
The World Is Not Enough – On Complex Types

NIKOLAOS A. KROMIDAS
(German Sport University Cologne)

Summary Complex types are crucially independent from realizations, and notably independent from possible realizations. How can we determine a complex type without any reference to realizations? My thesis: We can handle complex types by a non-referential and substitutional semantics.

The Challenge Intuitively, complex types are types that contain types. For instance, the complex type “word” contains the types “written word”, “read word” and “spoken word”. Reicher (1998) developed a typology with focus on complex types. According to her definition, complex types are compositions of logical parts. Logical parts are types that can be either simple or complex. For example, type A (e.g. a rectangle) is a logical part of type B (e.g. a square) iff necessarily every realization of B is a realization of A (Reicher, 1998, 216). On that account Reichers' definition is co-referential: Complex types determine co-references of possible (or actual) realizations. However, types are independent from their realizations. I will take this literally. In particular, types are independent from possible realizations. For instance, a fictional type has by definition no possible realization, but according to Reichers' definition, it seems that the world is not enough. It seems that we have to add something, for example possible, fictional or drafted worlds. Hence, the danger of inflating ontology arises. Loosely speaking, our world is at risk of being lost in a universe of everything. That's where the James Bond strategy comes into play.

The James Bond Strategy The idea of the James Bond strategy is to add a fiction to the actual world. The name of this strategy was inspired by James Bond, because the strategy handles fictions, just like the famous Englishman is merely a fiction. However, to add a fiction is not to add something. We use a non-referential technique to talk about fictions "according to which a sentence can be true without being true about something" (Wieckowski, 2008, 647) and in this non-referential way, so my suggestion, we talk about types and complex types. To this effect we need a non-referential semantics. An evident candidate is a substitutional semantics. Therefore I will combine Reicher's typology with the fine-grained substitutional semantics from Wieckowski (2008) to a new two-semantics typology. The ontological point is this: When talking about (non-referential) types we are only committed to language we are already committed to; there is no need for further worlds.

The Place of Action Presupposed is a given language talking about types that are independent from realizations. Hence, I regard myself as committed to an anti-particularist point of view. Following Husserl I take types to be abstract entities which are neither created nor necessary. This idea may sound odd at first. However, one should take into account that even our concrete world is considered to be neither created nor necessary by the majority of scientific researchers. My thesis is that types are abstract entities captured by Wieckowski models, analogous to the way Descartes' coordinate systems serve to identify spaces (Quine 2003). Similarly, the instantiation of W-Models fixes sense-extensions of a given language. In this way types are

considered to be sense-structures captured by sense-extensions.

The Technical Equipment W-Models are based on a given language which, in turn is based on another, primitive language. The primitive language consists solely of constants, pure predicates and atomic sentences. This language serves only to determine the semantic value of the complex language with variables, logical operations and quantifiers. Therefore a W-Model is a triple $\langle C, P, \nu \rangle$ consisting of nominal constants C , pure predicates P and the valuation function ν . We can set up a W-Model to be admissible by determining constraints upon ν in a way that enables the subsets of atomic sentences to be definitional, consequent or conform. The subsets of atomic sentences are associates of nominal constants or predicates. A sentence of the complex language is true in a W-Model iff this sentence is an element of the intersection between the associates of the nominal constants and the predicates occurring in that sentence.

Using such admissible W-Models we can provide a type definition (Kromidas, 2009): T is a type iff there is a W-Model with the nominal constant "T". Type T is simple iff there is only one constant, but complex iff there are two or more constants. This type definition is relative to a background language which fixes the primitive language and the constraints upon ν or so to say "the relevant piece of discourse" (Wieckowski, 2008). The following assumption is fundamental: Each Type is entrenched to a particular part of a discourse. Consequently there are no global right or wrong nominal definitions or meaning postulates. In analogy there is no global right or wrong place to fix a coordinate system in space-time. It is a local matter.

According to Reicher (1998) the type "read word" *is determined to* be read and a word. The Reicher connective "is determined to" is relative to a piece of discourse. In addition the Reicher connective, like the Fregean "is", is logical simple and cannot be defined in a strictly logical sense (Reicher, 2003). My thesis: the Wieckowski semantics models the Reicher connective "is determined to", just like the Tarski semantics models the Fregean connective "is". For instance the sentence "James Bond is well-dressed" is neither referential nor absolute true or false. In a given discourse a type "James Bond" could be determined to be well-dressed and that means: In that case the sentence above is true in a locally fixed W-Model, thereby the truth value is substitutional and relative to a background language of that particular case. And for example, to fix "James Bond" in a given discourse, we could agree to collect the books written by Ian Fleming and extract all atomic sentences that mention James Bond. Then we determine the definitional part of the sense-extension by using a piece of discourse as the relevant background language in which we agree.

The Mission Now I will give a concise sketch of my approach as a whole. We have types on one hand and realizations of types on the other hand. Hence, we have a dimension of non-referential semantics for types, and a dimension of standard denotational first-order semantics for realizations. By translating a non-referring predication of a type into a referring predication of a concrete object, we determine a so called realization of a type. A detailed manual on a (homophonic) translation between these two semantics is represented by Wieckowski (2005).

As stated above the main idea of the non-referring Admissible Associative Semantics (Wieckowski, 2008) is that names and predicates are associated with sets of atomic sentences, or so to say with the sense expressed by these sentences. In this way I

regard a complex type (or a simple type) as determined by the associated sense of a name. This sense is captured by a nominal definition, which is represented by a list containing all definitional information with respect to the complex type or so to say to the relevant piece of discourse. For instance, the nominal definition of the complex type “SQUARE” could be the list “the polygon having four angles of 90°, the polygon having four equal sides”. Notably we are talking about a complex type which has the type “RECTANGLE” as a logical part. The nominal definition of a logical part is included by the nominal definition of the complex type. Thereby the predicate “... is having four equal sides” is a defining predicate for “SQUARE” and not for “RECTANGLE”. Intuitively, the sense-extension of a complex type captures all information which are compatible with the defining predicates for that particular complex type. In this way the sense-extension of a complex type serves to define the truth of our sentences about complex types. Thus, we can talk about complex types without any reference to realizations.

The Happy Ending Now we can define a complex type without co-reference. A complex type reflects a sense-extension, and the included types are connected by association. Type A is a logical part of type B iff necessarily the sense-extension of the defining predicates of type B is included in the sense-extension of the defining predicates of type A. For instance, the sense-extension of the type “SQUARE” is necessarily included in the sense-extension of the type “RECTANGLE”.

- Kromidas, N.A. (2009). Kunstwerke als abstrakte Typenobjekte? Zu den Erfolgsaussichten einer von Frege inspirierten kunstontologischen Perspektive. Magisterarbeit an der Universität des Saarlandes.
- Quine, W.v.O. (2003). Ontologische Relativität. In: Ontologische Relativität und andere Schriften. Frankfurt am Main: Klostermann. S. 43-84.
- Reicher, M.E. (2003): Eine Typenontologie der Kunst. In: Schmücker, R. (Hrsg.) Identität und Existenz. Studien zur Ontologie der Kunst. Paderborn: Mentis. S. 180-199.
- Reicher, M.E. (1998). Zur Metaphysik der Kunst. Eine logisch-ontologische Untersuchung des Werkbegriffs. Graz (Dissertationen der Karl-Franzens-Universität, Bd. 111).
- Wieckowski, B. (2005). Modality Without Reference. An Alternative Semantics for Substitutional Quantified Modal Logic and its Philosophical Significance. Tübingen (Dissertation der Eberhard-Karls-Universität).
- Wieckowski, B. (2005). Modality Without Reference. An Alternative Semantics for Substitutional Quantified Modal Logic and its Philosophical Significance. Tübingen (Dissertation der Eberhard-Karls-Universität).