

Measurement-Theoretic Remarks on Degree of Resemblance

鈴木 聡 (Satoru SUZUKI)

駒澤大学総合教育研究部非常勤講師

The *problem of particulars and universals* consists in a crossroads of *ontology* and *semantics*. When we translate a natural language into a first-order (modal) language, (though it is a problem which formal language we should adopt in this translation), the *semantic problem* as to which entity we should choose as the semantic value of a symbol in the *model* of first-order modal logic depends crucially on the *ontological problem* as to which ontology we should adopt. According to Rodriguez-Pereyra [2], there are at least two kinds of *Nominalism*, one that maintains that there are no *universals* and one that maintains that there are no *abstract objects* like classes, functions, numbers and possible worlds. On the other hand, *Realism* about universals is the doctrine that there are universals, and *Platonism* is the doctrine that there are abstract objects. The doctrines about universals and the doctrines about abstract objects are *independent*. According to Rodriguez-Pereyra [2], Nominalisms about universals can be classified into at least eight types: (i) Trope Theory, (ii) Predicate Nominalism, (iii) Concept Nominalism, (iv) Ostrich Nominalism, (v) Mereological Nominalism, (vi) Class Nominalism, (vii) Resemblance Nominalism, and (viii) Causal Nominalism. Resemblance Nominalism in general is confronted with at least seven problems: (i) Imperfect Community Problem, (ii) Companionship Problem, (iii) Mere Intersections Problem, (iv) Contingent Coextension Problem, (v) Necessary Coextension Problem, (vi) Infinite Regress Problem, and (vii) Degree of Resemblance Problem. As Rodriguez-Pereyra [2] argues, according to Resemblance Nominalism, it is not because things are scarlet that they resemble one another, but what makes them scarlet is that they resemble one another. Resemblance is *primitive* and the properties of a thing are *defined* by resemblance. Resemblance Nominalism reifies neither resemblance nor accessibility relation in themselves. We [5] proposed, in terms of *measurement theory*, a new *absolute-difference-structured model of first-order modal resemblance logic (MRL)* that can furnish solutions to all of the problems (i)–(vii). Yi [6] raised a version of degree of resemblance problem. Yi [6, pp.622-625] argues as follows:

- (1) Carmine resembles vermilion more than it resembles triangularity.

(2) is a resemblance-nominalistic formulation that expresses what makes (1) true:

(2) Some carmine particular resembles some vermilion particular more closely than any carmine particular resembles any triangular particular.

In Rodriguez-Pereyra[1]’s theory , the *degree of resemblance* n is defined as follows:

Definition 1 (Degree of Resemblance) The particulars resemble to the degree n iff they shares n properties.

Under Definition 1, (2) compares the *maximum* degrees of resemblance. But (2) is false because a possible carmine particular completely resembles a possible triangular particular (the same particular might be both carmine and triangular). Rodriguez-Pereyra [3] responds to Yi by replacing (2) by (3):

(3) Some carmine particular resembles some triangular particular less closely than any carmine particular resembles any vermilion particular.

Under Definition 1, (3) compares the *minimum* degrees of resemblance. Rodriguez-Pereyra [3, p.225] argues that (3) is true because the minimum degree to which a carmine particular can resemble a triangular particular (degree 0) is smaller than the minimum degree to which a carmine particular can resemble a vermilion particular (a degree greater than 0). Yi [7, p.796] criticized this Rodriguez-Pereyra’s response by arguing that it rests on a false assumption: the minimum degree to which a carmine particular can resemble a vermilion particular is greater than 0. When we considered this Yi-Rodriguez-Pereyra debate, we realized that the model of MRL was too weak to solve this type of problem. The aim of this talk is to revise the model of MRL so that it can solve it in terms of measurement-theoretic multidimensional representation (cf.[4]) of degree of resemblance. (使用言語：日本語)

参考文献

- [1] Rodriguez-Pereyra, G.: Resemblance Nominalism. Clarendon Press, Oxford (2002)
- [2] Rodriguez-Pereyra, G.: Nominalism in metaphysics (2015), Stanford Encyclopedia of Philosophy
- [3] Rodriguez-Pereyra, G.: Resemblance nominalism and abstract nouns. *Analysis* **75**, 223–231 (2015)
- [4] Suppes, P., et al.: Foundations of Measurement, vol. 2. Academic Press, San Diego (1989)
- [5] Suzuki, S.: Measurement-theoretic foundations of resemblance nominalism. In: Mineshima, K. (ed.) Proceedings of the Seventeenth Workshop on Logic and Engineering of Natural Language Semantics (LENLS 17). JSAI, Tokyo (2019)
- [6] Yi, B.U.: Abstract nouns and resemblance nominalism. *Analysis* **74**, 622–629 (2014)
- [7] Yi, B.U.: Nominalism and comparative similarity. *Erkenntnis* **83**, 793–803 (2018)