

NEH Application Cover Sheet (FA-232235)

Fellowships for University Teachers

PROJECT DIRECTOR

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Field of expertise: Logic

INSTITUTION

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APPLICATION INFORMATION

Title: *Re-Visioning Identity and Necessity: A Post-Kripkean Manifesto*

Grant period: From 2016-07-01 to 2017-06-30

Project field(s): Logic; Philosophy of Language; Metaphysics

Description of project: I propose to re-examine currently orthodox philosophical views concerning the logic, metaphysics and semantics of identity and necessity. The resulting alternative theory dispenses with the notion of a two-place relation that every object bears to itself, and to itself only, and proposes a more sophisticated conception of logical form for necessity statements that accounts, by way of explicit notation, for the distinction between indicative and non-indicative verb moods. It will be shown that a number of prominent philosophical theses, many of which were first articulated by Saul Kripke in the 1970s, require substantial revision or become outright untenable when the background logical framework is modified in the manner proposed. These include the necessity of identity, the existence of contingent a priori truths, and the principled non-synonymy of proper names with definite descriptions. The results will be of interest to philosophers, logicians and linguists.

REFERENCE LETTERS

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NEH Supplemental Information for Individuals

This form should be used by applicants to the NEH Fellowships, Fellowships for Advanced Social Science Research on Japan, Awards for Faculty, and Summer Stipends Programs.

Field of Project:

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1. Research and Contribution: The notions of *identity* and *necessity* have played a central role in analytic philosophy for over forty years now, owing in large part to Saul Kripke's work—in particular, his lectures on "Identity and Necessity" and "Naming and Necessity", published in the early 1970s.

Kripke's theses regarding these notions went against received wisdom and were revolutionary at the time. For instance, he argued (against the then prevailing consensus) that identity statements using proper names, like *Amantine Dupin is George Sand*, cannot be merely contingently true, but are, if true at all, necessarily true. Further, he made a case that the notions of *a priori truth* (a truth we can come to know independently of empirical investigation) and *necessary truth* (a truth that couldn't have failed to hold, even if the world were very different from the way it is) are conceptually quite different and do not always coincide in practice. Thus there are *a priori* truths that fail to be necessary (such as *the standard meter is one meter long*), as well as necessary truths that are knowable only *a posteriori*, that is, with the help of worldly experience (such as *Amantine Dupin is George Sand*). Finally, Kripke provided several arguments against the then widely accepted "Frege-Russell theory" of proper names, according to which a proper name (say *George Sand*) must be backed, in some, by a definite description (say *the author of Indiana*) in order to be meaningful. These once revolutionary contentions have become so deeply engrained in the analytic mainstream that they may fairly be called the new orthodoxy.

During the period of the fellowship, I intend to develop a systematic alternative to the Kripkean worldview and to produce a book manuscript articulating and defending this alternative. My proposal rests on two major claims that are independent of each other.

(I) The first is that no identity relation of the sort required for Kripke's project exists. My argument proceeds from the observation that an account must be given of the *adicity* of relations, i.e. of the number of things a relation can relate. Inspired by remarks of Russell's (1903, §64) and Wittgenstein's (1922, 5.5303), who note that identity can never relate *two* things (if they are two, they are not identical), I will argue that identity is only a *unary* "relation", i.e. a property. This property of self-identity is not sufficient for Kripke's purpose, since it can only be used to make trivial necessity statements: To be sure, every object is necessarily self-identical; but this is a matter of pure logic, much like the necessity of *either snow is white, or snow isn't white*, hardly a deep metaphysical insight.

To make my analysis palatable, I must show that rejecting a binary identity relation doesn't cripple the expressive power of our logic, or our ability to model the semantics of natural language. This will be accomplished by establishing that the expressive functions typically fulfilled by the identity sign can be taken care of by a combination of (a) a well-motivated adjustment of the semantics of bound variables, and (b) the introduction of a predicate expressing co-reference of proper names.

The idea behind (a), which goes back to Wittgenstein (1922, 5.53ff.), is that when we make the statement *everybody admires Kripke*, or more formally, *for all x: x admires Kripke*, it is intuitively (though not in orthodox first-order logic) understood that this doesn't entail Kripke's admiring himself. In other words, the individual mentioned in the scope of the quantifier *for all x* is not itself a possible value of the bound variable *x*. Once this convention is implemented formally, one can see that uses of the identity sign which seem essential are in fact dispensable. For instance, to say that at least two objects have a property *P*, which ordinarily requires the identity sign (*there is an x: there is a y: x has P, y has P, and not x=y*), we can now simply say *there is an x: there is a y: x has P and y has P*, because whatever object the variable *x* is assigned as its value is mentioned within the scope of *there is a y*, so that *y* cannot also take this particular value, and the distinctness of the values of *x* and *y* is already guaranteed.

This method cannot be used for the analysis of identity statements like *Amantine Dupin is George Sand*, which is where strategy (b) comes in. The idea here is to use a new binary predicate of co-reference between names, so that instead of interpreting the sentence as *Amantine Dupin = George Sand*, we can read it as *the names "Amantine Dupin" and "George Sand" co-refer* (which may in turn be defined as *there is an x: "Amantine Dupin" refers to x, and "George Sand" also refers to x*). This approach goes back to Gottlob Frege's *Begriffsschrift* (1879) and requires some care in its implementation, but can be developed in a logically rigorous and intuitively satisfactory way.

(II) The second major claim on which I base my approach is that Kripke's analysis of modal discourse is flawed. The problem with his analysis is that it misidentifies the logical forms of many English sentences. Simplifying somewhat, on the orthodox account, indicative sentences such as *Aristotle taught Alexander* are modeled as formulas like $teach(Aristotle, Alexander, a)$, where a is a parameter that is set to refer to the actual world (accomplished in English by indicative mood; for the sake of exposition, ignore tense). Modal sentences such as *under certain circumstances, Aristotle would not have taught Alexander* receive the analysis $there\ is\ a\ world\ w: not\ teach(Aristotle, Alexander, w)$, where the variable w (corresponding roughly to English *would*) is bound by the initial existential quantifier (i.e. by *there is a world w*) and ranges over all possible worlds. If we extract from this structure the constituent $teach(Aristotle, Alexander, w)$, which corresponds roughly to the English *Aristotle would have taught Alexander*, we find that it contains a "free" world variable w (i.e. a "dangling" *would*) and thus cannot be evaluated for truth or falsity outright. Crucially, the orthodoxy treats this w as basically identical to the parameter a , thereby identifying the form of the declarative sentence *Aristotle taught Alexander* with that of *Aristotle would have taught Alexander*. I argue that this identification is methodologically inadmissible because it engenders notational artifacts that we routinely reject in other logical environments, notably non-modal predicate logic. Instead, I take the prima facie grammatical difference between *Aristotle taught Alexander* and *Aristotle would have taught Alexander* at face value and preserve it in the formal analysis by treating $teach(Aristotle, Alexander, a)$ and $teach(Aristotle, Alexander, w)$ as distinct logical forms.

This seemingly subtle difference in logical analysis has dramatic consequences for the predicted logical structure of natural language. To see this, recall that both Kripke's argument for the existence of contingent a priori truths and his argument against the Frege-Russell theory hinge on the claim that definite descriptions are so-called non-rigid designators. Here, a designator is rigid if, no matter which possible circumstances we may be discussing, it invariably designates the same individual. Proper names such as *Aristotle* are widely thought to be paradigmatic examples of rigid designators: Even when talking about a world in which Aristotle would have died in infancy, we still use the name *Aristotle* to designate the man Aristotle. But according to Kripke, descriptions such as *the teacher of Alexander* are non-rigid: When speaking about the actual world, we use it to refer to Aristotle, but when speaking about a world w_1 in which Aristotle would have died in infancy, and in which Philip of Macedonia would have educated his son all by himself, we use it to refer to Philip instead.

On the more fine-grained analysis I propose, the claim that descriptions are non-rigid designators is no longer tenable. In a nutshell, a description that is a designator, i.e., one that refers to an individual at all, must be an indicative description such as *the man who taught Alexander*, rather than a "subjunctive" one such as *the man who would have taught Alexander*. After all, who is the man who would have taught Alexander? We cannot say, unless we have independent information as to which counterfactual situation is to be considered. (To be sure, English surface grammar does not always display inflectible verbs in descriptions, so that the difference between these forms may not be visible at the surface, cf. *the teacher of Alexander*. But this only means that verbless descriptions are ambiguous between an indicative and a subjunctive reading.) The form of the indicative version, however, is $the\ x: teach(x, Alexander, a)$, so that it has an explicit reference to the actual world built in. Therefore, even when the description is evaluated with respect to a merely possible world, it still designates Aristotle rather than whoever would have taught Alexander in that world. Accordingly, the indicative description is as rigid a designator as the name. This is why we intuitively consider the sentence *under certain circumstances, the man who taught Alexander would not have taught Alexander* true, while *under certain circumstances, the man who would have taught Alexander would not have taught Alexander* is clearly false.

A combination of (I) and (II) leads to results strictly opposed to Kripke's. In particular, it turns out that (A) the phenomena adduced as evidence for the necessity of identity have nothing to do with a purported *relation* of identity; (B) necessity and apriority (as well as contingency and a posteriority) are more closely connected than Kripke suggests; and (C) modal considerations do not, *pace* Kripke, establish any essential semantic difference between proper names and definite descriptions.

Point (A) is more or less obvious: No merely apparent relation can be the source of the necessary truth of *Amantine Dupin is George Sand*. With respect to (B), recall Kripke's example of a contingent a priori truth: (i) *The standard meter is one meter long*. If we assume, with Kripke, that being one meter long is defined as being (exactly) as long as the standard meter rod is, the content of (i) is knowable a priori. Kripke argues that it is only contingently true, for the ambient temperature at the time of the definitional ceremony might have been greater than it was, and under such circumstances, the meter rod would have been longer than it was. That is, Kripke is impressed by the fact that (ii) *under certain circumstances, the meter rod would not have been one meter long* is true. But (ii) can be read in two ways, either as (iii) *u. c. c., the meter rod would not have been as long as the meter rod is*, which is the true reading preferred by Kripke, or as (iv) *u. c. c., the meter rod would not have been as long as the meter rod would have been*, which is false. I argue that reading (iv) is relevant for the assessment of (i) as necessary or contingent, and that the falsity of (iv) shows that (i) is indeed a necessary rather than a contingent truth. Finally, with respect to (C), we've seen that Kripke's strategy of separating names and descriptions by means of the notion of rigid designation is not, upon closer analysis, successful.

The project is thus situated at the intersection of philosophical logic, metaphysics, philosophy of language, and linguistic (especially formal) semantics.

2. Methods and Work Plan: The results of my fellowship project are to be published in a book. The tentative table of contents is as follows:

- I. *Introduction* (The World according to Kripke, historical alternatives, methodology, outline of my view)
- II. *A Philosophical Case against Identity* (Identity as an artifact of notation; historical arguments in Hume, Frege, Russell, Wittgenstein, Ramsey; their systematic development)
- III. *How to live without identity* (Wittgensteinian quantifiers, relation to classical first-order logic, co-reference and co-instantiation, cardinality versus identity)
- IV. *Quantified Modal Logic and Necessity* (Actuality and subjunctivity; intensionality; rigidity; Kripke's modal argument; cross-world predication; subjunctive conditionals)
- V. *Quantified Modal Logic and Identity* (Necessity of identity; modal logic with Wittgensteinian quantifiers; identity versus cardinality revisited; temporal languages; Evans on tense logic)
- VI. *Further Consequences* (Fregean versus Russellian propositions; Quine on "quantifying in")
- VII. *Conclusion* (Contrasting the two world views; the contingent a priori and the necessary a posteriori revisited; identifying artifacts of logical analyses; open questions)

Material for chapters 2–4 exists in form of published articles. Chapter 1 and, more importantly, chapters 5 through 7 will be written from scratch and so must be expected to take longer. I envisage the following timeline for the fellowship year. Month 1: draft chapter 3; Month 2: draft chapter 2; Month 3: draft chapter 4; Months 4–6: draft chapter 5; Months 7–8: draft chapter 6; Months 9–10: draft chapter 7; Month 11: draft chapter 1; Month 12: revise draft chapters and complete manuscript.

3. Competencies, Skills, and Access: Given the support of the Kripkean worldview by solid mathematical foundations, it is important that the proposed alternative be backed by an equally unassailable formal apparatus. As a trained mathematician and a philosopher working in, I am in an excellent position to develop such machinery, and have indeed already worked out the main ideas needed to carry out the technical parts of my project. Regarding identity, I have developed a "Wittgensteinian" predicate logic as an alternative to traditional first-order logic with identity (cf. items 22, 12, 11, 8, and 9 on the résumé). This work will form the basis for chapters 2 and 3. I have published extensively in modal logic; in particular, I have already presented the modal language on which chapter 4 will be based (cf. items 23, 16, 10, and 5). I plan to remain in Irvine for the duration of the project. No special research materials will be required over and above the support provided by the UCI Libraries.

4. Final Product and Dissemination: I plan to publish the results of the project in book form. Both Oxford and Cambridge have expressed interest in publishing such a work. Parts of the book will also likely be submitted as journal articles, especially chapters 4–6. The intended core audience consists of philosophers working in philosophical logic, the philosophy of logic, philosophy of language, history of logic, and analytic metaphysics. In addition, the results should be of significant interest to linguists working in formal semantics and related areas.

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Kai F. Wehmeier

Résumé – 4/30/15

Current and Past Positions

- Professor of Logic & Philosophy of Science, UC Irvine: 7/10 – present.
- Professor of Philosophy, UC Irvine: 7/14 – present.
- Director of the UC Irvine Center for the Advancement of Logic, its Philosophy, History & Applications (C-ALPHA): 9/13 – present.
- Member of the UC Irvine Center for Language Sciences: 7/14 – present.
- Associate Professor of Logic & Philosophy of Science, UC Irvine: 7/04 – 6/10.
- Assistant Professor of Logic & Philosophy of Science, UC Irvine: 7/02 – 6/04.
- Assistant Professor of Computer Science & Philosophy, Tübingen, Germany: 10/01 – 6/02.
- Postdoctoral Researcher, Philosophy, Leiden, The Netherlands: 10/99 – 9/01.
- Assistant Professor of Mathematical Logic, Münster, Germany: 12/96 – 9/99.

Education

- M.A., Mathematics, University of California, Berkeley, 1992.
- M.A., Philosophy, Universität Bochum, Germany, 1999.
- Ph.D., Mathematical Logic, Universität Münster, Germany, 1996.

Awards and Honors

- Visiting Professor (Professeur des Universités Invité), Laboratoire d'Histoire des Sciences et de Philosophie – Archives Henri-Poincaré, Université Nancy 2, France, 6/2009 – 9/2009
- Emmy Noether Fellowship, Deutsche Forschungsgemeinschaft, 10/1999 – 9/2001

Publications

1. Robert May & KFW, “The Proof of Hume’s Principle,” forthcoming in P. Ebert and M. Rossberg (eds.), *A Companion to Frege’s Grundgesetze*, Oxford UP.
2. “Critical Remarks on Frege’s Conception of Logic by Patricia Blanchette,” forthcoming in the *Journal for the History of Analytic Philosophy*.
3. “Tarskis Lügner” [“Tarski’s Liar”], in B. Falt and D. Zumpf (eds.), *Identität Logik Kritik – Festschrift für Ulrich Pardey*, LIT-Verlag, Münster, Germany, 2014, 135–145.
4. “Nothing but d-truth,” *Analytic Philosophy*, Vol. 55(1), 2014, 114–117.
5. “Still living without identity: Reply to Trueman,” *Australasian J. Phil.*, Vol. 92(1), 2014, 173–175.
6. “Subjunctivity and Conditionals,” *Journal of Philosophy*, Vol. 110(3), 2013, 117–142.
7. A.P. Hazen, B.G. Rin & KFW, “Actuality in Propositional Modal Logic,” *Studia Logica* 101, 2013, 487–503.
8. Sven Schlotter & KFW, “Gingerbread Nuts and Pebbles—Frege and the Neo-Kantians: Two Recently Discovered Documents,” *British J. for the History of Philosophy*, Vol. 21(3), 2013, 591–609.
9. “How to Live Without Identity—and Why,” *Australasian J. of Philosophy* 90(4), 2012, 761–777.
10. Brian Rogers & KFW, “Tractarian First-Order Logic: Identity and the N-Operator,” *Review of Symbolic Logic* 5(4), 2012, 538–573.
11. “Subjunctivity and Cross-World Predication,” *Philosophical Studies* 159(1), 2012, 107–122.
12. “On Ramsey’s ‘Silly Delusion’ Regarding *Tractatus* 5.53,” in S. Rahman and G. Primiero (eds.), *Knowledge and Judgment*, London: College Publications, 2009, 353–368.
13. “Wittgensteinian Tableaux, Identity, and Co-Denotation,” *Erkenntnis* 69, 2008, 363–376.
14. Sven Schlotter & KFW, “Ein unbekannter Brief Gottlob Freges,” in *Methodisches Denken*, P. Bernhard and V. Peckhaus (eds.), Paderborn, Germany: mentis, 2008, 171–176.
15. H.-C. Schmidt am Busch & KFW, “On the Relations between Heinrich Scholz and Jan Lukasiewicz,” *History and Philosophy of Logic* 28, 2007, 67–81.

16. "Gottlob Frege," in D. Borchert (ed.), *The Encyclopedia of Philosophy*, 2nd edition, Macmillan Reference USA, 2005, 725–736.
17. "Modality, Mood, and Descriptions," in R. Kahle (ed.), *Intensionality – An Interdisciplinary Discussion*, Wellesley, Mass.: AK Peters, 2005, 187–216.
18. KFW & Peter Schroeder-Heister: "Frege's Permutation Argument Revisited," *Synthese* 147, 2005, 43–61.
19. H.-C. Schmidt am Busch & KFW (eds.), *Heinrich Scholz – Logiker, Philosoph, Theologe*, Paderborn, Germany: mentis, 2005.
20. H.-C. Schmidt am Busch & KFW, "Heinrich Scholz und Jan Lukasiewicz," in No. 19, 119–131 (reprinted: *Forum für Osteuropäische Ideen- und Zeitgeschichte* 11, 2007, 107–125).
21. H.-C. Schmidt am Busch & KFW, "'Es ist die einzige Spur, die ich hinterlasse'—zur Geschichte des Instituts für Mathematische Logik und Grundlagenforschung," in No. 19, 93–101.
22. KFW & H.-C. Schmidt am Busch, "The Quest for Frege's Nachlass," in M. Beaney and E. Reck (eds.), *Critical Assessments of Leading Philosophers: Gottlob Frege*, vol. I, London: Routledge, 2005, 54–67.
23. "Wittgensteinian Predicate Logic," *Notre Dame J. Formal Logic* 45, 2004, 1–11.
24. "In the Mood," *Journal of Philosophical Logic* 33, 2004, 607–630.
25. "Russell's Paradox in Consistent Fragments of Frege's *Grundgesetze*," in G. Link (ed.), *One Hundred Years of Russell's Paradox*, Berlin/Germany: de Gruyter, 2004, 247–257.
26. "World Travelling and Mood Swings," in B. Löwe, T. Räscher, W. Malzkorn (eds.), *Foundations of the Formal Sciences II*, Dordrecht: Kluwer, 2003, 257–260.
27. F. Ferreira & KFW: "On the Consistency of the Δ_1^1 -CA Fragment of Frege's *Grundgesetze*," *J. of Philosophical Logic* 31, 2002, 301–311.
28. KFW & H.-C. Schmidt am Busch, "Auf der Suche nach Freges Nachlaß," in G. Gabriel and U. Dathe (eds.), *Gottlob Frege*, Paderborn/Germany: mentis, 2000, 267–281.
29. "Consistent Fragments of *Grundgesetze* and the Existence of Non-Logical Objects," *Synthese* 121, 1999, 309–328.
30. "Constructing Kripke Models of Certain Fragments of Heyting's Arithmetic," *Publications de l'Institut Mathématique* n.s. 63 (77), 1998, 1–8.
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33. "Classical and Intuitionistic Models of Arithmetic," *NDJFL* 37, 1996, 452–461.

Invited Presentations (2013–15 only)

- "Truth-Aptness and Modal Logic," Nottingham, England, 4-29-15.
- "Tarskian Semantics for Modal Language," Bristol, England, 4-24-15.
- "Modal Language and Truth," UConn Logic Group, 4-10-15.
- "Quantification and Identity," Frankfurt, Germany, 11-4-14.
- "Truth-Aptness in Modal Language," Frankfurt, Germany, 10-30-14.
- "Modal Languages, Truth-Aptness, and Intensionality," Salzburg, Austria, 3-20-14.
- "The Strange Case of Dr. Gödel and Mr. Schmidt: Remarks on Kripke's Objections to the Description Theory of Proper Names," Mannheim, Germany, 3-18-14.
- "Zalta's Paradox and Modal-Logical Consequence," Workshop *Logical Consequence and Paradox*, Bochum, Germany, 12-2-13.
- "The Modal Rubicon," *Forum Scientiarum*, Tübingen, Germany, 10-21-13.
- "Modal Logic's Dark Secret," Munich Center for Mathematical Philosophy, Germany, 5-3-13.
- "Modal Logic's Dark Secret," Birkbeck, University of London, England, 3-13-13.
- "Modal Logic's Dark Little Secret," Department of Philosophy, UC Davis, 2-22-13.

Professional Service and Activities

Member, Editorial Board, *History and Philosophy of Logic*.

Review Editor, *Bulletin of Symbolic Logic*.

Member, Committee on Translations, Association for Symbolic Logic, 2008-2014.

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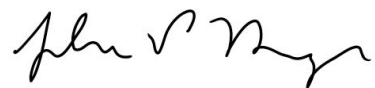
KAI WEHMEIER

(b) (6)

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John P. Burgess