equal parts theoretical psychologists, neurologists, physicists, and mathematicians. I would also admit logicians, philosophers, and theologians. My 'audience' should be comprised of the *best* of those fields, not the 'modern' forms; those are grotesque mutations of the greatest among them. I should perhaps imagine that I am to explain this idea to Jung, Pauli, Brouwer, Kleene, and Cassirer. Consequently, I need to introduce all things that are necessary in order to render the whole message intelligible to the whole group.
- It is possible that we also need a sort of dialectical relationship in order to incorporate the action of the unconscious. A naive way I have supposed this is to introduce a pair $(\mu\eta\tau\eta\rho, \pi\alpha\tau\eta\rho)$, but I am uncertain if I should regard these as derived; it would perhaps be better to think of a pair like $(\gamma\eta, \eta\lambda\iota o\varsigma)$.
- Symbols and archetypes stand in relation to one another: the archetypes are the contents of the collective unconscious, and as a result, *by definition,* they cannot be known. But their symbolic exposition–i.e. the symbols which indicate them–*can be*. Here, Neumann: "the numinous grandeur of the archetype, as originally experienced by primitive man, is the unity of the archetypal group of symbols in which it now manifests itself, plus an unknown quantity which disappears in the fragmentation process." - OHC, p. 322 –This is *essential;* it *justifies* the assertion that an archetype is indicated by a species of symbolic generators, but that their *extension* cannot be equivalent to the whole of the archetype, so that the archetype itself cannot be given by a synthetic process–the extension of the species of symbolic generators forms a *synthetic substitute* for the archetype, which I think is a purely analytic content. See my discussion below on these things.
- *Libido* still associates sexual content and concepts too strongly; we will rely on something like *psychic energy* instead as an adequate descriptor of the elementary synthetic unities which the understanding manipulates.

- *Hierophany is the fundamental orienting mechanism.* This is the reason for the absolute necessity for the theory to account for religion, which formalizes this process. For example, Neumman: "Man's rise to consciousness operated at first through an unconscious process that appeared significant to the group as well as the individual: this process we call ritual. Every important activity of primitive man is in this sense a ritual" (The Great Mother, p. 281)–and Eliade: "Being an *axis mundi*, the scared city or temple is regarded as the meeting point of heaven, earth, and hell" (Myth of the Eternal Return, p. 12)–how does this center emerge? The *emergence* of the sacred together with the mechaism of projection then *inheres* the sacred into the physical, endowing the other with this pojection. This then furnishes the orientation. This can emerge in *any* case and with *any* person–this is the 'Ratatouille' problem: although not everyone is blessed with vision, vision can emerge within anyone and at any time and for whatever reason. We can have geniuses in cullinary arts, in architecture, in mathematics, in engineering, in painting, in theology, etc. Comparing also Huxley's *The Perennial Philosophy* would be useful here too, especially Chs. I-IV, VII, IX, XI, XII, and maybe others but these are some of the more important chapters. This is to say that this aspect of emergence of the sacred is the dynamic driver of the process Jung builds in CW16 (*The Psychology of the Transference*) as well as CW 12 and 14. Hierophany as mediating personality development *justifies* the Principle of Affective Extremization–if this is the fundamental mediator in individuation, it can be construed as an extremization principle along the lines of Hamilton's Principle.
- The *genetic* treatment of the theory parallels the notion of evolutionary development. What is the nature of the property of being evolutionarily compatible? We can build this directly into the metatheory.
- There is a sense in which I mean to develop the theory here as a *topos*, but there has been some question as to the subobject classifier. I think we can take the $\lambda o\gamma o\varsigma$ in its symbolic form as the local classifier, and the full archetype as the universal one; since we can only ever deal with incomplete presentations of the archetypal complexes, this might be enough. In particular, this will work if the subobject classifier is responsible for the genesis of the internal logic or reasoning in a system, which I think is an accurate understanding of it as an object. More to check here.
- I think we can think of affective evaluation as a functor from a category of symbols (and their synthetic extensions) into a complete total order category, which we call $|\eta|$.[2]
- "Universes" and a 'hierarchy' of them is legitimized by taking the 'bottom' to be the universal psyche, and each level of differentiation (indexed by 'time'–which is to be thought of as the analytic representation of time according to the following: form the synthetic unity of all analytic representations of all terms (i.e. the substance) of the type (species) that is time–this new type is the (analytic) representation of time). In this sense, we can put $\Psi_0 : \Psi_1 : ...$, where Ψ_0 should be thought of the universal psyche; now this means that we should think $\Psi_0 \leftarrow \Psi_1 \leftarrow ...$[3] in a sense of 'inclusion'. See the example below for the intuition behind the notion of relation between analytic and synthetic. Consequently, one could also interpret 'number' as equivalence classes of the hierarchy of archetypes as they emerge from the a priori unity. The projective limit suggested here is the analytic re-presentation of the synthetic unfolding. The masculine views the twoity so borne as synthetically recombined into the analytic unity out of which they emerge; the feminine denies this perspective and instead views all descendents as 'contained within' and every enumerated chain as an incomplete facet of the true unity that is Ψ_0.
- *Substance* and *substantive species* should be thought of a type that is inhabited; and a content that indicates a species is the same as a term that inhabits a type. The differentiated levels should be thought of therefore as special (or archetypal) contents. There is a slight problem: when this gets interpreted in category theory, the terms are then interpreted as processes. This would suggest that the processes themselves are the presentations of the substantive contents. The emergence of the content itself then is coextensive with the process that produces it. Concrete or empirical indications of a property therefore become interpreted as *proofs* and the contents themselves are promoted to abstract, static, transcendental 'phenomena'. I'm not yet settled on this question.
- The theory is totally compatible with conventional means of reasoning and standard claims–e.g., evolution, biology, other branches of psychology, etc. The distinction is in the individuals in which the system is expanded. This compatibility will obviously need a brief exposition, but any criticism of this is absurd.
- The archetype and the notion of continuum came to be identified specifically because we needed those entities

[2]The concept of infinity consists in the observation that whenever a content ξ can be exhibited of the associated species Ξ, then we can always exhibit another $\xi' : \Xi$ with the existence of a binary connection such that $\xi \nsim_p \xi'$, where p indicates a universal property that admits possibility of comparison–viz. whenever ξ is indicated, $p(\xi)$ can be evaluated (this might be absurd in general). The general genuine continuum consists in the species generated by the following pair of properties: first, the principle of noncontradiction holds; second, the principle of the excluded middle does not.

[3]This is called a *projective limit* in category theory.

which are forever in a state of free creation, and whose nature is such that any given law which generates a species of figures whose order is infinite and consists of differentiated contents associated to the archetype cannot possibly exhaust the archetype. This corresponds to the intuitive notion of the continuum due to Brouwer–cf. Brouwer's Cambridge Lectures, Dummett's *Elements of Intuitionism*, Ch. 3, and Heyting's *Intuitionism*. Also compare Kleene and Vesley, 1965. This is necessarily the case with the archetype, and more generally of the whole unconscious–cf. Jung's remarks on the possibility of 'emptying the unconscious'.

- von Mises in his *Human Action* postulates economics as the science of human choice and action–cf the introduction–which means that if this is a satisfactory observation then it is the local theory governing the species of choice sequences in the symbolic unfolding of the psyche. Compare Friston's notion of minimization of free energy and my notion of affective extremization.
- Eliade's *Sacred and Profane* together with, for example, Pope John Paul II's encyclical *Fides et Ratio* (but the thematic structure persists throughout the doctrine of the Church) lay the foundation for the psychological mediating structure of the perception of Truth as Hierophany. This also motivates the necessary unity of mathematics and religion.
- **NECESSITY** for a physiological coupling. The *embodied* aspect (I think) can be viewed as the image of the psychic data under the adjunction[4] (?) implied by Jung's principle.
- Conjecture that the principle of projection can be deduced from Jung's principle by restricting to the functor $\Psi \to \Phi$ (or maybe its unit?)
- Note that Shulman has already done a large share of the work in regards to the interpretation of the type-theoretic data within the category-theoretic framework. See specifically *Homotopy Type Theory: the logic of space*. Our view may differ, but this work will undoubtedly be instrumental in our construction. Update 05/25 - Ehh..
- An important quote due to Kant in the section on the notion of schemata: (various quotes from pp. B176|A137 - B183|A144)
- potential problem with rationalization: incompatibility with the subjective factor. Is this an issue? If I give an explanation (or a proof) exhibiting some psychic factor or content but I can also indicate a frame whose internal machinations disprove the exhibition of the content, is this sufficient? Definition of rationalization: finite analytical substitute for the synthetic closure of a given symbolic complex.
- the problem of measure can be solved by building an analogue to the usual measure theory obtained in classical mathematics, but we replace the notion of measure by a functor into a complete chain with a balance point, where the balance point is the point of symmetry. Then this primitive measure *is* to be thought of as the concept of valence.
- Even in SDG, the theory of integration is not yet solidified, and is given merely by an axiomatic imposition of a combinatorial analogue of the fundamental theorem of calculus. Compare, for example, F. Bar, 2024 *Towards a geometric theory of integration*. This is also a problem in statistics, since there appear several distinct notions of integration. For us, we want to think of it as the synthetic extension of a symbolic complex under something like homotopy equivalence. In a sense, it should be given by something like a dependent product in our view. On the other hand, it turns out that if one approaches measure theory from a sheaf-theoretic perspective, one can define inetgration as a natural transformation. That comes later.
- The way to perform the substitution calculus is to consider a diagram Δ then to consider a vertex v and to substitute a diagram δ at v in Δ. Then just work out the compatibility details.
- Also comment on how this theory is **neither post-modern nor marxist, vehemently.** State in no uncertain terms: **any effort to critically analyze and interpret this work in a marxist manner, or in any manner which abides fundamentally by the critical method (cf. Horkeimer, Habermas, Marx), is *absurd*. This *must* follow because the initial move required is a reduction to materiality. This is the same as the claim that the category one works within is Cartesian closed (or at least has exponentials) because it takes as an axiom the fundamental claim that processes can be reduced to contents–this is the *core* of the content of what we shall call *the materialist conjecture*–which is: every category in which we work is (globally) Cartesian closed.**
- will need to include a sketch of diagonalization of the marxist perspective, or post-modern perspective. Can be done through a short collection of works: Of Grammatology (Derrida), the Order of Things (Foucault), Traditional and Critical Theory (Horkheimer), Capital (Marx), Knowledge and Human Interest (Habermas). Probably there are others. The basis of their argument which nullifies it is the tacit assumption of the validity

[4]We conjecture this at the moment, since it need not be the case that the two categories are isomorphic or naturally equivalent. However, it *is* the case that either can be represented in the other by Jung's principle. This suggests an adjunction–furthermore, we may in fact have a string of them, so that there may exist natural relationships between the way each is perceived within the other.

of the principle of the excluded middle. The ambivalence inherent to the analytic perspective is the antidote.

- there is also an issue regarding the problem of communication in the context of science–i.e., its 'social element', cf. [74, 43, 44], especially Bohm's view in the first. The idea that communication plays a central role in science is *wrong* unless the underlying goal is the illumination of the group, so that wisdom is sought on behalf the collective (Truth by consensus). The mechanism whereby this is made possible is the analytic representation of the synthetic extension of a species of symbolic generators. This representation is *not* isomorphic to the unity which initially presents itself either in intuition or in perception. The discretization of the experience *is* what makes the experience communicable, which is exactly why Brouwer was led to form such a sharp distinction between mathematics as an introverted science and its communication through linguistic means (which he viewed as the basis of logic) [6].
- Despite this, we might be able to admit *locally* cartesian closed categories on this basis: once we construct either a finite extension or finite intension of a symbol or archetype respectively, we can indicate the process itself as index by this, say, extension. *This is not the same thing as the process itself, but projects it into a substantive contentful form.* This form then indicates a type which is, I think, a 'process space'.
- The *most important* observation is the following: any existential claim requires one to exhibit the content indicating the existence of the species in question. Consequently, the *experience* of the content itself *is* the proof of the substantiveness of the species in question. Conversely, if one works within a category whose logical model *denies* the existential claim (so that one denies the *mere possibility* of the exhibition of a construction resulting in the exhibition of the species in question), then openness to evaluation of the actual claim is impossible, since one represses all possible experience affiliated with the construction. The most important 'species' for which this is a the question is God. The existential claim begins by rendering the object of study not as a content to be experienced, but as an object to be judged. This motion implies the possibility of the adoption of a frame in which genuine conscious experience of the divine is denied (since it presupposes that the subject forming the judgement can be removed from the synthetic unity of the Godhead, this latter fact requiring conscious recognition as a precondition for the experience of the transcendent whatsoever). There is no proof that can be exhibited to a frame which has adopted the denial of the hypothetical substantiveness of any given species (as an axiom, say); the correlated existential claim has already been evaluated and rendered inert.
- It appears that the Yoneda functor is equivalent to λ-abstraction, and the Yoneda lemma equivalent to η-conversion. β-conversion is given by the evaluation $[-, \Delta](\Gamma) = [\Gamma, \Delta]$. This implies an intuitive span $[\Delta, -] \leftarrow \Delta \rightarrow [-, \Delta]$. ($\alpha$-conversion is just $[-, \Delta] \xrightarrow{\sim} [-, \Delta']$.) It also suggests that the content at the root of the synthetic unity of the archetype and its symbolic extension is something 'other than' either. It implies the interpretation of the archetypes as processes and the symbols as contents. There is a strong parallel to the old intuition that I had which expresses itself in the context of, say, supersymmetry, where the real physical object is the unity of the matter and the field, and each is like a 'mode' of the underlying unity, which ought to be thought of as an image of the Father. The image of the Father under the Yoneda functor is therefore the Spirit, and under its dual is therefore the Son. Seemingly more evidence that this is the correct perspective. Compare [13].
- Need for a thorough analysis and incorporation of the phenomenon of synchronicity.
- Probably type theory will encode the actual 'formal' dynamics, but the geometric presentation should be expressed in terms of primitive symbols of a given archetype. The free algebra constructed in terms of these will be the infinitesimal synthetic extension of the symbol, and its finite extension will be a segment of the archetype it's tied to, and can serve as a synthetic representation of the archetype. The free algebra over the finite set of symbolic generators is the analytic representation of the symbol itself, which really should be thought of as the synthetic unity of elements (i.e. the species) which are nilpotent. This being the case based on the fact that the infinitesimals have the key property of being obtained after exhaustive analysis of the continuum. This is the same as 'being the best possible representation of the archetype' (viz. as a *point*)
- We'll need something like the Lindenbaum algebra on infinitesimals. Imposing the relations via quotient map in the sense we define in our *Mathematical Tools*. This means that the associated Lindenbaum algebra on infinitesimals is the free algebra subjected to the relevant equivalence relations (such as $dxdy = dydx$)
- justify the introduction of the identity (process) on the basis of the persistence of contents in time; differential persistence is sufficient, since (hypothetically) any continuous segment of the psyche consists of a synthetic unity which cannot be separated, so that its extension must admit homotopic deformation to a point. (Segments are hypothetically compact, but I think we can relax this condition.) Actually, we don't need the previous (wrong) justification, but rather just Brouwer's bar theorem, I think.
- Principle of Affective Extremization (probably also the Principle of Individuation) not only valid on the

basis of Jung's postulate of individuation, but also by analogy with physics obviously. But there is *another* extremization principle which is infrequently invoked in this manner: the biological concept of homeostasis. Homeostasis is *also* an extremization principle, which says that the physiology of the organism seeks to assign to itself the point of natural parity (in the sense of $1 \xrightarrow{0} R$ in SDG) where biological valence is 'balanced.' The reductionist materialist perspective would then allow for justification of the introduction of the postulate on this basis, although we think it should be done in its own right moreso on, say, religious grounds whereby we observe that each personality is unique and he carries with himself his own unique (God-given) vocation.

- Genuine existence of the individual–given all are subjected to the same universal psychic law of personality development–implies that actually the individual is characterized by his initial psychic conditions. Now–this does *not* mean the spatio-temporal initial conditions, but *rather* it means something like the symbolic generators and associated inherent distribution over them a given individual comes into existence with. This would be the analogue of genes; that is, we would say the inherent memetic makeup of a person *is* the kernel of his individuality. The process of individuation is the full maturation and development of those memes. This implies the genuine possibility of completely antagonistic memetic extensions, but actually within a given species (and perhaps a psychic ecosystem), I think: 1) the memetic variation cannot out-compete the objective psychological evolution (i.e., paths near the minimal-action path contribute the strongest); 2) the existence of the minimal path guarantees effective objective evolution with variations *around* it.
- Primitive local 'consciousness' as segment of the synthetic extension of a subspecies of the symbols of the $\lambda o\gamma o\varsigma$. This will follow from the theory here; it will also follow that this is necessarily incomplete and that at best it can only present a section of the collective psyche.
- Sieves as measuring degree of truth is born from an internalization of a natural ordered continuum–that is, as soon as we have a natural ordered continuum, we have a way of judging truth. We can take the underlying natural measure to be a symmetric monoidal bounded poset $|\eta|$. If we put the identity as the bottom and 'impose' a top as, say, $\top = \bigvee_{h \in |\eta|} h$, then we have a measured object that allows for our usual stuff. More complicated; only the classifying object for sheaf structures. Might be sufficient–not sure yet.
- FUNDAMENTAL OR ELEMENTARY PROCESSES *ARE* THE STRUCTURES THAT EMERGE BY DIFFERENTIATION. THAT MEANS THAT $\prod_{\xi \in X} \Lambda(\xi)$ IS THE SPECIES OF 'CONTENTS' EMERGED BY VIRTUE OF DIFFERENTIATION. NOW THIS MEANS $\lambda\xi.f(\xi) : \prod_{\xi \in X} \Lambda(\xi)$[5] IMMEDIATELY IMPLIES A SEQUENCE WHICH WILL RESULT IN SOME KIND OF DIAGRAM. In other words, $\mathrm{Ars}(\Delta)$ *is* the substantive (re?)presentation of the process of differentiation. How do I capture this more accurately? Also–consequently–what is integration? I have seen it suggested that these are natural transformations. If differentiation is assignment on functors and integration is adjoint to it, then both are natural transformations. PURE speculation at this point based on nothing–could be very wrong. By the way, if this were true, then extremizaiton might be viewed as a type of monad? I'm not sure.
- Introduction of function *space* justified insofar as the outcome of a process is *known*. The outcome of a computation of diagrams is locally valid whenever the shape of the terminal diagram is known *and* the contents and elementary (or derived) processes are. Otherwise as we require the allowance for the unconscious this must be left open.
- Levi-Strauss *also* makes the same observation regarding symbols as Jung does; then intensity of affect I think is a measure of the degree of symbolization of a content (maybe). In general the treatment of object as sign or symbol is really a question as to whether the content in question is elementary or if it (exactly) admits a finite analytical representation (every archetype will admit a finite one, but it will never be complete or exact).
- St. Gregory the Theologian, in Oration 28.3, argues that we can *only* contend with the symbolic material of the psyche, rather than the archetypes themselves–which is consistent with Jung's perspective.
- The $\lambda o\gamma o\varsigma$ as archetype means that mathematical contents, entities, themselves *are* the points of the continuum–one cannot 'study' them–he must *experience* them. Exhaustive analysis of the continuum resulting in a *point* is absurd–it must be a symbol whose presentation cannot be clarified or analyzed further. Every mathematical entity is of this species. Is the whole project therefore impossible?

2 Introduction

The essential critical question we must ask at the very beginning of such an effort is why exactly we should think such a theory is admissible under the *sort* of understanding which we have (i.e., as humans). While in some sense

[5] Still need to work out notation for these objects

the whole of this work is an answer to that question, we can provide a sketch from the outset. The basic idea is to render the individual as an indivorcible synthetic unity (this follows from the postulate of the principle of psychic symmetry, since it implies that the totality of external and internal contents are united within him as a synthetic whole which cannot be separated), so that every analytic representation of him cannot be *identical* with him (so that the totality of him really is an archetype; abstracting out the *particular* individual offers a model for the archetype of the *Self*–we will refer to archetypes by Greek words, so here, *Self* aught to be rendered '$\alpha\upsilon\tau o\varsigma$'). By virtue of this unity, and together with the postulate that within him are all the faculties which each human could *conceivably* access,[6] it would seem that on the basis of these two postulates that it becomes *possible* that he is able to offer a description of his nature which conforms to it in an empirical fashion, and is done through the elementary symbols of the archetypal structure that mediates this sort of behavior. In this case, that would be by virtue of the $\lambda o\gamma o\varsigma$. In particular, it is for this reason that we require this analysis to proceed in a *mathematical* fashion, as we conjecture that mathematics consists *exactly* in the exposition of the elementary symbols of the $\lambda o\gamma o\varsigma$. Consequently, in searching for such an exposition, we are already led into questions regarding the fundamental nature of mathematics per se, and specifically whether foundations can be offered for mathematics. Unfortunately (or fortunately), it appears that even now (despite some 130 years of study) there remains little consensus as to how this ought to be done. (For example, cf. < Mac Lane 1971 > discussion on universes; also compare HoTT or MLTT.) For our purposes, this is only a 'quasi' problem; We don't attempt to render the $\lambda o\gamma o\varsigma$ from within itself (as the efforts of Foundations in Math attempt), but rather we attempt to offer a *presentation* (also a *geometric presentation* or *geometric realization*[7]) of the system as it would be rendered by the archetype. The reason here being that in principle, this archetype is the unique component of the universal psyche which mediates the (human) process of understanding. We shall have more to say on this later.

Probably the *whole* of the theory will rest upon *two* postulates, which we attribute both to C. G. Jung.[8] They are

1. **The Principle of Psychic Symmetry (Jung's Principle)**: Inner and Outer life are symmetric (and complimentary) in the sense that to each extroverted content, a dual introverted one can be assigned and vice versa. In particular, we hold that inner life and outer life contain the same quantity and intensity of 'life force' a priori. Personalities (i.e., local psychic frames) admit *distributions* over the measure, but universally these are symmetric in this sense[9,10]
2. ~~**(Something Like) The Principle of Archetypal Ground**: (Human) life is regarded to be genetically constructed out of a species of universal contents which admit symbolic presentation via a duality relation; these contents are by definition collective and unconscious, yet form the basis of *all* psychic life (and it must be so for the theory to carry evolutionary weight; or else one must show the existence of a discontinuity from an evolutionary point of view).~~ [11]
3. ~~**The Principle of Projection**: All psychic life is mediated by the interaction between the extroverted and introverted contents. *Projection* is the mechanism whereby an external content comes to be endowed with its dual internal content. This is the fundamental mechanism which yields the capacity for constructing consciously the internal contents so that the may become associated with the ego complex.~~
4. **The Principle of Affective Extremization**:[12] Every frame encodes behavior which extremizes the magnitude of free psychic energy.

Fundamentally, the thesis of this entire work is that it is *impossible* for humans to subsume the totality of experience under the faculty of the understanding.[13] A more modern way to state this is that any effort to express the whole of our experience in scientific means is effectively absurd.[14] This follows by the very basic inferential

[6] Is this equivalent to the postulate of projection mediating all psychic life together with the postulate of psychic symmetry? Seems like it would be an immediate consequence.

[7] In the older literature, I rendered this as *imagistic representative*.

[8] Perhaps projection in the intuitive sense could be attributed to someone earlier (e.g. Freud), but since we employ it particularly in the technical sense which Jung means, we attribute its definition to him.

[9] This can be substantiated symbollically, particularly through Jung's analysis of the medieval duality of microcosm/macrocosm. Compare CW 12, 13(?), 14, probably others–esp. CW 12, Fig. 195. There is also a nice discussion in *The Undiscovered Self*, para. 540, CW 10

[10] This principle will also be responsible for the possibility of re-presenting data as opposite of how it is initially presented; in fact, this principle *exactly* conjectures the existence of a contravariant functor (which we call †, but you might also call ¬) which takes purely synthetic data to purely analytic data, and vice versa. See the discussion on this pair below.

[11] Actually, we think that this should be inferrable from the first principle on an empirical basis; if we take projection and symmetry seriously, then the only way to *construct* the hypothesis of atomic structure is via something like a fundamental presentation of the archetypes in intuition.

[12] The principle of individuation should follow naturally from these two postulates.

[13] Actually, it might be even stronger: the possibility of the *psychization* [24] of the whole of experience is impossible.

[14] It is worth noting that this hypothesis is *hypnotically alluring* to the introverted intellectual. He desperately clings to his inner

premise that at the root of the scientific method and analysis lies a very general structure of logic which can be captured in a purely symbolic way (cf. [66, 23, 67, 43, 29, 31, 36, 37]); if this were not a core hypothesis, then the act of applying mathematical reasoning to the physical realm would be absurd [84, 83]. Consequently, the very *root* of the scientific process is captured in a psychological theory of mathematics, which we intend to develop here. I have proposed to call this theory *(formal) psychics* as it is the foundational theory of the inner realm in the exact same way as physics is the foundational theory of the outer realm. In Kant's frame, psychics lays the foundational work for a formal description of the form of the inner sense, i.e., *time*, whereas physics is the foundation of the form of the outer sense, i.e., *space*. Here space is to be understood as synonymous with geometry. We will see that time is therefore synonymous with algebra, or with computability. By fundamental theorems due to Post and others (in [78]), logic and computability are synonymous, so that algebra and logic can really be viewed as the same thing. More modern efforts consist in showing that algebra and geometry are synonymous in the same sort of way, cf. for example [20]. This is just the surface of that very deep problem. We show below that this actually cannot hold since it requires the reduction of what we term a *process* to what we term a *content*. This means that the mathematical effort to describe the theory at all is really absurd in the sense that the attempt to capture the claim that all being can be subsumed under the faculty of the understanding by the individual comprehending the data presented herein is impossible in the sense of Cantor and Gödel (in [78, 40]). That is, this proposition will intuitively be true in our system, as it must be based on the very essence of the construction, but neither it nor its negation will be constructable from *within the system*.

This sort of reasoning perhaps invites the intuition that the work presented here is in the very least hypocritical, if not outright wrong or absurd. But our position is *not* that there exists *no* such relationship between mathematics and experience, but rather that the very action of establishing this connection necessarily requires a type of abstraction which cannot itself be captured mathematically.[15] Another way to put this is: although any mathematical theory may give a *coherent* description of (a segment of) being, it cannot be a *complete* one (as a corollary to the previous comments, this is essentially the content of Gödel's *completeness* theorem). What individuals normally term *model* can therefore be viewed as a truncated or projected encapsulation of being into a specific symbolic realm whose generators are a subspecies of the symbolic generators of the full synthetic extension of the archetype of the $\lambda o\gamma o\varsigma$. We shall have more to say on this below.

It is worth noting that what I present here is not the first such attempt, although to my knowledge it *is* the first one which relies on a synthesis of Jung and Brouwer through Kant. We address the other prominent perspectives below.

3 Psychological Theory

3.1 Overview

Perhaps nothing is more striking about the theory of analytical psychology than its ability to accurately predict fundamental aspects of human psychology in a purely theoretical manner. For example, the libido (and complex) theory implies directly that the foundation of human psychic life is *affective*. It also accurately predicts psychological *orientation*–whose two extremes are *introversion* and *extroversion* respectively. It can also adequately account for the emergence of cultural phenomena such as religion and mathematics by asserting that these are symbolic unfoldings of particular archetypes ($\theta\epsilon o\varsigma$ and $\lambda o\gamma o\varsigma$ respectively). Recently, Friston [19] has asserted that the fundamental neurological process which characterizes (human) brain development is the process of minimization of free energy–in our view, this mirrors Jung's notion of individuation closely. There are other practical examples as well, such as the case of David Goggins, who came to the process of integrating the Shadow and becoming his form of the Self by relying entirely on his inner images. As far as we know, he knew nothing of Analytical Psychology (there are instances of him taking pride in the fact that he refrains from theorizing, which would suggest further that he likely knew nothing of the theory) and yet he came to this conclusion naturally. This suggests the natural formation of the hypothesis that there exists an underlying universal development that produces the individual image of $\alpha\upsilon\tau o\varsigma$.

images in order to make sense of the realm, which presents itself to him as ever increasingly chaotic–especially at its affective root. This perspective offers him a naive panacea which assuages these concerns and soothes the sort of heartache he feels that reflects to him a sort of meaninglessness or emptiness to this chaos. At its heart, this book is addressed to him, but more broadly to all scientific materialists. It is time that we know this position is totally untennable, and that this is *transcendentally true*; gone are the days where we hold these truths to be self-evident.

[15] Surprisingly, it seems that a similar intuition is coming to be demonstrated among those working in machine learning; the possibility of realizing generalized artificial intelligence seems to be impossible.

Fundamentally, the goal is to meet the psyche on its own terms. In that sense, we want a first-order theory. We cannot suppose some system Σ whose individuals σ are "more" foundational to the psychic stucture other than those immediately presented before us, which we apprehend directly. Why? Because *if* we suppose this (for example, neurologically, or chemically), then we must immediately observe we are employing these immediate contents to apprehend those data, which we suppose correspond to an actual objective organon of our being whose symbols *generate* our psychic state.–But this is a mere projection, filtered through the *psyche*–which is the immediate organ whose symbolic species generates that above organon (a psychic presentation of it) and that which is generated comes to be used as a tool for abstractly apprehending our nature. It is alluring–on the basis of the nature of experience of *truth* (or *validity*) as an affective experience–to suppose a naïve λ-abstraction (which is also a type of reduction) to this slice of the "topos" of the psyche and the conjecture its universality across all possible slices, or worse: that the slice is identical with the whole topos. It is for this reason we've sought this first-order (elementary) treatment. Insofar as one can tell, it is the *only* way to deal effectively with the (empirical) existence of the unconscious, and to account for the genesis of the large scale symbolic systems like mathematics and religion. Every true theory of the human psyche *must* account for the natural emergence of perception of Truth (i.e., the symbols of the $\lambda o\gamma o\varsigma$) and the Divine (or Sacred, i.e., the symbols of the $\theta\epsilon o\varsigma$). Ideally, we seek a description which is conformal with respect to timescale–viz., the stages of development of an individual ought to harmonize with the culture ought to harmonize with the evolutionary picture [57]–and this ought to be given locally in terms of a fundamental relationship which characterizes the manner in which differential unfolding of the inner images satisfies a type of equilibrating principle (e.g., Piaget's *Equilibration of Cognitive Structures*), which can be inferred to exist internally to a given psychic frame on the basis of what we will call *Jung's Principle*–or *the principle of psycho-physical symmetry*.

This principle asserts that the inner and outer realms are *symmetric* (or *dual*) with one another,[16] so that internal and external data can be apprehended in terms of the other. This apprehension is complete in the sense of Brouwer–whereby the successor function can be invoked at any moment. The theory is *affectively valued*, meaning that upon the construction of an elementary theory, there is a valence mapping generating an associated distribution over the (free) extension of the species of symbols in question (defined on the individuals, and functorial over the synthetic operations) which will be differentially extremized. This is the second principle, called *the principle of affective extremization*. This lays the foundation of the mathematical description.

3.1.1 A Comment on the Legitimacy of this Perspective

The discerning thinker may ask (rightly) *why* this must be done *mathematically* (or why we insist on this perspective).–That is, what are we *doing* in giving a *mathematical* description? If the hypothesis of the existence of a first-order theory is legitimate at all, it means that the immediately presented contents are indicative of the very structure of the psyche itself–they become affective quanta which mirror the nature of the psyche, so that if they are rendered intelligible, the structure of the psyche itself is rendered intelligible.[17] But we are at an impasse from a purely theoretical perspective; for the turning inward to comprehend the data is already an act of the psyche. It therefore presents us with the realization that we are merely comprehending to the degree that is *possible* in accordance with the nature of our psyche–that is, we are inherently limited by the fact that we must employ the organ to perceive and comprehend its actions; it is the very special property of consciousness which enables this self-reflection and yet which does not cause a *regresso ad infinitum*, and psychosis is abated despite a turning inward being invoked. This *forces* a synthetic–and therefore elementary–perspective. Consequently, the question becomes: what are the generating symbols of the invoked faculty (archetype) when this disposition is consciously inhabited? The answer is: the faculty is that of the understanding, and so whatever it is in us which renders experience as comprehensible as is possible in accordance with our (psychic) nature. Clearly it is "logic" which does this–and its *extreme* is mathematics[18] (which I think is made amply evident from the modern treatment of higher logic by means of the elementary theory of topoi). Why? For what is *comprehended* is that which is invariant about what is perceived

[16] To the degree that this is true, it is an *adjunction*. Since objective data only admit finite analytical representations, the projective functor that carries the internal data (which is a complete free unfolding of the inner images) into the external data must be 'truncating,' so that it should be right adjoint to a functor which constructs free synthetic representations of the inner images based on the analytic data reflected back to us through the object. Then the inner images admit synthetic representations on the basis of these external data. If there are neurological data which describe this fact, this would be the ideal place to point to them.

[17] This *is* what Jung means by taking up an empirical disposition toward the psyche. This is *also* what it means to study the psyche scientifically. The requisite humility and reverence towards God becomes immediately clear as soon as one adopts this and takes it seriously.

[18] A project for a later date: tracing the genesis of mathematics *historically* and correlating this to the significance of what is being differentiated within the collective psyche *as a consequence*. The 'dual' to this project is the psychogensis of mathematics, which would seek to expose the differential unfolding of mathematics from constructive principles, in terms of the mathematical objects themselves.

(which need not be equivalent to the object itself; cf. [38]) across timescales which are relevant to the perceiving subject (as opposed to what is *apprehended*, which is that which strikes consciousness immediately and by means of the affective weight or intensity it carries). In its ideal form, this timescale extends to infinity; that is, the data comprehended remain invariant at *any* invocation of the successor function. Going forward, whenever we invoke "infinity" we shall always mean it in this sense. But practically, this may only be until additional data present themselves which transform the perception (which must *necessarily* present themselves as transformations *on the* substantive indicators[19] of the properties in question insofar as the object has been "rendered comprehensible"–i.e., "analyzed"). Anyone who has engaged in the *experience* of mathematics is acutely and immediately aware that the essential sensation characterizing those conceptions, and their associated dynamical unfoldings, is that of the experience of the transcendent. This *is* the experience in the *apprehension* of a theorem as it presents immediately in intuition–its comprehension comes by exhibition of the proof which *affirms* the experience.

3.2 Unstructured Sections

3.2.1 Addressing Behaviorism

It should be noted first that behavioral psychology and its correlated philosophical position may have changed (even substantially) relative to when Skinner exposed its initial principles. We doubt that it has strayed too far from its spirit, since the transformation of the underlying axiomatic structure is usually sufficient to introduce a new system of thought rather than to furnish a transformation in the original one. Exceptions to this are the universes of reasoning that likely correspond to particular expressions of the $\lambda o \gamma o \varsigma$ restricted to a particular domain (i.e. whose symbolic generators are a proper subspecies of the unity of generators of the whole of the archetype). In this case, the analogues would be 'behaviorism' and 'psychology' respectively. It seems as though behavioral theory has produced various veins of thought–where modifiers are tacked on in order to indicate an application of the theory of behavior to a particular species of contents, offering up a particular analytical organon that purportedly asserts that the contents it analyzes the initial synthetic presentation into faithfully represent the (the unity of the) original data. Furthermore, it asserts of itself that its solution is the best possible one, and the unique one (so that it indicates a composite symbol representing the associated archetype, or archetypal complex).

The theory of behaviorism according to my understanding (which needs to be supported by claims and quotes due to Skinner) consists in the description that the synthetic unity of the *extension* of an individual's mechanical actions is sufficient to capture the totality of that which the individual really *is*. This extension consists of all physical mechanisms and configurations that occur within the individual and which the individual is capable of. Here, 'extension' is to be understood in the same sense that the logician uses it–viz. as a completely differentiated aggregate of contents whose elements are totally discernible among themselves. It isn't a large leap to postulate that one really need not appeal to any 'local' aggregate and instead work with fields, in the sense of physical reality, which indicate properties and whose nonzero values constitute local proofs of the properties. This means that we can think of behavior as a dynamical process (which extremizes some objective function–more on this in a bit) and that the configuration space of possible behavioral actions is sufficient to capture what a human is–for example.

Certainly the theory is causal, and speculative with respect to the first cause. But the philosophical problem is eschewed in favor of the degree to which the causal perspective is successful in characterizing the nature of the phenomena in question–e.g., the capacity to predictably analyze and and describe an individual's response to a given stimulus [72].

Examples of materialistic philosophy and hypothesis of absurdity of necessity of any additional data (*About Behaviorism*):

- the core example is in the assertion that the inner realm exists in dimensions of behavior. Probably also the general implicit materialistic perspective persists throughout Skinner's works. For example, [73].

Where the theory *does* seem to be accurate (despite my criticisms) is particular with regards to notion of contingencies in the sense that the basic elementary structures (in this case behavior sequences) are indexed by particular presentations of instances of the form of the internal sense. That is, we both agree on the fact that the elementary objects of study are chains of substantive elementary contents. The fundamental disagreement consists in where the elementary objects are to be derived from. Our goal is to make sense of *why* we can conceptualize the world at all (and also a proper theory of the development of the personality)–it is not an *explanative* theory in the sense of dealing with purely causal data; it is also the case that the way in which behavior is inherited is the same sense in

[19] Cf. Curry's notion of function in [12], [11].

which psychic data are. In truth, the behavioral point of view I think appears as the unique characteristic arrow that emerges out of equivalence classes of monics within a given object. Cf. Skinner, Ibid, pp. 48-49.

Discussion of notion of contingencies and conditionings is essential to the exposition. Cf the notion of principle of reinforcement–especially ch 4

Operant conditioning consists in the process whereby an individual develops behavioral functions (contingent upon environmental configuration) which are adpative to the local environmental pressures characterizing the space. The individual is supposed to be equipped with a priori content that enables him to generate sustained adaptive behavioral functions that enable successful navigation of the environment, the latter being determined by (slowly-varying) selection functions. Cf pp. 44-45, then probably the following chapter.

3.2.2 Evolutionary psychology

The description can actually be thought of for evolutionary psychology in the same way as for behaviorism and analytical psychology–but evolutionary psychology takes as its basic resolution of time step to be far larger than behaviorism (and analytical psychology is supposed to be conformal with respect to time scaling). The elementary data are to be regarded, I think, like a pair, where one has a physiological phenomenon (the actual matter) together with its (evolutionary) function. We can actually think about this as an existential type, where one must exhibit a substantive content (e.g. the brain) and a 'proof' which can be thought of as the function. Probably evolutionary psychology can be viewed as a dependent type theory (this might be a relatively trivial observation). The idea remains *applied* however, again in the sense that it doesn't take as the elementary data those conceptions which are responsible for cognizing the immediate data (compare Jung's comments on psychology in regards to what it studies–probably cf CW8) of the 'subjective experience'. In particular, it seems to take the elementary data as physiological, so that the psyche is indexed by the physiological structures with fibers being the functions. To see the equivalence to MLTT, I think compare [71].

3.2.3 Cognitive Psychology

The problem here consists in the hypothesis that the totality of being can be subsumed under the archetype of the $\lambda o\gamma o\varsigma$ in an *entire* way,[20] so that it is sufficient to detail its total nature within this structure. This is evident both in Newell's book and Anderson's book. See [58, 1].

3.2.4 Neurophysiology and Brain Structure

This is a section for a discussion by the work of Friston, as well as a basic overview of how the neurological structure motivates and supports our argument. We need to emphasize *carefully* that the symbols precede the conceptualization so that the biology cannot be regarded as *prior* to the elementary treatment.[21] In particular, the developmental hypothesis wherein the time evolution of physiological development corresponds to epochs in the psyche. See [75] and probably also [62].

3.2.5 On the critique or analysis indicated by the foundational works of post-modern thought

I will need to modify these things; this system of thought has come to bear a segment of my shadow as a projection, particularly on the basis of the naïve hypothesis that it is responsible for the death of what I care for. In fact, what I cared for was contingent upon the repression of what gave rise to this thought to begin with, and in that regard it must be honored for what it carries, the information it presents about what we have neglected and rejected. On the other hand, every age has this problem; it must be so. The continued differentiation of the psyche *requires* this mechanism.

Foucault, *The Order of Things*:

- Even in the preface, Foucault lays the perspective bare: essentially that the psyche (for him, seems more like the 'realm of perception') is mediated through a special complex of memes which essentially count as a basis for that which is analyzed (i.e., the underlying manifold of experience, and especially the psyche) so that there exist contents relative to a given basis which are hypothetically trivial (i.e., within the kernel of the representing map). One conjecture here is that (tacitly) the underlying space is explorable in a 'complete' sense, so that all possible local charts are equally valid (in fact, *necessary*) in order to totally apprehend the local (and global) data, which suggests the conclusion that we are allowed all possible transformations–and

[20] It might be phrased as the slice $\Psi \downarrow \Lambda \cong \Psi$, where Ψ is the full psychic continuum and Λ is the archetype of the $\lambda o\gamma o\varsigma$.

[21] Our position is that they are coextensive; neither is reducible to the other.

which further indicates the question regarding which segments have been the most 'neglected'? Joined to Nietzsche's principle of Power, one gets a toxic dynamic which suggests that all ought to be siphoned from the existing dominant and imbued into the neglected–which is a projection of the internal experience of a pathological frame seeking justification for identification with the dominant of a given complex and asking why this complex cannot be allowed to play out on the world stage. Most importantly, it neglects the possibility that Kant suggests in his *Critique of Pure Reason* which suggests that actually the full perception of the manifold is impossible; rather, we are restricted to perception contingent upon that with which we are endowed–and there is no reason to suppose that this a priori content varies above a certain (possibly small) threshold across races of man. In fact, I would conjecture that it is the *hallmark* of a species (i.e., enabling the exhibition of a canonical element) that each individual matures according to a principle characteristic *of the whole species*. Furthermore, we suppose that the potential realm of distributions within a given species is accessible to any given element in the sense that it is reasonable to hypothesize that although worldviews may differ across cultures, we cannot conclude that this variation exceeds the driving dynamic of the process of individuation, which operates on a much longer timescale (i.e., it is evolutionary, which outpaces cultural variation)–cf. Neumann [57].

- In fact, Foucault's intentions are perhaps even more nefarious; the consequence of adopting a specific representation destroys the possibility of constructing alternative representations (because, supposedly, the individual is so immersed in his specific representation that he lacks the ability to construct morphisms between his system of thought and those around him–i.e., he is stupid, like Foucault). So Foucault then insinuates that the *answer* to this problem is not the construction of the space of all possible local charts (i.e., $C^\infty_U(\mathbb{R}^n)$, the ring of smooth local charts at U–which, I *think*, should also present as an exponentiated object–but that for a later time), but rather the total dissolution of any given chart and therefore of the manifold structure itself (i.e., one *removes* the ability to analyze entirely–which, psychologically, is equivalent to the total repression of the masculine function, which is obviously impossible, again referring back to Kant).
- Putting the 'political' or teleological aspects of the work aside, the most charitable portrayal of the work (which, I suppose, in itself is not unthinkable) is given on pp. xxi - xxii, where Foucault presents the work as 'archaeological'. The problem will present itself when one asks the question: what are the assumptions behind the supposed conditions for a content to present itself in consciousness? It is worth noting that the symbolic generators of a psychic frame can evolve in time, both in the sense that the contents of the symbolic complex can change, as well as the character or image of the symbols themselves. In this sense there can be temporal segmentation in a hypothetical unity of thought, which 'archaeology' can reveal. But this again is contingent upon–what seems to me–a stunning lack of evolutionary awareness and the necessity of the existence of human experience as a synthetic unity, especially in time.
- Again another valid point here: it is possible for the transformation of the generators in the underlying complex to produce outcomes which segment off whole sections of the psyche, at the expense of wholeness. The (inevitable, natural) consequence is the remergence of these contents in 'corrupted' form. Here Foucault compares the theory of representations with a notion of purely objective knowledge. Scientism rises. We are in agreement (seemingly) in that the passage segments off awareness of man as a *vis viva*; subsumption under the intellect sterilizes. But still the premise remains; perhaps the best possible solution here (for the sake of the psyche) is the reconciliation of these supposed opposites.
- By the way, the adoption of this archaeological method is contingent upon what one constitutes as a body of representative works; see a short note I wrote on this when arguing for why I would be able to construct an American analytic at all. Furthermore, the assumption of the archaeological approach *also* indicates a feminized perception, first as a synthetic method, and second as the disposition that the body 'analyzed' is somehow a 'living' thing to be known in its wholeness as a woman would seek to do. Utility, necessity, and value of this obvious, but worth mentioning. It necessarily informs the manner in which the discontinuity is perceived; a logical perspective views the apparent discontinuity as a boundary condition which the underlying continuum satisfies, whereas this method regards the transformation like a change in personality or one of a collective of distinct presentable modes, so characteristic of the female psyche.

3.2.6 Archetypes and Symbols

The hypothesis of the existence of something like a psychic ground. We also want to detail the process of deduction of a complex of contents as indicating an archetype. It begins essentially by the observation of the definition together with an amassing of evidence in support of the claim. What constitutes evidence is a difficult question.

3.2.7 The Possibility of Mathematical Treatment

The possibility of mathematical treatment is bound up in the question of whether the universal psyche (which we think of a cohesive *whole*) can be adequately represented under a given archetype. The answer to that question requires investigation. Under the assumption that the whole of the psyche can be *expanded* in the symbols of a given archetype, then following the observation that mathematics consists *precisely* in dynamic unfolding of the archetype of the $\lambda o\gamma o\varsigma$, we ask how it expresses in a first order way (which I think ought to be construed as a *presentation* rather than a *re*-presentation) any given content or process. The sort of 'irony' here is that we are providing a type of higher order mediation. The observation of the process and its detailing are made distinct. We therefore do *not* assert that the symbols which follow in this work consist in unified and complete presentation, but rather the *best possible one* to our knowledge. This is inherent to the subject and the core difficulty. From my own personal experience, I can say that it has been *extremely* difficult to tease this out, and has even been intensely paralyzing in the progression of my own thought.

I think this section ought to also consist in the argument of why mathematics is the symbolic unfolding of the $\lambda o\gamma o\varsigma$.

Also: the old hesitation was in the belief that I would remain unconscious of what needed to be modified in the development and introduction of mathematical tools, and this was the *reason* for refraining from diving into the theory. But as I've started to lay the actual foundation for this work, I observe that I can *use* the existing structure and remain aware of the properties which cleave us from the appropriate description (i.e. the 'diagrams' which function as sort of separators–actually I should think about this more!). I can then follow up by modifying the description as necessary to build the desired thing I need.

Furthermore, because I observe that this can *never* consist in a final description (as an essential postulate to the theory from the beginning), I am in a sense 'saved' from this problem. I can *accept* the difficulty outright.

3.2.8 Argument for Mathematical Treatment

See previous section for some thoughts; this section must consist in the core argument that that understanding as a human process is mediated by an archetype *and* that its purest expression consists in mathematical exposition. From here, it follows that the 'project' of rendering the psyche intelligible must proceed by *mathematical* exposition. Therefore the argument for the *possibility* of mathematical treatment must consist in two parts:

1. Understanding is a core human faculty that expresses itself in a socio-cultural manner, and therefore must find its psychic genesis in a complex of psychic contents. This is the scope of validity of the perspective that 'science is a social phenomenon'–and that is the *end* of its validity. Beyond this claim, the social aspect of science detracts from what we here mean by it. Its ground must therefore be archetypal. It is possible that the archetypal mediator is derived (from elementary archetypes) and it is also possible that it consists in a *complex* of archetypes rather than finding its genesis in a single one. The question of the possibility of its derived nature cannot be answered at this time; we deny the complex nature and assert that it is unified under a single archetype, and define the unity of all action that seeks to render the world intelligible as derived from this archetype. This becomes the *definition* for the $\lambda o\gamma o\varsigma$.

2. The mode of the expression of the $\lambda o\gamma o\varsigma$ is symbolic, as with all archetypes. We conjecture that it is mathematics that captures this symbolic unfolding in its purest or rawest form. We claim this initially based on the observation that whenever we sought to understand something, the most natural analogies exist in mathematics. We can reify this intuition by the observation that the objects of mathematics are supposed to be the fundamental concrete elements presenting the key species of properties we are seeking to study, and therefore admit substitution of all those objects which satisfy the properties considered that generate the presented elements. That is, the geometric presentation of the properties considered are supposed to be the best possible renderings of the fundamental or elementary intuitions giving rise to the conceptions named in the properties.

As always, we *must stress* that this description requires the awareness of the user from the outset that the contents he manipulates to render all things before him intelligible is itself an archetype, so that for this description to be *equal to* the whole of the psyche would require the validity of the statement that the totality of the psyche can be subsumed under a given archetype. In particular, one would need to use the symbols which the $\lambda o\gamma o\varsigma$ generates

in a free unfolding to exhibit this statement, but would require that the differentiation of the $\lambda o\gamma o\varsigma$ be complete (since one is performing an expansion–reasonable analogue: $\mathbf{1} = \sum_k |k\rangle\langle k|$). But the statement which is in the process of construction itself is not yet differentiated, which therefore exhibits a content which diagonalizes the process and inidicates the incompleteness of the archetype. We must, must, *must* therefore always remember that we are *projecting* the unity of our nature into the (necessarily incomplete) species of symbols which generate the $\lambda o\gamma o\varsigma$ as a category. In this way, we obtain an understanding of *how* the psyche appears under the $\lambda o\gamma o\varsigma$ (i.e. we render the transcendental properties of the psyche as intelligible, or as presentable), but this is not sufficient to declare that we've constructed the whole of the psyche, or the whole of the theory. Another useful analogue: instead of forcing the finitary construction of all logical statements in Gödel (1931) [78] (also cf Kleene 1952 [39]), it would be as if we could treat the whole of the logical statements at once, as the old Naive set theorists did. This of course produces the paradoxes we try so intently to avoid, but which we always observe to be impossible. A quote from Per Martin-Löf [52]:

> *It therefore seems clear that mathematics cannot be properly defined in this way. Instead, you must start afresh, so to say, in your attempt to answer this question. You do not need to reflect upon it very much in order to realize that mathematics is not defined by its content, but by its method, which is to say the deductive method, the method of proving theorems: proving theorems is what mathematicians do. The deductive method, in its widest understanding, is simply the method of acquiring knowledge through proof, the method that was consciously conceived and described already in ancient times, in particular in Aristotle's Posterior Analytics, and that was revived at the beginning of the modern era by the rationalists, by Descartes and Leibniz in particular. This is then the answer to the question of what mathematics is that seems most reasonable to me. You see that it is a very wide determination: it widens mathematics to encompass all knowledge acquisition through deductive reasoning, or through proof. Mathematics is then conceived as generally as it was in the beginning of the modern era, as mathesis universalis. Whenever deductive reasoning—this typical stepwise acquisition of knowledge—is involved, there is mathematics, according to this general determination*

On the other hand, we need to show that this perspective and any regression to it is wrong: there is a tacit postulate in mathematics that universality can be subject to exact exposition. This is prominent in Frege (*Function and Concept* [18]) as well as, say, Russell (*Principia* and *Principles of Mathematics* [69]). This persists throughout the whole unfolding of any attempt at Foundations of Mathematics, and *I think* one could even argue that it persists today [68] (more work necessary here). As a consequence of these things, it is ***absolutely necessary*** to indicate why we think this sort of problem is resolved in what we attempt here. Fundamentally it has to do with the required disposition towards the contents analyzed.

3.2.9 Plausibility of the Connection between Physics and Analytical Psychology

Compare *On Psychic Energy* [30]. Clarify the argument. Require on the basis of the principle of projection, following from the principle of psychic symmetry.

3.2.10 $\lambda o\gamma o\varsigma$ as Archetype

The criterion for being as archetypal requires that we show: 1) there is a uniting theme among the collection of symbols considered (so that there is a possibility of a unified generating source); 2) that this theme *excludes* other modes of being (so that it is not the unification of all being that we analyze); 3) this uniting theme is *not* a function of culture (i.e., its symbolic expression may vary as a function of culture, but its function remains invariant in time and space), thereby demonstrating its *collective* aspect; 4) it finds its nature projected into a broad class of cultural and psychic contents so that it is not a purely conscious content. If we demonstrate (1) - (4), we can infer that the content which gives rise to the collection of symbols together with their dynamical unfolding is an archetype. This is the clear approach in, say, [56].

Some key pieces:

- Christ as $\lambda o\gamma o\varsigma$ suggesting that it has been projected into mythological structure (projection $\Rightarrow$ unconscious manifestation)
- We need other cases of this (e.g. Faust?); compare the Rhind papyrus (varies across culture)

- The academy as a fundamental cultural expression of this psychic source–i.e. the instinct which gives rise to the institution of the academy as the object of interest. All things associated with the academy, e.g. books written for the purpose of solving a problem
- the fact that logical judgement and understanding is mediated by an *emotional* process–"Eureka!"
- understanding as intentional thinking(?)–how is this exclusionary on being? The claim seems obvious, but we need to be able to indicate a substantive species which is orthogonal to the species of contents generated by the process in question
- the process of understanding as a unified process so that whenever an individual intends to understand something, it is the same in each case (stupid people think this means that we need to describe this biologically; we can satisfy them if we do this, but we also need to be very clear in the critique of the problem with this)

3.2.11 Psychological Empiricism

Psychological empiricism is mainly concerned with questions of *existence*, which means that the construction of a psychological phenomenon is sufficient for the proof of its existence. This does *not* imply that the existence of phenomenon within a given individual is present within *all* individuals, but it *does* prove the existence of the phenomenon within the collective psyche. In particular it implies that the phenomenon in question is compatible with the psyche, or that the psyche as a unified whole has the possibility of expressing the phenomenon in question. Methods can be developed to infer the degree to which a given property is shared among a species of personalities. Because psychic data have implications for physiological and behavioral data, one can infer the contents of the 'subjective' state on the basis of measurements of these structures. These are, however, insufficient by the arguments we make here; they are not first-order expressions of the fundamental psychic data but instead amount to the expansion of that system underneath an alternative archetype. Psychological empiricism proposes to study the contents before the psyche as they are immediately presented to us. *Formal Psychics* is the mathematical process that arises out of this disposition.

4 Mathematical Theory

4.1 Mathematical Notes

These are the key pieces from my notebook that should guide and motivate the mathematical machinery introduced here.

1. Direct quote:

   > *This, I think, is the sketch. The dynamical law of the Psyche will be given by an extremization principle [cf discussion in my notebook around pp. 27-32, and others] of raw psychic content in the direction of the given frame's subobject classifier. [Subject to change.] In non-pathological cases, this will be a symbolic representative of the archetype of the Self [αυτος]. The extremization statement will occur in a topos [why? I need article(s) on how toposes are generalized areas of reasoning–specifically, we should make apparent how they consist in 'local' generalized structures in which we can do reasoning–**I think there is a paper by Bell which discusses this explicitly**.] wherein one seeks a frame so that microvariatons in the symbolic contents [what does this mean? If we demand that symbols to be purely synthetic, what does this entail? It would require the variation to be an isomorphism–is this a legitimate hypothesis?] of the frame presereve the stability [what does this mean?] of the frame. This is consistent with Jung, Peterson, etal. Thus I think the statement essentially occurs in the topos of synthetic differential geometry [this led to the deduction of symbol as an infinitesimal, cf. pp. 82-84 in my notes]. All this based on the principle of psychophysical symmetry [i.e., Jung's principle] guaranteed by the fundamental mechanism of projection [analogue of rule of detachment?] as the mediating mechanism of the psyche wrt its coupling to the external world. One should therefore be able to connect the logical aspect of hte psyche–which consists in the raw mathematical symbolic contents thereof–with the objective mechanism which mediates personality development.*

4.2 Introduction

We want to treat this as a realm in which logical judgements can be formed, where we can render local frames that admit nontrivial kernels so that not all contents are accessible within a given frame, where there is a notion

of extremization across the symbolic contents, where both archetypal and personal contents are expressible, where there exists notion of unconscious, where notion of 'model' as geometric presentation is possible. *Elementary* in the sense that we take the immediate psychic contents as the objects of study, that these are not purely subjective. Cf. Marburg.

The basic idea here will be essentially a sort of variational principle pursuing the analogy in < Jung CW8 Essay 1 >. This I think is supported further by the fact that we are affective creatures. There is a similar principle in neuroscience whereby 'free energy' is minimized (from a statistical and informatic point of view, which we deny as elementary from the psychic point of view). Also compare < Jacobi 1959 >:

> *For it is incontestable that side by side with the archetypes which belong to the entire human race or the European, an inhabitant of London will embody others that are typical only of the dweller in London. The latter, however, must be regarded as variations of the former. The basic structure is laid down, but its individual spatiotemporal concretizations are imprinted by the time and environmental constellation in which they appear.* p. 57

4.3 Elementary Theories in General

When we term a theory *elementary*, we also mean that it is *first-order*. The key piece here is that the immediate objects of study are taken as the fundamental ground, and the rules which govern their synthetic combinations function like axioms. First order theories are inherently *constructive* or *genetic*.

The theory will proceed essentially after a form of the *sequent calculus*. The essential idea is that a given sequent should be thought of as a *process* whereby the affective *judgement* is formed in an affective *context*

$$\Gamma \vdash \alpha \tag{1}$$

4.4 First Order Contents

The critical objects of study are the *symbols* and *archetypes*. The justification of the mathematical objects we detail here will be discussed in the section motivating their introduction. Here instead we will prefer to detail the whole of the mathematical content. We will take the symbol and the archetype as elementary, but we also require a natural relationship between the two. In order to encode the unconscious into the theory, we need the notion of free creation that Brouwer introduces. For now, we work in the theory of categories, and we view the arrow '$\to$' as a fundamental type of illative structure (cf Curry). The domain will be viewed as the (synthetic) combinator, and the codomain as the (analytic) precipitate.

4.4.1 Symbols

Because the symbol is the best possible presentation of the archetype, it ought to be viewed as the content which presents the archetype after its exhaustive analysis, so that it should be viewed as the analogue of an infinitesimal. We take it to be a purely synthetic content, so that it manifests contents combinatorially, but admits no analysis. We employ lower case Greek letters for these objects. An arbitrary symbol will be denoted α and the only arrow it admits of the form $[-, \alpha]$ is the identity. Considering it as a generator, then it will indicate a category with *the possibility of* all colimits. A priori, if we take the hom-objects to be **Set**-valued, we do not know the cardinality of the hom-set. At this time, we abstain from asserting a structure on the hom-objects, so that we deny the ability to form the objects $[a, a']$. To do this implies that we have reduced a process to a content, which we are at this time unwilling to admit. If we enforce the existence of all colimits in the category, we have diagrams of the form

$$\left\{\alpha \xrightarrow{i_\alpha} \sum \alpha\right\} \tag{2}$$

It also implies the existence of an initial object (denoted 0), but if we have this then we have one of the following options: 1) $\alpha \cong 0$: since the definition of 0 requires $0 \xrightarrow{!} a$, all objects a, then we have $0 \to \alpha$, but then by the axiom, this requires the arrow to be the identity. We could relax this and require it to be iso to the identity–but if we take the axiom seriously, then $0 = \alpha$ and α is initial in the category; 2) $\alpha \neq 0$ and 0 a subinitial object (i.e., for all a, there is at most one arrow $0 \to a$): this requires that we deny that all colimits exist on the whole category, but we could modify the claim and assert that select subcategories admit all colimits; if we do this, and assert that every subcategory not containing α has all colimits, then we get a subinitial object since the empty diagram appears in every category. This means we need to quantify over subcategories rather than working with the whole category

to begin with. 3) Deny colimits entirely; in this case, we get analogues of $\alpha + \alpha$, but in the cospan $\alpha \to a \leftarrow \alpha$, we may have many arrows that satisfy $a \to a'$ whenever we have another cospan $\alpha \to a' \leftarrow \alpha$. If we take **SDG** as our analogue, probably the first option is the most appropriate when thinking of the α as infinitesimals. In **SDG**, we know that if dx is a nilsquare element of R, then $dx^2 = 0$ but we cannot conclude that $dx = 0$ or $dx \neq 0$. If we view these data as sufficient to declare (at the appropriate level of analysis) $dx \cong 0$ (which means that we can 'uniquely' pass between dx and 0, but *not* that they are equal), then the analogous situation is (1) above. It also implies that $\alpha \xrightarrow{!} a$ for all objects a, so that we basically have a join-semi-lattice generated by the symbol. On the other hand, (2) is another good option since it allows all non-empty limits when α is included in the objects we will use to take colimits, and at this time I do not see that it implies there exists an arrow $0 \to \alpha$, so that we don't have any contradictions. In particular, (3) seems to make the calculations the most difficult since we deny the existence of any colimits.[22]

Deduction of symbolic structures as ∞-groupoids actually follows naturally by the hypothesis that processes can also be made identical–which means the reduction of a pair of processes to contents, which is admissible on the basis of, say, the necessity of communication of them (indeed, this current sentence exhibits that fact). This then legitimizes the HoTT as the mathematical basis of the theory, but with something more general due to the duality relation in †.

4.4.2 Archetypes

We obtain the notion of *archetype* again by a similar mode of thought, but instead view these as *purely analytic* objects since they admit an infinite depth but cannot be known in their totality (so that they cannot enter as generalized elements into any other object with the exception of admitting an inclusion into the universal psyche; but in that case, they are their own image so that we don't break the axiomatic condition we seek to impose). We employ capital Greek letters to denote the archetypes, and assert that whenever they enter into a diagram of the form $[A, -]$, that the only arrow which is admissible here is the identity.

4.5 Analytic and Synthetic Contents

4.5.1 Example

Let X be a species (type); then $x : X$ are the individuals. We can define an identity type on X by $Id(X, x_1, x_2) : (x_1, x_2 : X)(X : \Psi)L(X, x_1, x_2)$, so that when $\ell : L$,[23] then we can think of ℓ of the form $x_1 =_L x_2$, so that we consider the claim that 'x_1 is L-equivalent to x_2'. The idea of an analytic representation is the following: let $\ell : Id_X$ (which we should think about as a line) and then let $\varphi : \omega \to X$, so that φ is a (partial) function type on the (intuitive) naturals into the space (type, species) X.[24] Then an analytic representation needs to be thought of as an assignment of the terms of type $\omega \to X$ (i.e. the collection of points) to the term ℓ, so something of this sort. This gives a collection of 'discrete' representations of the line. The assignment should be a term of type $\theta(\ell, \varphi)$ (naively, I think about this like $\ell \rightsquigarrow \varphi$), which should yield a term of a type that effects the judgement that ℓ is identified with the output of φ. A *refinement* on the analytic representation is a term $\varphi : \omega \to (\omega \to X)$, so that it can be thought of as a collection of the collection of points.[25]

The basic intuition here is that I have a line and a collection of points; the line itself should be thought of as a purely synthetic content, and ℓ is like a presentation of the species that is to be represented in terms of the individuals of the type X.

4.5.2 Fundamental Relationships

The relationships should be dual. The key mechanism as indicated in the discussion above should consist in something like a commutative diagram

[22] At this time, I am unaware of any result which asserts a necessary (and sufficient) condition for the existence of colimits in an elementary category other than by definition, so that, unless we've constructed the category from one which has structure, we need to insist on the (co)limits by hand. That is, it isn't necessarily a natural condition induced by the structure we set up as the generating mechanisms for the category in question.

[23] Really, I should think about this L as, say, an infinite collection of the points–how do we get 'curves' instead of 'lines'? Notice that this really means that $\ell = \ell(x_1, x_2, ...)$, although it should be noted that–simply because we have $\ell(x_1, x_2)$, it does not imply that ℓ is a 'straight line'–any line that contains these points would be a term of this type.

[24] Actually, we really just need to invoke an instance of the successor here in order to generate a refined (or finer) geometric (re?)presentation of the content. This could easily be confused with a partial function.

[25] The same comment as above can be mentioned here; we don't need a total function or even partial function, but just an action of the process of differentiation.

$$\begin{array}{ccc} a & \xrightarrow{f} & b \\ \downarrow{\scriptstyle \delta} & & \downarrow{\scriptstyle \delta} \\ da & \xrightarrow{\lambda x.f(x)} & db \end{array} \tag{3}$$

where δ should function like a differentiating operator and the da as an analytic representation of the content a.[26] In this case, such a diagram is likely a pullback of $\lambda x.f(x)$ along δ. In reality, δ is also likely a functor rather than a map within a given category. In principle, δ should be a functor that allows passage between representations. Its (right) adjoint *I think* should be the synthetic functor, $\int$, which gives a synthetic representation of some analytically presented data.[27]

The other essential relationship we need axiomatizes the principle of affective extremization; the key details relating category theoretic and type theoretic formulations are not yet exact, but loosely have to do with interpretting natural deductions as (composite) affective processes where the data considered and deduced are regarded as symbolic (?) contents. Regardless of interpretation, the formulation will need to take the character of something like

$$\delta^p \Psi = 0 \tag{4}$$

for some $p \in \omega$. The notion of '0' here requires analysis–in truth, the equation should read as $\delta^p : \Psi \to \eta$. Rather, we should observe a pullback for the cospan $\Psi \to \eta \xleftarrow{\emptyset} *$, supposing that the 'point' $\emptyset : * \to \eta$ is that affective expression relative to a given frame which is the fundamental point of symmetry (in particular, with respect to the primitive measure of valence).[28]

If we consider the initial presentation, it suggests that if we consider an infinitesmal expansion in a frame, then its analytic representation is extremized and the pullback generates a synthetic expansion of the frame so that the new one is in line with the old–but we need the principle of psychic inertia to emerge naturally.

4.5.3 The Fundamental Equation

If there is a 'natural law' within this domain, it is given by a cycle. Segments of the cycle have analytic character that may or may not be elementary or even 'trivial'. But fundamentally, the equation is the commutativity of the following diagram

$$\begin{array}{ccc} Differentiate & \longrightarrow & Transform \\ \uparrow & & \downarrow \\ Inhibit & \longleftarrow & Integrate \end{array} \tag{5}$$

Differentiation implies the application of the function of the psyche which renders a purely synthetic content as an analytic structure; the transformation proceeds consistent with the principle of affective extremization; the data are (re)integrated,[29] resulting in a widening of the psychic frame, or a development of the personality towards the (personal) symbol of the $\alpha\upsilon\tau o\varsigma$; this new frame evolves freely in time until new data are confronted which require further differentiation.

4.6 Types, Dependent Types, and Interpretations

Intuitive types can be reinterpreted as Brouwer's notion of *species*, which is the entity associated to the notion of archetype in our theory here. Dependent types are then derived types from primitive types built from the capacity to connect properties to entities indicating a fundamental species

[26] Indeed, this abstraction should divest the content of its intense emotional charge, enabling its free manipulation. The affective data can be restored after the transformation so that the general consequences yield insight into the data which were presented, just more generally.

[27] Compare the notion of a *cohesive* topos.

[28] Indeed, if this accurately describes the evolution of the psyche, the empirical fact of its affective ambivalence becomes immediately the case by virtue of the fact that all developments of the personality 'revert' to the point of fundamental affective symmetry.

[29] This entails the appending of the refined data to the frame in question, followed by the categorial closure. I think this is the essence of the integration process.

4.6.1 Examples

Consider for the sake of examples that we are working with ω. We already saw an example of such a construction–in the previous section on the relation between analysis and synthesis: Let $x : X$ (read: 'x *indicates* X').[30] Since ω is the primitive ordered species of recursive generation, it is an elementary species, and we can consider (partial) maps as above $\varphi : \omega \to X$–which is the same as $\prod_{n:\omega} X$. Here X is not dependent on n, so categorically this is just $\hom[\omega, X]$, which we denote $\omega \to X$, following P. Martin-Löf (*An intuitionistic theory of types*). This means that we have the species ω together with a *rule* that assigns to each indicator of the domain species

Maybe we say that a species is *substantive* (or *contentful*(?)) whenever it admits a positive judgment of the form $x \in X$,[31] whereas we might say that a species is *indicated* whenever we can form the judgment $x : X$. In the former, we say x *is subsumed under* X, where X is the *firmament* or *domain* and x is the *substance*, *ground*, or *base*. In the latter, x is the *indicator* and X is *indicated*. Obviously any indicated species is substantive, but the converse need not be the case (for we may judge by the process which forms as a result of $x : X$ that $x' \in X$, but this need not imply that given x', we would obtain $x' : X$). To see that this is the case, one can see that the categorial notion of a group easily indicates the categorial notion of groupoid, but the subsumption of the identity type under the notion of groupoid is not something indicated by the notion of groupoid a priori (I think). There are likely better examples; the key idea here is that subsumptive and indicative judgments are to be regarded as *distinct*. A better example I think is the following: the species $S = \{(x, y)|x^2 + y^2 = 1\}$ is substantive when we conceive of the algebraic property then observe $(1, 0) \in S$, but not $(1, 0) : S$. Conversely, if we had a method of forming the indicative judgment $s : S_r$, where $S_r = \{(x, y)|x^2 + y^2 = r\}$, then we could specify an intuitive limiting procedure where we take $S = \lim_{r\to 1} S_r$. As it stands, the judgment is not purely indicative since it is contingent upon subsumptive hypotheticals whose substance is not yet demonstrated. In principle, indicative judgments ought to precede subsumptive ones. I *think* the relationship between these judgments is dual, where the indicative one is a synthetic one, whereby X is 'extracted' from x in $x : X$, and x is subsumed under X (which is supposed to exist a priori) with respect to $x \in X$. In fact, Lawvere suggests this in [46] and even says that Cantor observed this same aspect. There he speaks of sets as those which have presented themselves in their totality as their essence, and those whose essence is 'built up' by a process of becoming. In our sense here, the former establishes a species of subsumptive judgments and the latter a species of indicative ones, or else the substance must be given primitively. Subsumptive judgments borne from principle of comprehension; species so comprehended are necessarily purely subsumptive. Their construction proceeds as: given the indication of previous species $X_1, ..., X_n$ (say), then if we admit a meta-content which indicates the fact that the species are combined in terms of fundamental operations to form a 'polynomial' or 'algebraic expression' we have $\phi(X_1, ..., X_n)$ and $\phi \ni x$ furnishes its substantive condition.[32] Furthermore, this ought to be such that whenever we specify an n-ary operation on indicated species, there is an associated local computation that details how to yield the subsumed contents in terms of the indicators. Note that as a result, working with subsumptive judgments are more general–since if $p : \psi$ then $p \in \psi$ so that if a judgment $\vdash \Delta(p)$ only depending on $p \in \psi$ then because $p \in \psi$ as a result of $p : \psi$ then the property holds in particular for the content considered.

Now this separation is only relevant if one could *actually* work out the difference in implication here. Certainly we have the axiom

$$x : X \Rightarrow X \ni x \tag{6}$$

so that this is reminiscent of $\phi \Rightarrow \neg\neg\phi$ but not conversely. Of course the difference here is that we are relating the analytical content to the encompassing structure. Perhaps there is a psychological parallel to the Trinity here. We can view the substance as the body and the firmament as the realm; then : and $\ni$ are to mark *procession*, so that $X \ni x$ can also be read: x *proceeds from* X. Another great example of this (per St. John's *Exact Exposition* [13]) is the relationship between the thought or word and the mind itself. See Bk. I, Ch. 6 for his perspective; in that case the thought proceeds from the mind so that the concept itself is subsumed under that domain whose essence

[30] We are conflicted on the notation $x : X$ and $x \in X$; this latter notation has the benefit of connoting both the substantive property, as well as a sort of 'membership' where then X comes to carry a sense of being as a firmament for which its elements furnish a ground; conversely, $x : X$ as *indication* really entails an abstraction from the concrete content presented before us–so that (for example, with Kant) the species indicated really amounts to the (analytic) extraction of a property from the data immediately presented, following which one ascertains a whole species. From there, one acquires a need for judgment as to whether another content indicates the species in question. In a sense, we really should separate : and $\in$; in a sense, they are really dual–as $x : X$ is the *extraction* of X given x, and $x \in X$ is the *subsumption* of x under X (meaning X was given previously).

[31] Perhaps a more proper notation would be $X \ni x$, read 'X *subsumes* x.'

[32] What is the meaning of an 'algebraic operation' here? Compare Curry. Ostensibly, supposed to be a repeatable constructive process–i.e., we can introduce a symbol which indicates the same construction, which really means a process always indexed by the same sequence of 'steps' or configurations or states. In that sense, we 'define' an operation as type of diagram in terms of elementary synthetic steps.

is the one of thought, and yet in dealing with the concept itself (not as an *experience* but rather as an objective datum), it does not appear to indicate the mind as such, whereas the *experience* of the thought (in apperceptive awareness) necessarily *must*. By the way, species need to be substantive in order for them to carry affective weight, but they need not be indicated; indicated species are those with contents that are manifestly conscious, whereas substantive species are those which obtain an affective base. In particular, there exist non-indicated substantive species, and these will be called *unconscious*.

Sets (finite) are the special case; they consist of data which are (hypothetically) totally differentiated.

4.6.2 Necessity of Type Theory

Currently, this branch of mathematics is the only one which allows for the *species* themselves to be laid at the foundation, together with their algebraic rules. We need a theory which allows us to indicate properties directly and to speak meaningfully about their manipulation in a direct way. All other methods impose too much structure in their assumptions. Type theory is a 'blank canvas' in the sense that we can work with the types directly. For example, in the footnote where we mention the continuum, we can now *define* a species η to be *continual* if it satisfies the substantive condition[33]

$$\vdash \xi \in \prod_{t:\langle\eta\rangle_\omega} \sum_{t':\langle\eta\rangle_\omega} \sum_{n':\omega} \left[Id_{\langle\eta\rangle_\omega}(t(n'), t'(n')) \to \oslash\right] \tag{7}$$

which says that whenever we consider a sequential species valued in η–which we call t here–we can always indicate a content t' at some point in the sequence such that the identification of t and t' is absurd. But this is the singular property that nullifies the possibility of purely countable (i.e., purely *discrete*) species. If we adopt Brouwer's perspective, this should be sufficient for the identification of the continuum (although we would probably need to take the unity of all such species η which are continual in order to indicate the *full continuum*).

We should also include a word on interpretation of the operations $\sum$, $\prod$, especially in the light of Curry's disposition, which we've adopted here. In a manner of speaking, these will likely need to be seen as 'meta'-operators, but in the following sense: $\prod_{x\in X} H(x)$ denotes an abstract concept whose internal data cannot be ascertained beyond the fact that *if* $h \in \prod_{x\in X} H(x)$, *then* it denotes the outcome of a process such that if $ev(h, x) = h(x)$ is the evaluation of h at x, and we obtain a content $h(x) \in H(x)$; $\sum_{x\in X} H(x)$ denotes a pairing process (x, h), meaning that as soon as we have $x \in X$ and $h(x) \in H(x)$, if $(x, h) \in \sum_{x\in X} H(x)$, then it indicates the existence of a primitive carrier that takes x to $h(x)$.

4.6.3 Some Mathematical Details

See below on the theory of categories. The synthetic theory of categories identifies the category with its species of diagrams. A diagram will be given by indicators of a substantive species together with a primitive force carrier. This force carrier *may* admit an alternative indexing substantive species, in which case a diagram will be given by a pairing of the substantive species together with a sum. If the initial species is sufficient (say X, so that $\xi \in X$), the diagram is

$$\Delta = \left\langle X, \sum_{\xi\in X} X(\xi) \right\rangle \tag{8}$$

where $X(\xi)$ is a derived species based on X, and at a fixed ξ is thought of as the species of edges out of ξ–i.e., $x \in \sum_{\xi\in X} X(\xi)$ means $x = (\xi, \{\xi'\}) = \{\langle\xi, \xi'\rangle\}$ for some (possibly empty) $\xi' \in X$. If the edge species is not derived from X but is based on the introduction of additional data (i.e., one seeks to regard the carriers as distinct in the sense that they are not indexed by the substance itself), then one has a pair of species X, H, with

$$\Delta = \left\langle X, \sum_{\xi\in X} H(\xi) \right\rangle \tag{9}$$

In this sense, a diagram is the exhibition of an object in $\sum_{X\in\Psi} \left[\sum_{x\in X} H(x)\right]$–here it seems the essential synthetic character exhibits itself. It becomes clearer when we admit $\sum_{X\in\Psi} \left[\sum_{\xi\in X} X(\xi)\right]$. If we instead keep $H(\xi)$ as the (dependent) type, then $h \in \sum_{\xi\in X} H(\xi)$ means $h = \langle\xi, \eta(\xi)\rangle$, with $\eta(\xi) \in H(\xi)$. Ostensibly, this η is an edge set

[33] Let $\langle\eta\rangle_\omega$ denote the species $\prod_{n\in\omega} \eta(n)$

with domain ξ so that $\eta \in \prod_{\xi \in X} \mathcal{P}X = X \to \mathcal{P}X = X \to (X \to X) = \prod_{\xi \in X} \prod_{\xi' \in X} X = \prod_{(\xi,\xi') \in \sum_{\xi \in X} X} X = X \times X \to X$ (assuming classical thinking).[34]

Let us turn to further analysis of this $H(\xi)$. Again, this is the species of carriers out of ξ–so that $H(\xi)$ in the existing mathematical structure subsumes data of the form $\lambda f.f(\xi)$, but is more general. Really, if $e = \langle x, x', \eta \rangle$, then $e = \langle x, \langle x', \eta \rangle \rangle$, so then $H(x) = \sum_{x' \in X(x)} H$ or something like this. Recalling $X(x) = \{x'\}$ such that there is an edge into x' from x, then this species has $\langle x', \eta \rangle \in H(x)$.[35] This specific construction seems to indicate a more general problem as in the notion of subspecies. *In fact*, this problem *may* be the reason why no generalization of $+$ can be found as in analogy to $\sum$, $\prod$ (at least at this time). This 'summation' I think would be over all possible special extensions of a given species at a given content. Why? Because $\vdash A \Longrightarrow \vdash A \vee B$, whatever B is (i.e., the latter is totally independent of B, so that even if it isn't well-formed, the disjunction is as long as A is). It would seem that we might have abstractions over *domain* elements in $\sum$, $\prod$ but not *co*domain elements.

There has been a problem with the analogy to (differential) geometric reasoning; but it is merely this: one takes the pair to be 'points' and 'tangent vectors'. So under this view, the fundamental geometric picture consists in a species of local computation rules that specify all possible local transformations on the identity. This means that the identity (or point of symmetry) is actually the same thing as the canonical element of the 'space'–it seems there is a natural relationship between the concept of this canonical element as a generator on the one hand, and as the origin in the other. This is just a type of generalization that proceeds from the group action of (infinitesimal) translations on the origin in $\mathbb{R}$; in a way, it attempts to specify a computational representation of the theory of Lie. In particular, this means that we really want to think about the canonical content indicating the species, together with the local processes which carry the identity into neighboring contents which are subsumed under the species of contents obtained by the action of the elementary/primitive symbols on the canonical content.

4.7 Category Theory

Our disposition is with an eye towards Brouwer's perspective. It is *not* sufficient to adopt the structure of a Heyting algebra and work with 'higher order' intuitionistic logic, because the disposition required *must be adopted from the outset*. Proving equality with Brouwer's perspective is not obvious–although Heyting asserts that his logic can be viewed that way.[36] We demand the occurrence of the unconscious in the system itself, which requires an alternative perspective. We develop this in the context of the theory of categories because they admit a natural interpretation within our theory, and because they encode natural sequencing or natural deduction. We will indicate a core example of this below.

4.7.1 Elementary Categories

The theory of elementary categories begins with a pair of conceptions: first, the intuition of *substance* which is presented as *objects*; second, the intuition of *function* which is presented as *maps*. These latter contents may also be viewed as *processes*, and it is a central feature of mathematics in general and category theory in particular to *reduce* this fundamental or elementary notion to a formal concept.[37] This reduction necessarily renders *process* as *content*. It seems to me that this itself is one-sided; there is no parity between these, and in particular there

[34] We can also put $=\!\!\to\!\!\cong$ or $=\!\!\to\!\!\simeq$, but since we are thinking in the context of the type theory, these are all 'the same' in that they all indicate a judgment of equality, which is a judgment of reflexive, symmetric, transitive sort.

[35] This definition is circular, but it conveys the correct intuition so that we keep it for now; it will need to be fixed.

[36] As far as the author is aware, Brouwer also supported this perspective. But this question can only really be opened if one adopts a psychological perspective ab initio.

[37] Cf. Lawvere's dictum that to understand category theory is to understand its arrows. Also compare Brouwer's Second Act of Intuitionism

can be *none*.[38,39]–For *if* we could establish parity in this regard,[40] then we will have introduced substance into the theory which itself has no parity in order to schematize the pair and facilitate an inter-representability. How do we see this? Suppose that we have some differentiated substance so that we can indicate ξ, ξ', these being some substantive contents that we may perceive. Whether these are equal or not is immaterial–we only know at this moment that we have the presentation of each content, made distinct by the fact that they occur before us at distinct moments (i.e., we can view them each as indicating distinct moments within our being, which we must take as a primitive intuition given by the mere apperception with which we are endowed). Now *any* process which admits interrelation between this pair cannot itself be made substantive other than by correlating it again to some substantive content that is supposed to indicate whatever method or process we've invoked in order to facilitate the interrelation.[41] This concretization therefore necessarily *reduces* the actual process to a contentful sequence whose indicators are (in the final analysis) elementary substance. For example, in the theory of categories, this is rendered $\xi \xrightarrow{f} \xi'$. Some authors (although it is rare; it is most common in older texts on algebra, and especially groups) emphasize this so strongly that they prefer to write $\xi f \xi'$, and view the rendering of the process in this manner as $(-)f(-)$. This is more common when f is a *relation* in the sense of the elementary theory of sets. This is exacerbated in the case of Cartesian closed categories or in the mathematical notion of enrichment or in the idea of a Hom functor. In each of these cases, there is a supposition that we can *manipulate* the 'space' of processes as though it were again of the same 'sort' or 'form' as contents[42] (though, as in the case of enrichment, perhaps of a 'sort' of contents distinct from the ones that we've asserted to be objects within the immediately presented category). A *particularly* salient example can be found in [70], and especially his notion of probing spaces, and the observation of a (Grothendieck) Topos as being (categorically) equivalent to the category of sheaves on a site. In that case, one effectively demands his objects *be* the processes in the sheaf category.[43] As a result of these remarks, it may be the case that to *label* a process (or *index* a process) is to regard it as the sequence of figures–i.e. affectively charged contents–in time. On the other hand, this will really be an *analytical representation* of the underlying process, rather than the process itself. This is best seen in the case of dreams or fantasies in which the individual *experiences* the affectively charged data, but upon an effort to capture the data and render it usable, he necessarily only recalls the components which are of sufficient intensity. Memory is mediated by affect, so that this is compatible with the neuroscientific data.

There are major departures from the standard disposition, wherein some mathematicians attempt to recapture the state of affairs prior to this reduction–but by our proof above, it is impossible as soon as the process is perceived as an entity within the theory. One important example occurs in the theory of constructive mathematics and the theory of intuitionistic types, wherein the notion of *proof* is reduced to that of a mathematical entity as well. This is the case in particular in Homotopy Type Theory, where proofs are viewed as objects living in spaces–in this case, the space itself is viewed as the primitive conception, so that the processes are themselves *analytically contained* in

[38]Actually, this can be rendered as a 'theorem': no faculty can (faithfully) present its processes to itself within itself or in terms of its elementary data, and in particular the $\lambda o\gamma o\varsigma$ cannot capture its capacity for proof in terms of its individuals. As a corollary: the degree to which processes can be represented internally is governed by the degree to which these can be expressed analytically as a (possibly finite) sequence of (elementary) figures. As a second corollary: every category that adequately models the nature of a faculty cannot itself be Cartesian closed. Specifically this means that the (analytic) representation of faculty in terms of the symbols affiliated with the $\lambda o\gamma o\varsigma$ cannot be equivalent to the initial presentation of the faculty itself (since the former in general admits exponentiation). See the mathematical details below for more.

[39]Surprisingly, there seems to be one exception to this, viz. God. Compare St. John of Damascus' *An Exact Exposition of the Orthodox Faith*, especially his analysis of the Word and the Spirit in their function. This cannot be presented within the data accessible to the $\lambda o\gamma o\varsigma$ (specifically because its symbolic unfolding is a *created image* of the transcendental analogue), even according to the Church Fathers, so that at best all we can do with the symbols the faculty presents is indicate the special complex of properties which 'classify' God. I suppose in the context of orthodox Christian theology, we would say that we are working with data which are *created* (rather than begotten or expressed by means of procession) and therefore mutable.

[40]In particular, this implies that there are contents which must remain purely intuitive; if they are introduced as formal symbols, the structure itself will lose grasp on the full synthetic content that is manifest within the intuition.

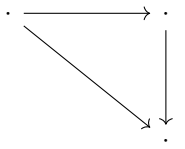
[41]This follows easily from the mechanism of projection.

[42]In fact, this perspective is so extreme that often one must assume that his 'universe' of universes possesses the same constructors as the internal data of the universes themselves. Compare also Russell's axiom of reducibility.

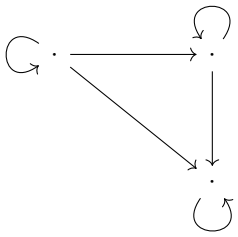
[43]In fact, this is *exactly* the problem of the lack of parity between time and space in physics. One projects the form of the internal sense into an external expression, which then generates the intuition of a 'space'. Indeed, this might be an outline for a proof of the possibility that not all 'function spaces' can be made into *spaces*. Either this, or it becomes the basis for an argument of the question of whether the dual perspective can be admitted; in fact, we would argue that this is *precisely* our stance throughout this whole work. Compare my *On the Psychological Question*. Additionally, this may be seen as the reason for the great difficulty–as its *source*. It further immediately implies that there will be a natural (re)-presentation of the psyche which *necessarily* cannot be Cartesian closed. Recursive synthetic extension of a finite symbolic complex will therefore be a topos. Same for recursive analytic intension of a finite archetypal one. This is the same as the following: imagine you have a dream, then you pull out core significant data from the dream, then you form inferences based on the data present (plus any other symbols you introduce), then this process exhibits a structure that admits assertions about what is *true* in the topos-sense.

the concepts, when we can show they are substantive. This notion is not necessarily a wrong one, although in our estimation it seems to lack a certain synthetic flavor that ought to characterize the notion of process (cf the purely synthetic objects and the synthetic closure of them); one would hope that he could indicate how to construct some transcendental content by means of its process so that this can be exhibited before and evaluated by other minds. But here I think is the really peculiar piece: the construction itself, the process itself, cannot be communicated. *We can only indicate a representation of the initial intuition that presents itself.* This is in line with Brouwer's modification to the science of mathematics, particularly as an introverted science.

If we now turn our attention to the concrete details, we proceed first by the introduction of the *rules* which govern the manner in which we are allowed to manipulate the data; after this, the (intuitive) process that gives rise to a sequence of figures (a *node*) will constitute a mathematical entity which governs a computable relation between the initial and final contents. In this case, the figures will consist of *diagrams* with vertices being the objects and edges the maps. This implies that the elementary mathematical objects will be of the form



with the idea that the arrows entering into the diagram are either elementary processes which are indexed by the symbols they mediate the transformation between, or else they are derived processes generated from elementary processes. The simplest derived process is then of the forms specified by the categorial axioms.



(10)

4.7.2 The Functorial Paradox

In the previous section, we *proved* that the introduction of a symbol f reduces a process to a content and therefore sacrifices its aspect *as a process*. The notion of functor in general actually makes this problem immediate. If we allow the existence of a (species of) elementary edge(s) and think of these as primitive processes of differentiation, then what we are doing is admitting that we cannot effectively describe the *elementary* process more simply than this *within any given category*. This is fine; it means that the associated psychic structure comes equipped with an internal 'carrier' that facilitates interior connection between contents–this is a fine interpretation. The *functorial* interpretation becomes problematic–why? Because the category of diagrams is the prototypical example, and to suppose that a functor is a (collection of) edge(s) within the category itself first *nullifies* the whole concept of a functor (cf. [16]), and second, it inhibits the intuition that there exists a superordinate synthetic structure that (cohesively) ties together the synthetic unity of the psyche beyond the comprehension of the $\lambda o\gamma o\varsigma$ but is nevertheless perceptible to it by means of its awareness of this fact. This piece is so critical to the theory that to render process entirely as content would be to nullify the validity of the theory itself. We do not have the perception that sensation and thought are equal, nor that symbolic generators of distinct archetypes are the same (this does *not* imply any inability to construct comparative analysis of data so apprehended and comprehended in consequence)–cf. [9] for a deeper discussion on this.

This paradox is a generalization of the paradox which *function* induces, and it is a core part of our theory here to grapple with it. We need a reinterpretation of the notion of function. As we've discussed above, it must take on the character of *process*.[44] Processes can have law-like segments, or they can be totally free (with the constraint that the assignments of the figures at a given index in the node constrained by the species of data accessible by the node in question). Completely free assignment indicates the intuitive introduction of the 'type' Ψ. Then whenever $\psi \in \Psi$, we have that ψ indicates a special complex of contents such that whenever $p : \psi$, p can be apprehended

[44]We might also say *relation* but that term already has a 'mathematically precise' definition so we avoid it–if we were to invoke it, we'd mean it in the sense Cassirer uses it.

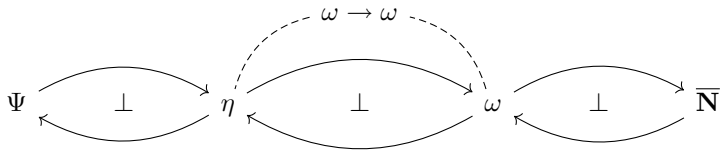
by a perceiving subject.[45] We might term ψ as *apprehensible*–i.e., ψ is the ground of the subsumptive judgment $\psi \in \Psi$.[46] Brouwer's efforts were to capture this–and in our estimation he did so successfully in very large measure. He did not address the boundedness of the figures assignable at any index of a fundamental node–although he seems to have believed these should be *numbers* and that these numbers *are* the primitive mathematical symbols (compare his precision analysis of the continuum in [6] as well as his thesis in [7]). We disagree on the basis of the fact that the understanding can be invoked at any moment *in principle*.

Key to understanding functors is through the concept of evaluation; the process is: take in a segment of the psyche which is a synthetic unity; render the segment as an analytic representation; evaluate with respect to valence–which means either to continue in the engagement of the current action, or else to change the current behavioral schema in pursuit of an alternate goal (all mediated by the principle of affective extremization). This is equivalent to formation of a judgement, so that, *I think*, this is jsut $\Gamma \vdash \Delta$. This *evaluation* then acts on a pair, which is the functor and the content to which it is applied. This is the key into the understanding of the functor itself. Has to do with analytic representation of the synthetic unity. Would be helpful here to know more about the neurological side of things. See [65, 64] for comparison; their entire construction is implicitly based on the psychic phenomenon I am trying to outline here.

Generally, this paradox makes the notion of function problematic, because it implies that the specification of a function as a content can be seen to be problematic. That is, the idea that we can introduce the notion of functor or map 'indiscriminately' is absurd, since it naively encodes a reduction that removes the psychic character from the content so considered–namely, that we are considering content at all. *However*, I think a possible way of understanding function as process but which also legitimizes it is by the consideration of the example of 'translation'–namely between (local) psychic frames. That is, when an individual seeks to understand another, he must effect a (notational) mapping which is (ideally) an isomorphism between the systems considered. Obviously this is impossible, since segments are inherently unique, but the interrelation can be sufficiently faithful that one essentially obtains a widened frame that functions like a coproduct 'glued' at the structure that is common.

4.7.3 On the Connection between Sequences of Symbols and the Universal Psyche, Ψ

I *think* we will need to introduce the initial adjunction as a postulate, but in general I think the connection should be given as follows



which we will discuss further in the preceding sections. The reason for *adjunction* here being that we want a best possible invertibility and we need to take as our primitive objects sequences of symbols, which should be identified with synthetic extensions of symbols. This means that the right-most category should be viewed as a 'sterilized' (i.e., compact or finite) synthetic extension of a given symbolic complex, which can then be used to re-present the universal psyche in a 'best possible' manner. This perspective is supported in its plausibility through a quote by Jung:

> *Since the remotest times men have used numbers to establish meaningful coincidences, that it, coincidences that can be interpreted. There is something peculiar, one might even say mysterious, about numbers. They have never been entirely robbed of their numinous aura. If, so a text-book of mathematics tells us, a group of objects is deprived of every single one of its properties or characteristics there still remains, at the end, its* ***number****, which seems to indicate that number is something irreducible...The sequence of natural numbers tuirns out tobe unexpectedly more than a mere string together of identical units: it contains the whole of mathematics and everything yet to be discovered in this field. Number, therefore, is in one sense an unpredictable entity...Number helps more than anything else to bring order into the chaos of appearances.* ***It is the predestined instrument for creating order, or for apprehending an already existing, but still unknown, regular arrangement or "orderedness."***[47]
> *- CW8, Para. 870*

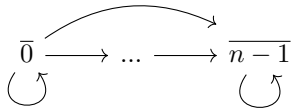
[45] Our notation is 'bad'–Ψ should indicate an archetype (viz. the universal psyche), and ψ a symbol–but in principle a symbol admits no analytic structure so that $p : \psi$ is absurd insofar as ψ is a symbol. Really here then $p : \psi$ means $p : \langle\psi\rangle$, where $\langle\psi\rangle$ is the symbol's synthetic extension (and therefore an analytic representation of the archetype).

[46] We must take it as *given* that Ψ is substantive, not merely indicative, by experience.

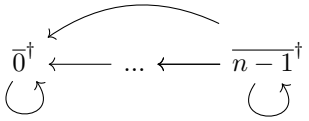
[47] Emphasis our own.

4.7.4 Algebraic Basics of the Theory

If we suppose that any given archetype presents itself to the frame by means of symbol, then there is a hierarchy of contents formed by way of the synthetic extension of the symbolic image as presented within the frame in question. That is the observation we make above. Now abstracting out the particular archetype and subjecting all such contents to the action of the faculty of the understanding, the extensions of the elementary symbols are necessarily the nodes in Brouwer's theory, which present themselves in the theory of categories as finite complete chains. Therefore the basic objects of study initially are the diagrams of the form



which in the theory of categories we might call $\overline{\mathbf{N}}$. Here the bar indicates that really this is an equivalence class of all species of nodes of order n. Dually, the cochains will correspond to analytic intension whose top is an archetype



where we employ † to denote the fact that if we treat this as a predicate $\phi[\overline{0}, ..., \overline{n-1}]$ and we substitute $\phi[\overline{0}/a_0, ..., \overline{n-1}/a_{n-1}]$ that we must take duals upon substitution.

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