

Mathematics

Tuesday, 18 June 2019

Type theory

A **type** is an indefinite abstraction. In contrast, a representation is a definite abstraction. There is a one to one relationship between a representation and an object of representation. The relationship is abstraction. The relationship of a type to its object of representation is one to unknown many greater than inutile, confusing, obfuscating, or distracting. That is, this quantification may remain obscure while the syntactic purpose of a type is not.

In **type analysis**, a *syntactic type* maps onto a *semantic type*, for some relationship of syntax to semantics, or representation to object of recognition. The proof of these objects and relationships as existent is a proof of semantic continuity, and the proof of these relationships as not contradictory is a proof of semantic consistency. The product is a type algebra, or a type system.

A mathematical object of syntax, space, type, class, or set, has no properties of extent or existence when null, void, or empty. The first objects of construction need to be able to represent themselves in the

analysis of their own theory. Therefore the type is the first object of representation of an object of recognition. The type type is equivalent to the type. And, the empty type is nonexistent. When we distinguish an empty type from an empty class or set, we maintain a pedantic adherence to the algebra of reason despite there being a sort of natural equivalence between any representation of void and another which remains unidentified by language.

By analysis, the assignment of definition to the objects of syntax: "null", "void", and "empty".

$\kappa\upsilon\mu\alpha_{\circ}$ = "null", *"a type having a wave node association"*.

$\kappa\epsilon\nu\acute{o}\varsigma_{\circ}$ = "void", *"a type having a space infinitude association"*.

$\sigma\epsilon\iota\rho\acute{\alpha}_{\circ}$ = "empty", *"a type having a finite, enumerable set association"*.

These are type objects as representational but not collecting or accumulating or mutable. They share no relationships and are not mutually contradictory or exclusive. These representations identify objects of recognition. Therefore, this type algebra (in three assignments) is continuous and consistent.

Notes

[[TREE](#)] Ahrens, Capriotti, Spadotti, “Non-wellfounded trees in Homotopy Type Theory” <https://arxiv.org/abs/1504.02949v1>

[[SELF](#)] Escardo, “A self-contained, brief and complete formulation of Voevodsky’s univalence axiom”
<https://homotopytypetheory.org/2018/03/07/a-self-contained-brief-and-complete-formulation-of-voevodskys-univalence-axiom/> <https://arxiv.org/abs/1803.02294>

[[HTOY](#)] Homotopy Type Theory
<https://homotopytypetheory.org/book/>
<https://github.com/hott>
<https://www.ams.org/notices/201309/rnoti-p1164.pdf>

[[VOEY](#)] Vladimir Voevodsky, Univalent foundations project
http://www.math.ias.edu/vladimir/Univalent_Foundations

Mathematics: type theory
John Pritchard, [@syntelos](#)

<https://docs.google.com/document/d/1XNKDHWhx01Ru1N-frS5Q0N2UjKkFrxDjDPM-Xwy4uNI/edit?usp=sharing>

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Mathematics

Tuesday, 25 June 2019

Type theory

A type, τ , has properties of frame, φ , as (object) τ_φ , and (observable) $\varphi\tau$.

Frame φ ,

$$\varphi \{ \begin{array}{l} \tau_\varphi \leftarrow \tau \end{array} \},$$

establishes a context of association, such that we learn of the character or meaning or object of recognition represented by a type when we learn about

$$\tau_\varphi \leftarrow \tau$$

in the relation of abstraction.

The association by abstraction between a syntactic identity and a semantic object is a representation of observability. A physical frame is a physical epistemology, a metaphysical frame is a metaphysical epistemology, and a generic frame is either or both

physical or metaphysical in its individual identities.
[\[TMI/2019\]](#)

An observable type has an additional degree of freedom over a naive type. It may be a member of a frame that is physical or metaphysical, or some derivation of either that defines its character substantially.

With frame φ ,

$$\varphi \{ \\ \tau \leftarrow \varphi \tau \\ \},$$

an observable, $\varphi \tau$, is related by representation of abstraction to an identity classified by the term type.

The indefinite abstraction proposes the identification of an object of recognition. The identity has aspects of observation ($\varphi \tau$) and utilization (τ_φ) that employ the relevant frame of reference, φ . The identity is a member of the least constructed class of representation relevant to logic.

A frame, φ , proposes terms of recognition. The frame and its terms constitute a type class (is itself a type) employed to propose a foundation to the observation of fields of observation enveloped by the frame. The

frame is the identification and characterization of terms of representation.

A metaphysical frame is subject to metaphysical incompleteness [[φZ/2019](#)]. A physical frame is subject to logical incompleteness [[GÖDEL](#)].

Review

Both are due to complexity, at radically different length scales. The first represents the inability of an individual to replicate itself into an independent and shared intellect in order to observe and comprehend itself. The self is metaphysical, meaning the semantic horizon fades into "fractal cycles" of objective substance. The incompleteness of a system of logic is a property of that logical system (e.g. arithmetic), and the incompleteness of metaphysical epistemology is a property of physiological consciousness.

The complexity of *framed type theory* in comparison of differentiation with *abstract type theory* is not distinctive. And by this observation, the framed type replaces the abstract type in mathematics as naive. The conception of the most basic atom of logical construction proposes a degree of freedom that maps types and their properties to their frame, a convenience of removal from the observation or

employment of the type that is otherwise representationally equivalent to axiomatic induction.

The conception of mathematical atoms as logical types serves to clarify conception by transparency, and opens mathematics to contextual objectification.

The qualification of abstract atoms as physical is transparent. The history of logical systems structured by framing includes modern physical science. This is because contextual objectification is representationally equivalent to a method of organization for the complexity present in a non-naive field.

The membership of that complexity may include the metaphysical consciousness. When an object of recognition has complexity in potential with respect to the field of observation, as in the case of representational physical spacetime, the logical representation of the field may be able to accommodate that complexity without engaging it immediately. This "distance of removal" must be differentiated from the representational abstraction which is subject to issues of ambiguity. An enormous subtlety in one case is a pedantic adherence to propriety of conception, while in another case the handling of physical terms in a metaphysical frame may encounter a fairly obvious and ordinary error of conception.

Notes

[[KAG/1968](#)] Don Knuth, "Semantics of context-free languages", Mathematical systems theory, V2 N2, Springer Verlag, 1968

[[GÖDEL](#)] Kurt Gödel, 1931, Logical incompleteness

[[φZ/20190519/1](#)] Metaphysical field theory

[[TMI/20190616/1](#)] Theory of mechanical information

Series

[[MATH/20190618/1](#)] Type theory (#1)

Mathematics: type theory
John Pritchard, [@syntelos](#)

https://docs.google.com/document/d/1PrfnLpdRxz6ZR_cG-Tse7dnQoawX_fHV_gUTeDZv4wE/edit?usp=drivesdk

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Logic

Friday, 1 November 2019

Object

The fundamental logical object is the mathematical type [\[MATH/201906\]](#).

The framed type opens the application domain of symbolic logic from the mathematical abstraction of physical objectivity to include a logical treatment of metaphysical objectivity.

Therefore the framed type is abstracted to the logical object.

Notes

[\[MATH/20190625/1\]](#) Type theory (#2)

[\[MATH/20190618/1\]](#) Type theory (#1)

Logic: object

John Pritchard, [@syntelos](#)

https://docs.google.com/document/d/1IEr1j8ewGj6UbSF_SqWf9W7Y0EiHT88tZ_08M0wo7H4/edit?usp=sharing

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Logic

Monday, 18 November 2019

Theory

The physical objectivity has been formalized to the scientific method of phenomenology.

In physical objectivity, a physical frame is an established (scientific) context of reproducible evidence. Of course, the spacetime (inertial) frame of reference is the ultimate, most abstract, or common physical context of recognition. There is no logical space in the physical objective beyond the spacetime reference frame.

The quantum mechanical reference frame may appear to be far removed from the objects and relationships of the spacetime reference frame, but it remains a logical member of the spacetime reference frame.

As in the case of the spacetime reference frame, the state of an observable is recognized relative to the reference frame. The resulting object of observation is a state in a frame. The state has no utility without the frame.

Likewise throughout logic. A logical object has a type definition. A boolean object is one of two values. The definition of the type employs elements of a context of interpretation, the logical frame of reference.

Our objective is not typically abstract. Our objective is typically the sentient aperture onto phenomena of experience. The experiential observation is metaphysical. It is the observation which is metaphysical.

In logical existentialism [[LEX](#)], a metaphysical frame is defined with a complex system of consciousness having static, dynamic, and temporal states of being, an experio-temporal manifold, and a micro-metaphysical musculature. The principal system model represents the component membership of the state of being.

$$\kappa = o + \alpha + \beta + \gamma + \delta + \lambda + \sigma$$

The complex system of consciousness experiences somatic, spiritual, intellectual, social, physical, sexual, and esoteric states of being. These psycho-physiological states of being occur as a coloring of experience that influences observation and behavior.

In order to characterize an observable we must be able to reference the types of its properties. These

are found in the context of interpretation or frame of reference.

A metaphysical frame of reference is founded upon the states of being as principal psycho-physiological observables. A frame of reference is founded upon a logical abstraction developed by the recognition, objectification, conception, and validation of the logical objects of the phenomena of experience.

The conception of the spacetime reference frame may be credited to Albert Einstein for convenience, while the origin of the spacetime reference frame remains metaphysical. However, this property of the spacetime reference frame is not relevant to its abstract extent in logic. Likewise, we are unable to deny the metaphysical extent of that context of recognition.

A logical object is an enumeration of properties. Each property is the instance of a type. Each type is the specification of possible value. The instance of a type is a well defined value.

A value object is a resolved type expression by which an element of a possibility space is selected.

A value object is a logical object.

When a logical object is a type object, one or more logical objects is a frame of reference.

An object of observation is framed by a type object. When the object of observation represents a possibility space, it is a type object. Likewise, the derivatives of a type object are framed objects of observation.

This structure is epistemological objectivity. It accepts the fact of sentient phenomenology, and rejects the denial of phenomena beyond the vagueries of arbitrary logical hegemony.

The statement establishes relativistic metaphysics. The object of observation is relatively metaphysical to a relatively physical observable. A physical observation, the product of a mechanical instrument, is relatively metaphysical as the object of observation.

Likewise, the sentient experience of observation (*e.g.* sight) is relatively metaphysical.

In both cases we have an observation which requires qualification. The epistemology of objective qualification is a metaphysical epistemology. The establishment, framing, and objectification of the qualification of observation is distinct from the establishment, framing, and objectification of an observable. With a metaphysical discipline of epistemology, the sentient sensory instrument is qualified to coexist with the mechanical instrument, terminating the crisis of physical logical positivism. We resolve the distinction of observable to dispel the problem of objective.

Positivistic metaphysics shares objective actuality with a larger phenomenological space than the logically physical objective. The phenomena of experience demand an epistemological establishment, which is afforded by a metaphysical distinction.

Notes

[[LEX/20190318/1](#)] Metaphysical field theory [[pdf](#)]

Series

[[20191101/1](#)] Object [[pdf](#)]

Logic: Theory

John Pritchard, [@syntelos](#)

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