

VAL (ROUTLEY) PLUMWOOD: WORK IN LOGIC

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Abstract

Val Plumwood (née Morrell) is best known in the logic community for her work on relevant logics published jointly with Richard Sylvan. Together, as “Val and Richard Routley”, they worked at the center of the Canberra Logic Group from 1971 to 1981 before they divorced and changed names, whereupon Val shifted her focus to issues in environmental philosophy. Her writing in that latter field drew so much attention, in fact, that most people familiar with her philosophical work know her solely for contributions there and are quite often surprised to hear of her work in non-classical logic. While her “fame” as an environmental philosopher overshadowed her work in logic, this work included significant contributions to the emerging study of non-classical logics and relevant logics in particular. Like Sylvan, she later turned to applications of this non-classical thinking in other areas, eventually in areas traditionally deemed beyond the reach of logical innovation.

What follows, then, is an account of this sometimes-neglected aspect of Plumwood’s contribution to philosophy.

Plumwood graduated with an honours degree in Philosophy from the University of Sydney in 1964 as a star student. Accepting a postgraduate scholarship, she moved to the University of New England to join her new partner Richard Sylvan (whom she had met earlier when he was teaching at Sydney). Len Goddard had been developing a teaching and research concentration in Logic at UNE since his appointment to the chair in 1961 and, with a critical mass of logicians there by 1964, he and Sylvan had set up a one-year (coursework) Masters Program in Logic – Australia’s first – open to Mathematics and Philosophy students. In early 1965, Plumwood was part of the inaugural intake of students commencing the Program. Upon completion,

she remained at UNE working alongside others in the New England Logic Group.

Given the heavy focus of the Group on the logical paradoxes and an adequate theory of implication, with a subsequent focus on exploring and developing non-classical alternatives, it is unsurprising that within a year, Plumwood was pursuing a diagnosis of what she saw as “false laws of implication”.¹ In her typescript ‘Some false laws of logic’ she pursued the idea that “suppression of needed premises” for an argument’s consequence was the culprit; arguing at length that classical logic included invalid laws whose seeming validity relied on illegitimate suppression.

The first public presentation of this idea appears to have been at the 1966 meeting of the recently-formed Australasian Association for Logic² and then at St. Andrews in 1967.³ The idea was subsequently employed a few years later in Plumwood and Sylvan’s breakthrough paper ‘The semantics of first degree entailment’ and was to then gain a foothold in the work of the Canberra Logic Group and further developed in the seminal 1982 publication *Relevant Logics and their Rivals*. Suppression was “responsible for relevance-violating paradoxes. ... Unrestricted suppression directly yields irrelevance” and suppression was deemed to have “an extremely damaging effect on ... entailment”.⁴ (For criticism of the diagnosis of irrelevance as a symptom of suppression see, for example, Øgaard 2020.)

After moving from UNE to Melbourne in the late 1960s, where Sylvan had taken up a research position at Monash University, Plumwood and Sylvan began work on the significant problem of a sought-after semantics for relevant logics. What resulted was a draft of ‘The semantics of first degree entailment’, which they read to the February 1969 Portsea Conference of the Melbourne De Morgan Society.⁵ There they detailed a semantics for the first degree “paradox-free” implication system *FD*. The first degree system described was common to a range of entailment systems including Anderson and Belnap’s *E* and *R* and rejected such paradoxes as disjunctive syllogism ($A \& (\sim A \vee B) \rightarrow B$) and *ex contradictione quodlibet* ($(A \& \sim A) \rightarrow B$). The

¹‘Some false laws of logic’, p. 97.

²A note in the bibliography of *Relevant Logics and their Rivals* claimed it was the 1967 AAL meeting but a list of contributors at that meeting did not include Plumwood who was, by then, out of the country. I think the 1966 meeting is more likely.

³Plumwood and Sylvan had driven to St. Andrews from UNE to spend a sabbatical year working with Len Goddard who had just returned there from UNE to take up the chair of Logic and Metaphysics.

⁴Routley *et al.* 1982, p. 144.

⁵A shortened version of this paper was subsequently published as Routley and Routley 1972.

crucial insight enabling their rejection was the use of what became known as the Routley star operator, ‘*’. It was by means of this that negation was defined in the now familiar way (i.e. negation on the “Australian Plan”):

$\sim A$ is true in a set-up a iff A is false in a companion set-up a^* (the image of a under the 1-1 function $*$).

Of course, questions were raised about the interpretation of ‘*’ and the philosophical status of the semantics employing it. Was the semantics merely a “pure semantics” or one that was philosophically informative, an “applied semantics”? (Cf. Copeland 1983.) The Routleys themselves characterised the function as follows: “ a^* just is the class of propositions A such that $\sim A$ is not in a ”.⁶ With the benefit of hindsight, their characterisation is strongly suggestive of the later interpretation in Dunn 1993 which supports the semantics as applied; see also Restall 1999.

Persisting with a standard two-valued functional semantics then – as opposed to four-valued functional semantics (the “American Plan”) or two-valued relational semantics – negation was modelled as an intensional notion in a manner similar to the (then) increasingly popular worlds-semantics for alethic modalities. “Set-ups” were developed as an ontologically neutral generalisation of the notion of possible worlds and, with the above definition of negation, may exhibit inconsistency and incompleteness thus permitting countermodels to theorems considered objectionable to relevant logicians.

(Reiterating Plumwood’s earlier diagnosis of irrelevance as due to suppression, they remark that “[t]he most important reason why we should consider all [such] set-ups is that doing so eliminates the suppression of necessary truths”, Routley and Routley 1972, p. 339. The role of suppression in generating irrelevance is extensively discussed pp. 340ff – the first *published* articulation of the ideas contained in Plumwood’s 1967 typescript. Sylvan went on to work on what became known as the “Routley-Meyer ternary relation semantics” for relevant implication to defeat higher degree paradoxes, supplementing the Routley star semantics for negation.)

Negation, in particular, resurfaced as something of considerable interest for Plumwood when she later ruminated on what she saw as the “logic of domination” that united the valuing of humans over nature (what she and Sylvan termed “human chauvinism”) and the valuing of men over women (male chauvinism).

⁶Routley and Routley 1972, p. 338. NB: they use ‘ H ’ as a set-up variable where I have used ‘ a ’.

In 1971 they moved again, this time to Canberra, with Sylvan's appointment to the Philosophy Program in Research School of Social Sciences (RSSH) at the Australian National University. There the Canberra Logic Group began to form around Sylvan and Plumwood. (The other key member, Bob Meyer, was drawn to the group after seeing a draft of Sylvan's proposed ternary relation semantics for the system of entailment R , sent to him and Belnap in the USA – the paper following up on Sylvan and Plumwood's semantics for first degree entailment. What arrived in the mail was what Meyer described as “an amazing scrawl ... about a purported semantics of entailment. ... [It] was amazing because it had, already written out, all the main ideas that we afterwards [over a number of years] wrote up as the [ternary relation] semantics of entailment.”⁷)

With Sylvan's appointment at the ANU, Plumwood was precluded from applying for positions in the RSSH since she was Sylvan's wife and a marriage-bar in place until 1977 precluded any appointment in the same department. However she continued to be active in the Logic Group for a decade, publishing joint works with Sylvan on a range of topics in non-classical logic (alongside joint work on Meinongian metaphysics, forestry policy, moral and environmental philosophy).⁸ The bulk of this work in logic focussed on relevant logics and this ground has been well traversed by commentators over the decades since.

In addition to this ongoing work on the paradoxes of implication and associated work on relevant logics, Plumwood was also working on the paradoxes of doxastic logic and deontic logic. The jointly-authored 1975 paper with Sylvan, ‘The role of inconsistent and incomplete theories in the logic of belief’, pursued a non-classical doxastic logic to handle paradoxes like the Preface Paradox. And in the case of deontic logic, too, Plumwood saw a need for non-classical logic – non-classical deontic logic. The jointly authored ‘Moral dilemmas, and the logic of deontic notions’ (1983) had its origins in an earlier paper read by Plumwood at the ANU in 1975. Much of that paper “was subsequently lost” and what remained was incorporated into this later Sylvan and Plumwood publication.⁹ Here they argued for an alternative to the orthodox, classically based, deontic logics pioneered by von Wright, advocating the use of an underlying relevant logic along with a revision of standardly-accepted deontic principles.

Anderson had earlier proposed the use of relevant logics in deontic logic

⁷Meyer 1996.

⁸For more detail on these other areas of work outside logic, see Hyde 2014.

⁹Routley and Plumwood 1983, fn. 1.

but his approach was designed to handle problems arising from his suggested reduction of the functor ‘ O ’ (‘it is obligatory that’) to alethic modal logic (see Anderson 1967).¹⁰ The approach did not seek to accommodate moral dilemmas. Plumwood and Sylvan saw scope for the application of relevant logics to more orthodox approaches to deontic logic – where deontic operators were given a possible-worlds analysis distinct from alethic modal operators – with a view to accommodating moral dilemmas and paradoxes.

More exactly, they argued at length that some apparent moral dilemmas are, in fact, real so that, for some p , both it and its negation are obligatory – i.e. $Op \& O\sim p$. However, this results in inconsistency if the classical principle of deontic consistency – $\sim(OA \& O\sim A)$ – is admitted. They reject the principle and, seeking “a consistent inclusion of moral dilemmas”, also reject the consistency principle $OA \rightarrow \sim O\sim A$.¹¹

But this is insufficient since further classically-accepted principles will result in triviality. An argument to triviality in such systems is as follows: accepting what they call O -adjunction – $OA \& OB \rightarrow O(A \& B)$ – it follows from $(Op \& O\sim p)$ that $O(p \& \sim p)$; accepting that if A entails B then OA entails OB (the logical consequences of our obligations are obligatory), since $A \& \sim A$ entails B , for any B (*ex contradictione quodlibet*), it follows that Oq , for any q . “That is, *if there are any deontic moral dilemmas* (of such forms as $OA \& O\sim A$) *then everything is obligatory*. But there are moral dilemmas, of this and other forms; and not everything is obligatory.”¹² Rejecting triviality, Sylvan and Plumwood argue (in effect) for the rejection of the underlying “spread” principle *ex contradictione quodlibet*.¹³ The sentential fragment of deontic logic must, they contend, be paraconsistent and a relevant logic is recommended. Thus they take themselves to have established the need for an underlying non-classical logic.

Further considering specifically deontic principles, given that the existence of moral dilemmas ought not give rise to inconsistency (despite the underlying paraconsistent logic tolerating non-trivial inconsistency), they also reject the Kantian ought-implies-can principle.¹⁴ They accept that there are

¹⁰Plumwood and Sylvan consider Anderson-style reduction proposals, though not mentioning Anderson, and reject them, pp. 657-8.

¹¹*Ibid*, pp. 653 and 667.

¹²*Ibid*, p. 654.

¹³They frame the issue as rejection of a “modal requirement” permitting intersubstitutivity of (merely) strict equivalents (e.g. $p \& \sim p$ and $p \& \sim p \& q$) within the scope of ‘ O ’, advocating the more demanding requirement of (paraconsistent) relevant coentailment, not just strict equivalence. Cf. p. 654. The deontic operator ‘ O ’ is thus argued to be *hyperintensional* (or “*ultramodal*” to use a term of Sylvan’s).

¹⁴*Ibid*, p. 674.

situations where $O(A \& B)$ yet it is not possible that $A \& B$. Indeed, where obligations concern actions (what I ought *do*) and we accept the impossibility of both doing something (e.g. returning the gun to its owner, to use an example, p. 661) and not doing it, then moral dilemmas always involve obligations to do the impossible. Yet the Kantian principle would entail its being possible that $A \& B$ and contradiction would follow. Thus they also reject the Kantian principle ought-implies-can.

They go on to describe a “minimal relevant deontic logic MD ” (section 4) capable of dealing with the “hard data” of moral dilemmas – issuing in a deontic logic based on some extension of the basic relevant logic B , precisely which is left open. With the resulting technical detail “[light] is cast on, and sometimes solutions delivered for, a number of other linked problems”.¹⁵ For example, “paradoxes of commitment”, so-called Good Samaritan paradoxes and Robber paradoxes.¹⁶

Other paraconsistent approaches to moral dilemmas soon followed. Priest pursued a logic capable of accommodating dilemmas without triviality in his *In Contradiction*.¹⁷ Eschewing appeal to inconsistent worlds, Priest’s proposal was nonetheless closely similar in its approach to avoiding inconsistency and also rejected the Kantian principle but it endorsed the seemingly problematic principle of the orthodox von Wright systems according to which if A is a theorem then OA is also a theorem. Priest defends the principle by way of a non-standard interpretation of the deontic operator O , rejecting the standard reading ‘It is obligatory that’. Others have argued for an underlying relevant logic specifically as a way to avoid this principle, with the appeal to the use of inconsistent worlds in the semantics for relevant logics as the means to invalidating it.¹⁸ Sylvan and Plumwood, too, had noted the invalidity of this principle given their relevant semantics but mentioned it only in passing.¹⁹ Another notable paraconsistent approach building on Plumwood and Sylvan’s work was pursued by their friend and collaborator Newton Da Costa and Carnielli.²⁰ They offer both Kantian and non-Kantian logics based on the propositional paraconsistent logic C_1 .

Contemporaneous with this work in logic and deontology, Sylvan and Plumwood also drew on relevant logical foundations in axiology. In Routley 1975, Val first raised the central idea of the presence of intrinsic (non-

¹⁵ *Ibid*, p. 669.

¹⁶ *Ibid*, section 5.

¹⁷ Priest 1987, Ch. 13, §3.

¹⁸ Cf. Mares 1992, Goble 1999.

¹⁹ Routley and Plumwood 1983, p. 668.

²⁰ Da Costa and Carnielli 1986.

instrumental) values in the non-human world as a key part of the “new, environmental, ethics” that Sylvan had called for in his 1973 paper, ‘Is there a need for a new, an environmental, ethic?’. Alongside this important development in environmental ethics – and building on work in Routley and Plumwood 1983, itself developing out of work by Plumwood in 1975 – by 1975 they had developed a semantic analysis of value, published in their jointly-authored ‘Semantical foundations for value theory’ (1983).²¹ “Though the motivation for providing such a semantical foundation for value theory sprang from the problem of underpinning the non-instrumental value judgments of environmental ethics, the resulting analysis is not specific to such an ethic.”²²

Alongside the relevant modelling of the deontic operator ‘*O*’, they introduced the comparative sentential connective of value theory ‘... *Bt*...’ – ‘That ... is better (more valuable) than that ...’. While ‘*O*’ satisfies the principle: if *A* entails *B* then *OA* entails *OB* (now called “transmissibility”), ‘*Bt*’ is only “weakly transmissible”: if *A* entails and is entailed by *C* and *B* entails and is entailed by *D* then *ABtB* entails *CBtD*. (For usual reasons, they argued for a strong, relevant, notion of entailment to avoid obvious counterexamples to weak transmissibility. Cf. p. 445.) Whereas ‘*O*’ had been given a Kripke-style semantics, ‘*Bt*’ required, they argued, a neighbourhood semantics which would only be reducible to Kripke-style semantics “were ‘*Bt*’ fully transmissible, which it evidently is not.” Thus “[i]t is impossible ... to reduce [the] axiological connective ‘*Bt*’ either semantically or syntactically by way of transmissible deontic connectives. ... ‘*Bt*’ will have to be taken as fundamental, as it is in standard value theory, and any reductions sought along the more promising route of characterising deontic notions axiologically”.²³ Moreover, as with deontic logic, they argued that the semantics must allow for incomplete and inconsistent set-ups. Without them “characteristic incompleteness and inconsistency features of preference and evaluation rankings (and especially of social preference rankings)”, central to their analysis, would be lost.²⁴ They saw the application of the newly-developed logics of the Canberra Logic Group as bearing rich fruit.

By the early 1980s, however, Plumwood and Sylvan’s partnership ended and they went their separate ways. Their work, where it continued to over-

²¹ Although published in 1983, like the work in deontic logic the work was said in an opening footnote as having been largely written in 1974/5.

²² Routley and Routley 1983, p. 442.

²³ *Ibid*, pp. 447-8.

²⁴ *Ibid*, p. 445.

lap, remained closely aligned but Plumwood's central interest shifted to environmental and feminist philosophy. From the early 1970s they had helped pioneer the emerging field of environmental philosophy and brought to it their typically unorthodox approach to matters philosophical and also a rigour that betrayed their strong analytic background. When environmental philosophers like J.B. Callicott later spoke of "the Australian philosophical style: conceptual clarity, conceptual creativity, and a leave-no-stone-unturned, leave-no-inference-unarticulated approach to exposition and argument" it was the high-profile work of Plumwood (and Sylvan) that he had in mind.²⁵ While some of her remaining contributions in relevant logic appeared in publication over coming years,²⁶ Plumwood turned primarily to ecofeminism as a response to the environmental devastation she saw around her and had been fighting hard to mitigate. Here she excelled. "[S]he was the best philosopher in the community of environmental philosophers – the best among us in the twentieth century and so far the best in the twenty-first."²⁷ But here, too, her interest in logic manifested itself.

In the 1980s she enrolled in a PhD in the Human Sciences Program at the ANU, thinking her chances of subsequently finding paid work would be enhanced. Now in her doctoral research she started to explore the link between "human chauvinism" (or anthropocentrism – the unwarranted privileging of humans and their concerns over the non-human world – identified in earlier joint work with Sylvan as the primary problem in environmental ethics) and male chauvinism (androcentrism) in detail. She began to analyse the underlying conceptual structure that she saw as imposed on a set of dualisms in Western thought: mind/body, male/female, human/nature, reason/emotion – a common and distorting structure of domination that linked the subjugation of women and the subjugation of nature. Of a dualised pair, one is superior and the other inferior – a damaging hierarchy is established. An understanding of what she took to be this distorting structure of difference would, she thought, help us better understand the roots of the environmental crisis and our Western concept of "reason" that made such oppressive and dangerous behaviour seem "rational".

This work in ecofeminism brought her into contact with feminists who linked the alleged tyranny of male chauvinism with the alleged tyranny of reason over emotion. Conspicuous among the forms of reason targeted was formal logic, a key aspect of which is its tendency to abstraction. Andrea

²⁵Callicott 2008.

²⁶A notable example of later publications was the long-awaited *Relevant Logics and their Rivals II*, brought to publication by Ross Brady in 2003.

²⁷Callicott 2008.

Nye's attacks, for example, in her 1990 *Words of Power: A feminist reading of the history of logic* rankled Plumwood and she defended logic at some length. Nye's analysis of logic saw it as a tool of the patriarchy that was irredeemable, portraying logicians and their abstractions as "lonely [and] cut off from the human community ... wracked by desires they do not know how to fulfil ... [T]ormented by the presence of women, men turn to logic".²⁸ Plumwood retorted that the description was more appropriate to the average alcoholic than the average logician! "Certainly abstraction *can* be a retreat: the overriding value and role accorded abstraction and reason in classical philosophy reflects the devaluation of the sphere of the household, the domain of women, slaves and animals in an elite, male-dominated culture. But an analysis which makes an invariant claim of this kind about abstraction and then extends it to the motivation of each individual logician is both over-individualised and over-generalised."²⁹ She took herself to be an obvious counterexample.

Setting aside such broad attacks on logic *per se*, she went on to argue that there were, however, ways in which particular logics (classical logic chief among them) impose, for example, the masculine/feminine dualism that separates the two in ways that support male chauvinism and human/nature dualism that splits us apart from nature in problematic ways and grounds human chauvinism. There was a confused identification of "logic" with classical logic resulting from a failure to appreciate the diversity of logical theories beyond classical logic. Plumwood agreed that feminist criticism could be levelled at classical logic, especially classical negation, but it was, again, a confusion to think that the criticisms extended to formal logic *per se*. She saw possibilities for logic, especially non-classical theories of negation that she and the Canberra Logic Group had pioneered, as a tool that could be marshalled in feminist theory. "Once the plurality of logical systems has been acknowledged, feminist and other social critique can be more discriminating in its response to logics, and begin an exploration of the way in which different logical systems correspond to different forms of rationality. We can begin to understand systems of logic and their corresponding systems of rationality as selected, in much the same way that scientific theories are selected."³⁰

Negation was particularly noteworthy here as a point of focus since the dualism taken to be at the heart of the ecological crisis was understood as

²⁸Nye 1990, p. 175.

²⁹Plumwood 1993, pp. 438-9.

³⁰Plumwood 1993, p. 441.

involving radical exclusion, polarization, and this, Plumwood argued, corresponded to the imposition of a particular account of negation, a particular way of understanding difference. The first hint of this idea appears in the jointly-authored 1984 paper with Sylvan, ‘Negation and contradiction’.³¹ In this little-discussed paper, Plumwood and Sylvan explore “the problem of the meaning and function of negation” (p. 201) focussing on the cancellation model (leading to connexivism), the explosion model (of classical and intuitionist theories) and a constraint model (including relevant theories). Comparing them, they argue that “the primary negation determinable of natural negation is relevant negation” (§5). Further discussing the “traditional idea that negation is otherthanness” (p. 214) or “otherness”, in considering the historical setting of late nineteenth and twentieth century work, they endorse the picture according to which A and $\sim A$ do not exhaust logical space. “The late nineteenth century view was that negation ... is otherthanness and, on the prevailing view, *restricted* otherthanness” (p. 215, my italics). They then introduce and endorse the Hegelian “liberalized” picture according to which A does not exclude $\sim A$. “[T]here are situations ... where both A and $\sim A$ hold. It is enough to say, with Simone de Beauvoir (1960, p. 18) that presence and absence are not mutually exclusive, or that what A covers does not fully exclude what $\sim A$ covers” (p. 216).

So, a non-classical picture of negation emerges but further criticism is made of the classical picture. “In classical logic negation, $\sim A$, is interpreted as the universe without $|A|$ [on a geometrical reading, what A covers, or the area (or territory) of A], [so] everything in the universe other than what A covers ... It is a corollary that $\sim p$ cannot be independently identified, it is entirely dependent on p . This relates, more than coincidentally, to alienation (compare what Simone de Beauvoir has to say to alienation where ‘woman’ is identified as ‘other than man’; and is not positively identified, only introduced as alien to the primary notion of ‘man’). The negation $\sim A$ of A is (so to say) alien to A . (pp. 216-7).

Within a decade, this idea was elaborated upon in Plumwood’s 1993 paper ‘The politics of reason: towards a feminist logic’. Now she presented a more detailed account of the structure of dualisms. Distinguishing a damaging “dualism” in the specific sense relevant to ecofeminist analysis from a mere “dichotomy”, Plumwood notes that “[i]n terms of propositional logic, the *dichotomising* functions of negations which simply divide the uni-

³¹Though published (in-house in Sylvan’s *Research Series In Logic and Metaphysics*) in 1984, the fact that the authors are both listed under the name ‘Routley’ suggests an earlier date for the paper’s drafting.

verse and recognise a boundary between self and other *without importing a hierarchical structure* are associated with the Law of Non-Contradiction ($\sim(A \& \sim A)$) and the Law of Excluded Middle ($(A \vee \sim A)$)” (Plumwood 1993, fn. 8, p. 443, my italics). Contra some feminist thinkers, excluded middle claims are not characteristic of dualisms. Dualisms (in the damaging sense at issue) are characterised, on Plumwood’s view, by the following five features:

1. Backgrounding: a denial of the essential dependency on the other by the superior, dominant class (pp. 447-8).

2. Radical Exclusion or Hyperseparation: the magnification and maximising of the number and importance of differences between the dominant class and the inferior other (pp. 448-450.)

3. Relational Definition (Incorporation): the definition of the inferior other in relation to the dominant class, as a lack, negatively defined (pp. 450-1).

4. Instrumentalism (Objectification): the conception of the inferior other as merely a means to the interests of the dominant class, interests viewed as intrinsically valuable in themselves (p. 451).

5. Homogenisation (Stereotyping): the disregarding of differences within the inferior class which, suitably homogenised, conforms to its inferior nature (pp. 451-3).

Homogenisation is said to support instrumentalism, relational definition and radical exclusion, and radical exclusion and homogenisation “combine to naturalise domination” (p. 452).

Aiming to substantiate her earlier claim that “[c]lassical logic provides an account of otherness which has key features of dualistic otherness” she reiterates the claim that in classical logic “[n]ot- p has no independent role, but is introduced as merely alien to the primary notion p . This corresponds to the relational definition feature of dualism” and “also lead[s] to the homogenisation of the other, since the other of p ... is indistinguishable from the rest of the universe. ... These homogenising properties of classical negation are associated with the failure of classical logic to make any finer discriminations in propositional identity than truth-functionality” (p. 454). She continues, “[t]he negation of classical logic ... has features of radical exclusion ... as well as exhibiting other features which are characteristic of dualism” (p. 455).

In this way, it is claimed, the use of classical negation in negative definitions – for example, of woman as otherthan-man, or of the non-human – is said to be pernicious. She claims that a relevant negation, on the other hand, “can be interpreted as expressing a notion of otherness as non-hierarchical difference. The resulting concept of relevant otherness avoids radical exclu-

sion, for the conjunction of A and $\sim A$ does not induce system collapse [they can “be brought together” without triviality]. Thus $\sim A$ is not homogenised as simply part of ‘the rest’, for an account of propositional identity based on relevant implicational equivalence can make fine discriminations among the elements of the propositional universe” (p. 458).

It is, perhaps, unsurprising that the blending of technical notions from formal logic and feminist analysis meant that this work elicited so little response for such a long time. However, it has attracted more attention recently. An early reply came from MacPherson 1999, contending that classical negation does not involve alienation. Dwelling on the fact of double-negation elimination he contends that, with respect to p and $\sim p$ “in terms of which proposition is ‘dominant’, negation is neutral. So it is not clear that classical negation in any way reflects the oppressive dualisms of a patriarchal society, since these oppressive dualisms are *not* neutral” (pp. 191-2). Moreover, he argues, relevant negation is no better suited to be logics of the oppressed (pp. 192-3). Garavaso 2016, focussing on feminist philosophy of logic more broadly but considering Plumwood’s view among others, argues against Plumwood’s claim that classical negation captures a dualising notion of “otherness”. The incorporation aspect of relational definition, in particular, with its “view of dependency, even if granted, would concern only the expression, i.e., the signifier, and would not automatically apply to what is symbolized by ‘ p ’, or the signified. To understand non- p requires a prior understanding of p , but that relation of dependence does not translate into the two areas signified by p and non- p ” (p. 191). She contends, additionally, that Frege’s notion of negation fails to support the notion of negation as otherness (p. 193). Russell 2020 also takes issue with Plumwood, in particular the claim that using classical negation “[n]ot- p has no independent role, but is introduced as merely alien to the primary notion” – that classical negation exhibits the relational definition feature of dualism. Reminiscent of MacPherson’s initial reply, the problem, argues Russell, “is that this claim is ambiguous between one that is right, but anodyne, and one that would be problematic if it were right, but which is clearly wrong” (Russell 2020, p. 92). Eckert and Donahue 2020, on the other hand, is broadly supportive, addressing criticisms and seeking to elaborate on Plumwood’s claims by shifting the debate from negation in the object language to four-valued semantics and the relation between falsity and non-truth in that semantics. They argue that classically truth is dominant over non-truth/falsity (analogous to Plumwood’s original claim concerning the dominance of p over classically-negated $\sim p$) but the four-valued semantics reveals that “[t]he classical assumption that falsity can mean nothing more

than ‘not true’ conceals conceptual possibilities” – possibilities capable of “liberating falsity” (p. 438).

This work on negation and dualism was heavily focussed on issues in feminism and environmental philosophy but Plumwood later advocated broader applications including race and post-colonial theory. (Cf. Plumwood 2003, pp. 46-7 and 52-4, for example.) As she saw it, there was “a very basic point of connection between logic and other areas of philosophy which carries the basic project of articulating alternative negation concepts into wider areas of philosophy than even Richard imagined or ventured into, I think.”³²

Her 2003 ‘Feminism and the logic of alterity’ – relying on the central arguments of the earlier 1993 paper to facilitate this broader discussion on “alterity” – was Plumwood’s final work in logic. Her star continued to rise in environmental philosophy circles but her interest in non-classical logic – a field where she made significant contributions – had gone. She had other fish to fry.

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³²Plumwood 2003, personal communication.

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