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In Memoriam
John Hayden Woods (1937–2024)

Philosophy's "most difficult problem," writes John Woods, is that of "adjudicating in a principled way" the conflict between concluding that an argument, A, is a sound demonstration of a counterintuitive truth and concluding that it is a counterexample of its own premisses (2003, p. 14).

Suppose that $A = <\{P_1, \ldots, P_n\}, C>$ and that conclusion C follows validly but counterintuitively from the set of reasonable premisses, $P_1, \ldots, P_n$. Should we accept C? Or should we reject C, along with one or more of P_1 through P_n? For some of us, argument A will justify conclusion C. So C should be accepted. For others, accepting C will come at too great an epistemic cost. So C (and at least one premiss) should be rejected. The problem is that one person's *modus ponens* is another person's *modus tollens*.

Woods focusses on this problem in his book, *Paradox and Paraconsistency: Conflict Resolution in the Abstract Sciences*. The main purpose of the book is to resolve the problem, especially as it reveals itself in the abstract sciences of logic, mathematics and philosophy, disciplines that appear to lack the comfort of empirical checkpoints and in which it is especially difficult to resolve conflicts between rival theories. The book includes helpful discussions of numerous related examples, cases in which theory-choice appears to rely on something other than ordinary empirical confirmation or falsification. In doing so, Woods revisits many of the logical topics that he discussed earlier in his career. These include fallacies,[1] the logic of

[1] For Woods' work on *fallacies*, see especially *Argument: The Logic of Fallacies* (with Douglas Walton), *Fallacies: Selected Papers, 1972–1982* (with Douglas Walton), *Argument: Critical Thinking, Logic and Fallacies* (with Andrew Irvine and Douglas Walton), and *The Death of Argument*.

fiction,[2] Aristotelian logic,[3] abduction,[4] quantified modal logic,[5] and the logical paradoxes.[6] Within this list, the Woods-Walton approach to fallacies, which Frans van Eemeren has called "the most continuous and extensive post-Hamblin contribution to the study of fallacies" (2001), and the Gabbay-Woods approach to abduction, which has been extended by Chiffi and Pietarinen (2018), have been particularly influential.

For Woods, philosophy's most difficult problem may be addressed in either of two ways. The first is an intuitions approach, the second is a cost-benefit approach. The first, which can also be thought of as an analytic approach or a purely conceptual-analysis approach, focuses on intuitions that reveal "truths that flow with complete assurance from the very idea of the thing in question (2003, p. 79). Here, Woods is skeptical: "Nothing is advanced in our disagreement by my forwarding intuitions that you reject," even intuitions about so-called analytic truths (2003, p. 325). This is especially true in debates about logic in which competing logical intuitions inevitably turn out to be question begging.

The second approach is to focus instead on the internal incoherence of an opponent's theory. Given the challenge of addressing

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[2] For Woods' work on *fiction*, see especially *The Logic of Fiction* and *Truth in Fiction*, as well as his numerous articles, beginning with his groundbreaking "Fictionality and the Logic of Relations," and his later "Truth in Fiction, Rethinking its Logic: A Précis."

[3] For Woods' work on *Aristotle*, see especially *Aristotle's Earlier Logic.*

[4] For Woods' work on *abduction*, see especially *The Reach of Abduction*, "Formal Models of Abduction," and "Advice on Abductive Logic" (all with Dov Gabbay), and "Abduction and Inference to the Best Explanation."

[5] For Woods' work on *modal logic*, see especially "Descriptions, Essences and Quantified Modal Logic," "Identity and Modality," and "Modal Argumentation Networks" (with Howard Barringer and Dov Gabbay).

[6] For Woods' work on *paradoxes*, see especially "Paradoxical Assertion," "Non-paradoxical Paradoxes?", "The Paradoxes of Necessitation and Ionic Entailment," and "The Economics of Paradox."

para-consistent and dialethic logics, incoherence needs to be understood as something other than simple inconsistency. When dialectically successful, there appear to be two kinds of result. The first Woods calls "surrender." This occurs when internal strains within an opponent's theory make the theory too costly to be pursued in light of the other beliefs and epistemic values your opponent holds. The problem here is that surrender turns out to be a purely internal (or "economic") matter. Although an argument might be successful, if the only consideration relevant to the acceptance or rejection of a belief is its compatibility or incompatibility with the other beliefs and values your opponent accepts, the criticism will succeed or fail independently of whether the belief is in fact true.

The second result is "reconciliation." This is when competing parties are able to discover some common ground within their opposing but overlapping theories. This common ground can then be used to test new hypotheses, hypotheses about which the two theories differ and that may be grounded in something other than mere language or belief. In such cases, one or both initial views may end up being abandoned. Alternatively, an ambiguity may be discovered that allows both theories to be accepted as true, albeit of separate (but often related) subjects. Among the examples Woods discusses is the case of *ex falso quodlibet*, the classical theorem that all sentences follow as consequences of a contradiction. In this case, Woods suggests that it turns out that rather than abandoning, say, either a classical consequence relation or a relevant consequence relation, it is better to conclude that both are valuable since they apply to different domains. The classical logician, says Woods, is right to think that the theorem applies to logical consequence. The relevant logician is right to think that the theorem fails to apply to belief revision (or to ordinary inference-making more broadly).

Woods uses this same general strategy in his attempts to develop an anti-realist semantics for fiction and an accurate, detailed theory of abduction. In the case of abduction, Woods and his co-author Dov

Gabbay pioneered an approach in which conjecture serves as a stand-in for knowledge in those epistemic contexts in which satisficing is all that is required. In the case of fiction, as Nicholas Griffin has observed, Woods' pioneering 1974 book *The Logic of Fiction* "was not the last word on the logic of fiction; it was much more important: it was nearly the first" (2009, p. [xix]). Both are topics to which Woods returned numerous times throughout his career.

Peirce serves as a springboard for considerations about abduction. Here is Peirce's famous 1903 encapsulation:

> The surprising fact, C, is observed;
> But if A were true, C would be a matter of course,
> Hence there is reason to suspect that A is true.
> (1934, s. 189, p. 117)

In this case, it is the observation of C – something surprising that an epistemic agent does not yet know how to explain – that triggers the abductive impulse. This establishes a target at which the epistemic agent wants to aim.

Gabbay and Woods suggest that this leads to the following abductive steps: that the epistemic agent will realize that this goal lies beyond the reach of his or her current body of knowledge; that this epistemic state of affairs will continue until some appropriate non-deductive step is taken; that given the use of the subjunctive in Peirce's second line, the agent will be justified in suspecting A to be true, but no more; and that by further studying the conditions surrounding A, the agent is able to conditionally select A as a fit candidate for subsequent testing.

In short, the Gabbay-Woods model justifies the suspicion found in Peirce's final line, concluding that A is in some non-epistemic sense justified even though it is not yet fully indicative. On this view, abduction is not best identified with inference to the best explanation. Statement A need not fully explain C. Instead, A becomes a candidate for explanation, perhaps along with other candidate

explanations. A is something whose connection to C makes it a suitable prospect for further examination. Gabbay and Woods take on the task of developing algorithms for finding several such candidates and for giving guidance about how to choose between them.

In the case of fiction, the relevant springboard comes in the form of a question: What truth value should be assigned to a sentence like "Sherlock Holmes lived at 221B Baker Street in London"? A strong case, says Woods, can be made that this sentence should be assigned the truth value True. When it is compared to the (clearly) false statement that Sherlock Holmes lived at 1600 Pennsylvania Avenue in Washington, we are drawn to its veracity. Alternatively, since there is in fact no Sherlock Holmes, a strong case can also be made that the statement should be assigned the truth value False. As Woods boldly concludes, "I take it as given that the most semantically distinctive feature of the sentences of fiction is that they are unambiguously true and false together" (2018, p. xi).

To resolve this dilemma, Woods considers two potential approaches. The first is to conclude that there is no ultimate contradiction involved in these assertions. On this view, fictional sentences turn out to be logically inconsistent but not logically contradictory. They cannot consistently be asserted together, but they never are. The second potential approach involves accepting a change in logic, for example accepting a three- or four-valued dialethic logic. Woods leans toward the first of these potential solutions.

It is in this context that Woods offers what he calls a "stipulationist theory of truth." This is an account that involves a form of antirealism that preserves a role for realist leanings. For Woods, stipulations, whether about fictional objects (Sherlock Holmes), mathematical objects (transfinite sets), or ideal scientific objects (a frictionless plane), can all turn out to be true. They turn out to be "real truths" about the entities under consideration. However, such truths turn out to be relative to the stipulations that underlie them. Such claims best can be understood as "hyphenated truths": "Sherlock Holmes lives

at 221B Baker Street" turns out to be true-in-Arthur-Conan-Doyle's-*A-Study-in-Scarlet*, but false-in-the-1887-London-census. *Ex falso* turns out to be true-in-S4 but false-in-R. Double Negation turns out to be true-in-classical-logic and false-in-intuitionistic-logic, and so on. There is, says Woods, nothing that cannot in principle be made true – really true (!) – in some system or other. Even so, successful theories abandon their hyphens. They do so once they become widely accepted within what Woods calls the "realist stance." Pragmatic considerations, it turns out, force upon us a "can't-help-it realism" which we associate with some beliefs and not others. This is an approach that will not be accepted by all. It shares both the virtues and the vices of other forms of pragmatism. It is good sociology, perhaps, but still unable to ground truth in anything other than mere language or belief.

One final example relates to Aristotle and his (implied) distinction between implication and inference. Deducibility relations today often are said to require (at least) the following three conditions: reflexivity, by which we mean that any statement is derivable from itself; transitivity, by which we mean that any statement yielding a statement which itself yields another, also yields that other; and monotonicity, by which we mean that any statement derivable from a statement is also derivable when the original statement is supplemented by any finite number of other statements.[7] One potential worry is that Aristotle's theory of the syllogism fails to meet (at least) two of these conditions. No valid syllogism satisfies reflexivity and no valid syllogism satisfies monotonicity. Aristotle's syllogisms are irreflexive and nonmonotonic. (They also obey only a restricted form of transitivity.)

[7] A logic that satisfies all of these conditions is often referred to as a *Gentzen logic*. See M.W. Szabo, "Investigations into Logical Deduction" in *The Collected Papers of Gerhard Gentzen,* and Dana Scott, "On Engendering an Illusion of Understanding."

The explanation for this failure is that Aristotle is using implication, not defining implication. He is using implication in the interest of developing a theory of inference, a theory fit for real-life argumentation rather than for simple validity checking. Rather than developing a content-free notion of consequence ranging over any arbitrary sequence of sentences, he develops a theory of truth-preserving argument suitable for describing real-life inferences and real-life debate. *Ex falso* is again perhaps the simplest example. It is one thing to note that inconsistent statements logically imply any statement. It is something else entirely to claim that when real-life reasoners are faced (in real-time) with an inconsistency in their belief sets, they ought to accept (or commit themselves to accepting) every statement whatsoever. Similarly, it is one thing to say that any truth-preserving argument remains truth-preserving under the addition of arbitrarily many additional premisses. It is something else entirely to say that in the midst of an argument it is always an innocent practice to add supplemental, irrelevant premisses when making your case against your opponent.

As Woods points out, it is for this reason that "The theory of syllogisms was the first linear (hence relevant and nonmonotonic), paraconsistent and intuitionistic-like logic ever known" (Woods and Irvine, 2004, p. 43).[8] Aristotle's logic was designed this way because

> Aristotle is essaying a bold experiment. He is taking seriously the idea that usable real-life rules for the conduct of argument and thinking can be got from context-free truth conditions on a purely propositional relation, provided the right constraints are imposed. In their unconstrained form, whether one proposition logically implies another tells us virtually nothing about whether it would be appropriate, helpful, realistic or possible to conform one's argumentative or cognitive strategies to that bare fact of logical consequence. Aristotle's gamble is that

[8] It is important to add that although as co-author I made a number of contributions to this chapter, this insight originated solely with Woods.

> facts about logical consequence do give the requisite guidance for argument and reasoning when constrained in the right ways. (Woods and Irvine, 2004, p. 44)

In short, it is by distinguishing implication from inference that Aristotle was able to develop a theory of inference that is capable of explaining a wide range of real-life arguments in real-world contexts.

Of course, with any of these examples we might end up disagreeing with Woods' specific conclusions. Even so, his blueprint of theoretical alternatives provides at least one helpful way of approaching disagreement, not just in the theoretical sciences but in a world in which a wide range of commentators – ranging from fringe conspiracy theorists to working academics – seems to have accepted a much too permissive understanding of both logical consequence and epistemic authority. This is a fitting legacy for someone who spent over six decades contributing to our understanding of logic and argumentation theory. More than once late in life Woods remarked that he had had a long and satisfying career.

Woods graduated with a B.A. (Hon.) and M.A. from the University of Toronto, and with a Ph.D. from the University of Michigan, in 1958, 1959 and 1965 respectively. His doctoral thesis was on the paradoxes of strict implication and was completed under the supervision of the American mathematician Arthur Burks. He began his teaching career at the University of Toronto in 1962 while still a doctoral candidate.

In 1971, he moved to the University of Victoria where he rose to become Department Chair and then Associate Dean of the Faculty of Arts and Science. In 1976, he moved to the University of Calgary to become that university's first Dean of Humanities. In 1979, he was appointed President and Vice-Chancellor at the University of Lethbridge, returning to the ranks in 1986.

As an administrator, Woods was known as someone to whom the university could turn whenever there was a need to fill an unexpected administrative vacancy or to resolve an especially thorny

organizational issue. At the University of Victoria, he served not only as Chair of the Department of Philosophy but also as Chair of the Department of Creative Writing. At the University of Lethbridge after finishing as President, he served variously as Chair of the Department of Philosophy, Chair of the Department of English and Chair of the Department of Modern Languages. Among his numerous appointments outside the university were Vice President of the Royal Society of Canada (RSC) and President of the RSC's Academy of Humanities and Social Sciences.

Throughout his career, visiting appointments regularly took him to Stanford University in the United States, the University of Groningen in The Netherlands and Sun Yat-sen University in China, as well as to other Canadian universities. In the classroom, he was a much-loved teacher and mentor for generations of undergraduate and postgraduate students. Wherever he taught, students gravitated to his lectures. They left, not just educated but inspired.

Woods became Emeritus in 2002, settling into honorary appointments in both the Department of Philosophy at Vancouver's University of British Columbia (UBC) and the Department of Computer Science at King's College London (KCL). As a retirement project with Dov Gabbay and the Dutch publishing house Elsevier, he undertook two enormous editorial projects: the 11-volume *Handbook of the History of Logic* (co-edited with Dov Gabbay and others) and the 16-volume *Handbook of the Philosophy of Science* (co-edited with Dov Gabbay and Paul Thagard).

Each handbook gives a comprehensive overview of its sub-discipline in the first quarter of the 21st century. Individual volumes range in size from 500 to 1400 pages, providing a remarkable resource for working academics and students alike, although why such massive collections should be referred to as "handbooks" and how Gabbay, Woods and their colleagues were able to complete all 27 volumes in the span of a single decade are questions that easily boggle the mind.

The ease with which Woods served as a co-author is also remarkable. His two most prolific co-authors, Douglas Walton (with whom he co-authored three books and some 25 articles and book chapters) and Dov Gabbay (with whom he co-authored two books and some 27 articles and book chapters) are each rightly famous, independently of any associations they have with Woods. Just as importantly, Woods also worked tirelessly to co-author material with more-junior scholars, helping them become established within their various disciplines.

Given the scope of these endeavors, colleagues might justifiably give some thought to assigning themselves "Woods numbers," numbers comparable to that of an Erdős number in mathematics. Erdős numbers report the "collaborative distance" between an author and the prolific, Hungarian mathematician Paul Erdős (1913–96). Someone who is a coauthor with Erdős has an Erdős number of 1. Someone who is not a coauthor with Erdős, but who is a coauthor with a coauthor of Erdős has an Erdős number of 2. The relevant formula is easy to state: an author's Erdős number is one greater than the lowest Erdős number of any of his or her collaborators. Philosophers such as Jon Barwise, John Burgess and Brian Skyrms each have an Erdős number of 2. It would be interesting to discover if they each also have a corresponding Woods number.

As readers of this note will recall, Woods also not only served on the editorial board of *Informal Logic*, he published in this journal regularly. His numerous titles include "Is the Theoretical Unity of the Fallacies Possible?" (1994), "How Philosophical is Informal Logic?" (2000), "Lightening Up on the *Ad hominem*" (2007), "Beyond Reasonable Doubt: An Abductive Dilemma in Criminal Law" (2008), "Whither Consequence?" (2011) and "Epistemology Mathematized" (2013). Even so, he saved his "Just How Stupid is Postmodernism?" for a venue a little further removed from the humanities, Springer's *Lecture Notes in Compter Science*.

By the completion of his career, Woods was a recipient of two honorary degrees: an LL.D. (*Honoris Causa*) from Mount Allison University in 1997 and a D.A. (*Honoris Causa*) from the University of Lethbridge in 2003. He was a recipient of The Queen's Golden Jubilee Medal in 2002, a Member of the Royal Society of Canada, and a Life Member of the Association of Fellows of the Netherlands Institute for Advanced Study.

At UBC, the John Woods Undergraduate Essay Prize was created to recognize Woods' "incredible generosity, charm and warmth," as well as his intellectual leadership and his unceasing interest in supporting students (UBC 2024).

Woods was also honoured with two festschrifts, one to mark his retirement (*Mistakes of Reason: Essays in Honour of John Woods*, 2005) and a second to mark his 80th birthday (*Natural Arguments: A Tribute to John Woods*, 2019). As Gabbay and his co-editors note in the second of these two tribute volumes, Woods was honored by his colleagues "not only as a scholar of prodigious energy and insight," but also as "a friend, colleague, collaborator or former teacher" (2019, p. 2).

As Kent Peacock and I note in the introduction to the other of these two books, Woods'

> old-fashioned courtly manner and formal bow ties were sometimes jarring to students in these days of backwards baseball caps and shirt-tails out, but his office door was always open. He treated his students with unfailing courtesy and friendly respect, while challenging them mercilessly in his courses. (2005, p. 4)

It is also worth recalling that despite a demanding career, throughout his working life Woods managed to keep family first – no small accomplishment for a university president who published fourteen monographs, four textbooks, over a dozen anthologies, two multivolume handbooks, and over 200 articles, chapters and reviews. As Woods himself remarked,

> Carol Arnold and I married virtually as children and had our own children early. We have seen nearly all of life's bounties and vicissitudes and, as we have passed together through several of Shakespeare's stages of man, we have been suffused and enriched by our love for each other and for our children, Catherine, Kelly, and Michael. I have enjoyed much good fortune in my academic life, but it is a second thing entirely to these four indispensable gifts. (2005, p. 11)

John Woods will be missed by his students, by his many colleagues around the world and by his family.

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University of Cambridge, 2024

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