Natural Resources for Human Health
eISSN: 2583-1194

Original Research

Received 08 July 2026
Revised 21 Aug 2026
Accepted 08 Sep 2026

Natural Resources for Human Health 2026, Vol. 6 (20s): 372–385

KEYWORDS:
ecofeminism; feminist political ecology; Carolyn Merchant; Vandana Shiva; ecological knowledge; essentialism

Mechanism, Development, and Ecological Knowledge: Rethinking Ecofeminism through Carolyn Merchant and Vandana Shiva

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ABSTRACT: Ecofeminist scholarship routinely pairs Carolyn Merchant and Vandana Shiva as complementary critics of the joint domination of women and nature, but existing treatments juxtapose them rather than comparing them, and the juxtaposition conceals a disagreement about how the woman–nature association should be handled. This article compares Merchant's The Death of Nature (1980) and Earthcare (1996) with Shiva's Staying Alive (1988) and Ecofeminism (Mies and Shiva) across five dimensions: the genealogy of ecological domination, the conception of science, the woman–nature relation, political economy and agency, and proposed ecological ethics. The two differ in where they locate the origin of ecological domination, Merchant in the epistemic and metaphorical transformation of European modernity and Shiva in the material appropriation of subsistence bases under colonial development, and their prescriptions follow from that difference. Merchant degenders nature, dissolving the woman–nature equation through a partnership ethic that distributes responsibility across genders; Shiva revalues it, treating women's subsistence knowledge as an epistemic resource. The article argues that these positions stand in a tradeoff rather than a contradiction. At the level of propositions they are combinable, and the article combines them; at the level of theoretical priority they are not, because each thinker treats her chosen emphasis as generally rather than locally correct. Merchant's ethic achieves gender symmetry without building differentiated responsibility into its structure, though she identifies production and North–South inequality as decisive; Shiva builds that asymmetry in but remains exposed to the essentialism critique. Contemporary feminist political ecology is read as an attempt to hold both commitments.

1. Introduction

Ecofeminism names the claim that the subordination of women and the degradation of nature are not separate injustices that happen to coincide, but outcomes of a shared conceptual and material order. That order is usually specified through a set of hierarchical dualisms in which the second term is both devalued and rendered available for use: mind over body, culture over nature, reason over emotion, male over female (Plumwood). The claim has proven durable. Thompson argued two decades ago that the core ecofeminist thesis, that the domination of women and the domination of nature share roots in the logic of science and capitalism, remained powerful even after poststructuralist and third-wave feminisms had rendered its more confident formulations unfashionable. The intervening years have borne this out: the thesis has been reworked through feminist political ecology, material feminisms, decolonial environmental thought and multispecies justice, rather than abandoned.

Carolyn Merchant and Vandana Shiva are the two figures most consistently invoked when this thesis is introduced. Merchant's *The Death of Nature* (1980) argued that the Scientific Revolution effected a transformation in the dominant metaphor for the

natural world, from an organic cosmos figured as a nurturing mother to a machine composed of inert matter, and that this transformation removed the cultural constraints that had previously limited extraction. *Earthcare* (1996) extended the argument into the history of women's environmental activism and proposed a partnership ethic as an alternative to the ethical frameworks then available. Shiva's *Staying Alive* (1988) and the volume *Ecofeminism*, coauthored with Maria Mies (1993), located the same structure of domination in a different site: the colonial and postcolonial development project, which Shiva reads as a form of "maldevelopment" that dispossesses women of the resource bases on which their subsistence and knowledge depend.

The pairing is familiar, but it is characteristically presented rather than examined. Warren's survey of feminist environmental philosophy is representative of the pattern in reference works: it gives each thinker a substantial section of her own, Merchant on the organic-to-mechanistic shift and Shiva on maldevelopment and the feminisation of poverty, and sets the two accounts side by side without bringing them into contact. Rao's review of ecofeminism in India follows the same structure at greater length, using Merchant as Western theoretical background and Shiva as the contested Indian case, and taking up the critical literature on Shiva without asking what Merchant's position implies for it. A search of Crossref and standard bibliographic databases for work whose principal purpose is a sustained comparison of the two surfaced none; what exists is juxtaposition.

Juxtaposition is not false, but it is analytically inert. It establishes that two thinkers agree about what is wrong, and leaves unexamined the question of whether they agree about what would count as putting it right. They do not.

1.1 The gap and the argument

The gap this article addresses is therefore not a shortage of scholarship on either thinker (both have been extensively discussed, and Shiva in particular has generated a substantial critical literature: Agarwal; Jackson; Molyneux and Steinberg; Nanda), but the absence of a comparison organised around their disagreement rather than their convergence. Warren and Rao exemplify the surveying pattern, in which each thinker is presented in turn and complementarity is inferred from thematic overlap. A second pattern engages one thinker critically while using the other as an unstated standard: Merchant's explicit rejection of essentialism is frequently invoked as a foil for Shiva's alleged embrace of it, without asking what else follows from adopting Merchant's position. Neither pattern asks why two theorists who share a diagnosis should order their prescriptions so differently, or what that divergence reveals about the choices ecofeminist theory has to make.

Three questions organise the analysis:

1. Where does each thinker locate the causal origin of ecological domination, and what consequences follow for how gender enters the account?
2. How does each handle the woman–nature association, by dissolving it or by revaluing it, and what conceptual costs does each strategy incur?
3. What does the resulting tension reveal about the theoretical choices available to ecofeminism today?

The article's thesis is that Merchant and Shiva pursue opposed strategies toward the same problem, and that the opposition is systematic rather than incidental. Both confront a symbolic order in which nature is coded as female, passive and available. Merchant's remedy is to break the coding: if the association of women with nature is what licenses the subordination of both, then the association must be dismantled, and ecological responsibility redistributed so that it attaches to no gender in particular. Shiva's remedy is to invert the coding's valuation: if women in subsistence economies are in fact the primary producers and conservers of biological diversity, then their marginalisation is an epistemic loss, and the appropriate response is to recognise what has been dismissed rather than to deny the association altogether.

These strategies follow from where each locates cause. For Merchant, ecological domination originates in a transformation of worldview: in metaphor, epistemology and the philosophical construction of nature as inert. If the motor is symbolic, the remedy is symbolic: change the metaphor, and the constraints return. For Shiva, domination originates in the material appropriation of land, water, forests and seed under colonial and capitalist development. If the motor is material, the remedy is to defend the practices and the people that the appropriation displaces, and gender enters not as an ontological claim about women's nature but as a description of an existing, historically produced division of labour.

The payoff is diagnostic. Degendering achieves gender symmetry, but the partnership ethic distributes responsibility without specifying how it is differentiated by position within the world economy, even though Merchant herself identifies production rather than Southern population or Northern consumption as the decisive variable; the gap falls between what she names as

the problem and what the ethic is built to track. Revaluation builds that asymmetry in from the start, but Shiva's recourse to Prakriti as a "feminine principle" exceeds what a materialist account of the division of labour can support. Each secures one kind of adequacy more readily than the other. Section 7 sets out the resulting tradeoff and, importantly, its limits: the two positions are combinable as propositions, and this article combines them, so what the comparison exposes is a conflict of theoretical priority rather than a contradiction.

1.2 Scope and structure

Section 2 sets out the comparative method and corpus. Sections 3 to 6 work through the analytical dimensions in turn: the two genealogies of domination and the difference in causal location; the woman–nature relation and the essentialism debate, where the divergence is sharpest; knowledge and epistemic authority; and political economy, agency and the two proposed ethics of partnership and subsistence. Section 7 states the tension directly and develops the central claim, Section 8 situates it in current scholarship, and Section 9 concludes with the comparative result, its limitations and its implications.

2. COMPARATIVE THEORETICAL METHOD AND CORPUS

The analysis proceeds through structured comparative textual interpretation. This is not an empirical study and makes no claims requiring sampling or measurement; but the interpretive procedure should be transparent, since a comparison's findings depend heavily on what is compared and along which axes.

Corpus. The primary corpus comprises four texts. For Merchant: *The Death of Nature: Women, Ecology, and the Scientific Revolution* (1980) and *Earthcare: Women and the Environment* (1996). For Shiva: *Staying Alive: Women, Ecology and Survival in India* (1988) and *Ecofeminism*, coauthored with Maria Mies (1993). These were selected on three grounds. They are the texts through which each thinker's position entered and shaped ecofeminist debate. They pair in a way that supports comparison: *The Death of Nature* and *Staying Alive* each advance a genealogical argument about the origins of ecological domination, while *Earthcare* and *Ecofeminism* each move from diagnosis to prescription. And they are the texts to which the critical literature on each thinker principally responds, which allows the comparison to engage that literature rather than proceeding in isolation from it. Secondary reference is made to Merchant's *Ecological Revolutions* (1989) and *Reinventing Eden* (2003), to Shiva's *Monocultures of the Mind* (1993), and to Mies's *Patriarchy and Accumulation on a World Scale* (1986) where these clarify positions taken in the primary texts.

Analytical dimensions. The two bodies of work are read across five dimensions, held constant so that convergence and divergence can be identified rather than asserted. These are (1) the genealogy of domination: where and when each locates the rupture that produces ecological crisis; (2) the conception of science: what precisely is under critique, whether an institution, a metaphor, an epistemology or a political economy; (3) the woman–nature relation: whether the association is treated as ideological artefact, material fact, strategic resource or ontological claim; (4) political economy and agency: who acts, on what basis, and against what; and (5) proposed ecological ethics: what each recommends and what each remedy presupposes about cause.

Procedure. For each dimension, the relevant passages in the primary texts were read against one another and the resulting interpretation tested against the critical literature on each thinker. Where that literature contests an interpretation, as it does extensively for Merchant's reading of Bacon and Shiva's account of Indian women's environmental agency, the article reports the contest rather than adjudicating it silently, and distinguishes throughout between what a thinker argues, what critics argue about that position, and what this article concludes.

Limits of the comparison. Three limits should be stated at the outset. First, the corpus is canonical and partial: both authors have written extensively since, and neither position is fully captured by texts published between 1980 and 1996. Merchant's later work, particularly *Reinventing Eden* (2003) and her 2008 response to critics of her Bacon interpretation, refines positions taken in 1980; Shiva's subsequent writing on seed sovereignty and agricultural policy develops arguments made in 1988. The article therefore compares two influential positions, not two complete oeuvres. Second, the two bodies of work differ in genre as well as content. Merchant writes as a historian of science addressing an academic readership; Shiva writes as a scientist-turned-activist addressing a readership that includes policy and movement audiences. Differences in evidentiary standard and rhetorical register partly reflect genre rather than disagreement, and the analysis tries not to score points that turn on this difference alone. Third, several categories central to both bodies of work ("women," "the West," "Western science," "the Global South") are internally heterogeneous to a degree that neither thinker consistently registers. This article uses them where the texts do, but treats their heterogeneity as an analytical problem in its own right rather than a matter of terminology.

Natural Resources for Human Health
eISSN: 2583-1194

3. GENEALOGIES OF DOMINATION: MECHANISM, COLONIAL MODERNITY, AND THE LOCATION OF CAUSE

3.1 Merchant: the organic cosmos and its replacement

Merchant's genealogical argument in *The Death of Nature* turns on a transformation in the dominant metaphor through which the natural world was apprehended. In the organic worldview that Merchant associates with the premodern and Renaissance periods, the cosmos was conceived as a living whole and the earth as a nurturing mother, a benevolent female providing sustenance to humankind. This image, Merchant argues, carried normative weight: a mother is not something one mines. It functioned as a cultural constraint, and Merchant assembles evidence for the constraint's operation, drawing among other sources on classical condemnations of mining in which extraction is figured as an assault on a maternal body (Merchant, *Death of Nature*).

The organic image was never singular. Alongside the nurturing mother stood nature as wild, disordered and uncontrollable, a source of drought, flood and storm. Merchant's argument is that the seventeenth century did not invent hostility toward nature but shifted the balance decisively toward the second image, and in doing so licensed a response (control, ordering, taming) that the first image had inhibited. Mechanism supplied the philosophical vocabulary for that response. Nature reconceived as a machine assembled from inert particles, and society as an aggregate of self-interested individuals, together produced a world in which the older restraints had no purchase (Merchant, *Death of Nature*). On her account, order in the organic cosmos had meant the interdependence of parts within a whole, while order in the mechanical world meant the predictability of parts within a system of law. Power in the organic cosmos had descended through hierarchy; power in the mechanical world meant immediate intervention in a secularised nature. Control followed from the conjunction.

This shift, Merchant argues, was not merely intellectual. It coincided with the expansion of mercantile capitalism, a transition from renewable energy sources (water, wood, wind, animal muscle) to coal and the extraction of inorganic metals, and with colonial expansion into lands figured as wastelands awaiting improvement. In *Ecological Revolutions* (1989) and *Earthcare* (1996) Merchant traces the consequences for women's relation to land in colonial New England. Native American women, who by her account contributed the substantial majority of the tribal diet through planting, tending and harvesting, and colonial women engaged in outdoor subsistence labour were both progressively displaced by an industrial-capitalist economy that relocated women's work indoors and reconstituted them as what she calls moral mothers, charged with the domestic transmission of virtue.

3.2 Bacon and the limits of the interpretive claim

Merchant's account of Francis Bacon is the most influential and the most contested element of her genealogy. She reads Bacon's methodological writings as supplying not merely a technique but a rhetoric: a figuration of nature as female, to be penetrated, bound into service and made to yield her secrets under constraint. The passage in *The Masculine Birth of Time* in which Bacon figures himself as leading Nature and her children into bound service (qtd. in Merchant, *Death of Nature*) has become the locus classicus of the reading. Merchant's argument is that such language did work: it converted what had been cultural constraints into scientific sanctions, and it did so by drawing on an available repertoire of gendered domination.

This interpretation has been challenged on philological and historical grounds and cannot be presented as settled. Pesic argues that Merchant's reading mistakes the character of Bacon's Proteus metaphor and that the vocabulary of "torture" attributed to Bacon does not survive close examination of the texts. Soble contends that the feminist reading rests on selective quotation and translation choices that import a sexual violence the Latin does not carry. Vickers presses the case furthest, arguing that the feminist historiography of Bacon has propagated misattributions through citation rather than through renewed reading of the sources. Merchant has responded directly in "The Scientific Revolution and *The Death of Nature*" and "The Violence of Impediments," revisiting the book's argument at twenty-five years' distance and examining Bacon's language of vexation and impediment, and maintaining that the substantive claim, that Bacon's rhetoric legitimated an interventionist and appropriative relation to nature, survives the philological objections even where particular phrasings must be revised. Park, writing in the same *Isis* retrospective on the book's influence, situates *The Death of Nature* within the historiography of early modern science and notes both its formative effect on the field and the questions its narrative structure leaves open.

The position taken here is deliberately narrow. Merchant's specific attributions to Bacon are contested and some require qualification; the broader claim that early modern natural philosophy deployed a gendered vocabulary of mastery, and that this

vocabulary was consequential, does not depend on any single disputed passage. What the dispute does establish is that Merchant's genealogy must be presented as an interpretation ("Merchant argues that…") rather than as uncontested historical fact, and that the strong version of the claim, in which the Scientific Revolution stands as the efficient cause of ecological crisis, overstates what the evidence will bear. Rolston, writing in a volume assessing Merchant's legacy, makes a related point about metaphor more generally: metaphors both illuminate and mislead, and a critique built on the argument that one metaphor displaced another must be careful not to treat metaphors as sufficient causes of material transformation.

3.3 Shiva: development as the continuation of colonisation

Shiva's genealogy shares Merchant's periodisation loosely, since she too invokes the scientific and industrial revolutions of early modern Europe and the Enlightenment theory of progress, but locates the operative mechanism elsewhere. For Shiva, the Enlightenment produced two categories that have done most of the subsequent damage: scientific knowledge understood as universal, and economic development understood as a single path. Her argument in *Staying Alive* is that neither is universal in fact (Shiva, *Staying Alive*). Both are particular, historically situated projects of Western patriarchal modernity that have been generalised through colonial and postcolonial institutions, and their generalisation has been destructive precisely where it displaced functioning local systems.

The claim that gives Shiva's genealogy its distinctive shape is that development is not the successor to colonialism but its continuation by other means. Colonial appropriation of land and resources and postcolonial development projects (large dams, commercial forestry, the industrialisation of agriculture) operate through the same logic: they treat as unproductive whatever does not enter the market, and as improvable whatever sustains people outside it. The effect on women, in Shiva's account, is not incidental but structural. Where women's labour is concentrated in the provision of subsistence (water, fuel, fodder, food), the destruction of the commons that supply these is directly the destruction of women's work and of the knowledge that work carries.

Shiva's critique of science follows from this. She is explicit that science and technology are not gender-neutral, and in this she converges with Merchant. But her target is more specific than the secondary literature sometimes acknowledges, and the specification matters. What Shiva attacks is the reductionism she identifies in a particular research programme (the treatment of forests as timber, of agriculture as yield per hectare of a single crop, of seed as an input rather than as the reproductive basis of a system) together with the institutional and commercial apparatus that makes that reductionism authoritative. Her critique of monocultures of the mind (Shiva, *Monocultures*) is directed at the epistemic erasure by which alternative systems of knowledge are rendered invisible or primitive, not at the possibility of systematic empirical inquiry as such. Where her formulations slide toward the broader claim that modern science is intrinsically a patriarchal enterprise, they become considerably harder to defend, a point developed in Section 5.

Molyneux and Steinberg, in an early and searching assessment of *Ecofeminism*, identify the central axiom of the Mies–Shiva position as the claim that modern science is grounded in linked material relations of patriarchal violence, capitalism and colonialism, and that capitalism and colonialism themselves constitute forms of patriarchal violence. They note the analytical cost of running the three together: if patriarchy, capitalism and colonialism are all expressions of a single logic, it becomes difficult to explain their historical variation or to identify which is doing the causal work in any particular case. Figueroa Helland and Lindgren develop a version of the same structural argument with more differentiation, tracing the "coloniality of power" through interlocking anthropocentric, androcentric and Euro-modern systems; Morinville and Van Lier caution, from a different direction, that narrow conceptions of nature can reproduce a capitalist "production bias" that fails to register the more-than-capitalist relations involved in making natures available for value production.

3.4 The difference that matters

Both narrate a rupture in which a restrained relation to nature gives way to an appropriative one, and both date it to the same broad period, but the rupture is differently constituted. Merchant's is primarily a transformation in how nature was conceived: metaphor, philosophy, the construction of matter as inert. Material processes (mercantile expansion, the shift in energy base, colonial settlement) are present and taken seriously, but they accompany and reinforce a conceptual change whose independent force the argument requires. Shiva's rupture is primarily a transformation in who controls the means of subsistence; conceptual change figures largely as legitimation for an appropriation whose motive is material.

This difference of emphasis is consequential rather than presentational. It shapes what each thinker takes a solution to require, and therefore what each takes the woman–nature association to be for. That is the subject of the next section.

4. GENDERING NATURE: METAPHOR, MATERIALITY, AND THE ESSENTIALISM PROBLEM

4.1 Merchant's ambivalence toward the female symbol

Merchant's treatment of nature's female symbols in *Earthcare* (1996) is the clearest statement of her position on the woman–nature association, and it is more ambivalent than either her admirers or her critics usually allow. She examines three figures. Gaia, the Greek primordial deity who orders the earth out of chaos, has been taken up in two registers: by feminist and environmental movements as a potentially powerful force for change, and by scientists as a model of the planet as a self-regulating system. Eve's meaning is organised around the Fall: before it, she figures virgin and untouched nature; after it, a wasteland requiring improvement; and as mother, a planted garden and fruitful world. Isis, the Egyptian goddess associated with the flooding of the Nile, becomes in Western scientific iconography the figure of nature whose secrets are known when her veil is lifted.

Merchant's analysis of these figures is not celebratory. Each carries a colonial and capitalist programme within it: the recovery of fallen wasteland through science, technology and capital is the narrative structure by which the improvement of New World and colonised lands was justified, and the unveiling of Isis is not a neutral image of discovery but a figure for knowledge as exposure. The symbols' contemporary reappropriation by environmentalism and feminism, however inspiring, reinstalls a gendered coding of nature that returns women to the position of natural caretakers and green homemakers: inspiration and cultural baggage in the same package. The female symbols, Merchant concludes, are insufficient as the basis for an alternative relation to the earth; what is needed, she argues, is a combination of nature narratives, partial perspectives in science, dialectical systems approaches and partnership ethics (Merchant, *Earthcare*).

This is a degendering programme, and it is deliberate. Merchant is explicit that the affinity between women and nature is complex, historically and culturally produced, and irreducible to the simple essentialism that women are closer to nature by virtue of a nurturing capacity. Her partnership ethic is constructed to exclude that reading: it refuses nature as nurturing mother, rejects the claim that either women or men have a special bond with the natural world, and assigns responsibility for ecological repair to both (Merchant, *Earthcare*). The motivation is not only theoretical but political. If women are the natural caretakers of the earth, then the obligation to repair ecological damage falls disproportionately on those who did least to cause it, a burden Merchant is concerned to lift.

4.2 Shiva's Prakriti and the two arguments within it

Shiva's position appears, at first, to be Merchant's inverse, and in one respect it is. Where Merchant works to dissolve the woman–nature association, Shiva works to recover and revalue it. Indian women, in her account, encounter nature as Prakriti (the living force that sustains life, the feminine principle from which all life arises), and this encounter is not a symbol to be deconstructed but a cosmology that has organised functioning ecological practice (Shiva, *Staying Alive*). The recovery of that perception, displaced by the Western development model, is part of what she is arguing for.

But Shiva's texts contain two arguments here, and separating them is essential to assessing the essentialism charge fairly. The first is materialist and positional: women in subsistence economies are the primary producers of food, the principal managers of water, fuel and fodder, and the custodians of seed, and they hold detailed practical knowledge because they perform this labour. Shiva's evidence for this is the division of labour, not biology. The claims that women in India are major producers of food by value, volume and hours worked; that the indigenous dairy economy rested on rural women's knowledge; that women's forestry knowledge is central to biomass use; that women have been seed custodians whose skills should inform crop improvement (Mies and Shiva): these are empirical claims about who does what, and they are vulnerable to empirical correction but carry no ontological commitment whatever.

The second argument is cosmological. Prakriti as the feminine principle, the sacredness of seed, the female spirit understood as the life force pervading all beings, the interconnection of spirit and matter that the joint volume describes as a materialism distinct from both Marxist materialism and commodified capitalism (Mies and Shiva): these are claims of a different order. They do not follow from the division of labour, and they are not vulnerable to the same kind of correction. They assert something about the nature of nature and about women's relation to it.

Shiva does not always distinguish these, and the slippage between them is what gives the essentialism critique its purchase. When the cosmological claim is read as grounding the empirical one, when women's knowledge of seed appears to derive from a feminine principle rather than from having saved seed for generations, the argument becomes precisely the naturalisation of gendered labour that ecofeminism is supposed to contest. The reader is left unable to tell whether women's ecological expertise is being presented as innate, culturally produced, materially situated or politically constructed.

4.3 The critical literature and what it establishes

The critique of Shiva on these grounds is extensive and, in its strongest forms, difficult to answer. Agarwal offers the most influential alternative: a "feminist environmentalism" that grounds women's relation to the environment in the material division of labour and in property and resource rights rather than in ideological or biological connection. Her objection to Shiva is twofold: that the account treats Indian women as an undifferentiated category, and that it locates the source of women's ecological relation in the wrong place. Jackson presses a complementary line, arguing that ecofeminist development thinking wrongly assumes women are naturally conservationist, and warning that policies built on that assumption have added to women's labour burdens in the name of environmental protection. Leach traces the institutional career of the "earth mother" notion through development policy, showing how a strategically useful idea was taken up by agencies, operationalised, and then found wanting.

The postcolonial critique runs alongside the feminist one. Mohanty's argument against the construction of "the Third World woman" as a singular analytic subject applies to Shiva's rural Indian woman regardless of the author's own location: the problem is the homogenisation, not who performs it. Sinha et al. identify a "new traditionalist" discourse in Indian environmentalism, a narrative of precolonial ecological harmony ruptured by colonial and developmental intrusion, and argue that it misrepresents the historical record. Rangan makes the case in detail for Chipko, showing that the movement's actual demands concerned regional economic development and rights over forest resources, and that the canonical retelling of Chipko as an expression of women's ecological consciousness obscures more than it reveals. Nanda mounts the sharpest challenge, arguing that Shiva's epistemological position, the claim that Western science is one local knowledge among others, supplies resources to reactionary antiscience politics in India whatever its author's intentions.

Two things follow. First, the empirical differentiation the critics demand is well founded and the secondary literature's habit of presenting rural Indian women as a homogeneous ecological subject cannot be sustained. Access to land, security of tenure, caste position, class, household structure and regional ecology stratify women's environmental experience so thoroughly that the category "women" does little analytical work on its own. Nightingale's study of gender, caste, class and environment in Nepal demonstrates the point concretely: these categories are not separate variables that intersect at a point but are materially coproduced through the everyday practices that also produce environmental difference. Kings argues that ecofeminism's capacity to absorb this insight, rather than treat intersectionality as an external correction, is what determines its continuing usefulness. Second, however, the critique does not dispose of Shiva's materialist argument. That women perform the labour and hold the knowledge Shiva describes, in the contexts she describes, is not refuted by the observation that they do so unevenly and for reasons of social structure rather than essence. The critique establishes that the cosmological argument cannot support the materialist one; it does not establish that the materialist one is false.

4.4 This article's position

The position taken here is that women's ecological knowledge is materially situated and socially produced, not innate. It arises from a division of labour that assigns particular work to particular people under particular property regimes, and it is accordingly variable, contested and subject to loss when the underlying conditions change. This position preserves what is strongest in Shiva, the claim that the destruction of subsistence bases destroys a body of knowledge along with a livelihood and that this loss is both an injustice and an epistemic impoverishment, while declining the cosmological framing that makes the claim vulnerable.

It also declines the assumption that Merchant's degendering is simply the more sophisticated position. Sturgeon showed that essentialist-sounding claims within the ecofeminist movement often functioned strategically, as the basis for coalition rather than as metaphysics, and that reading them literally misdescribes what they were doing. Gaard argues that ecofeminism was prematurely dismissed on essentialist grounds by a feminist theory that mistook the field's most quotable formulations for its analytical core, and that a material feminist ecofeminism remains both possible and necessary. Plumwood had already staked out the relevant middle ground: the woman–nature link can be neither simply affirmed nor simply denied, because the dualism

that produced it structures both the affirmation and the denial. The task is to dismantle the dualism, which requires neither accepting women's proximity to nature nor accepting the devaluation of nature that gives the proximity its meaning.

5. KNOWLEDGE AND EPISTEMIC AUTHORITY

5.1 Two critiques of scientific reason

Merchant and Shiva both argue that modern science is not the neutral instrument it claims to be, but they make the argument at different levels. Merchant's is historical and internal: she examines how a particular research programme, in a particular period, constructed its object through metaphors that carried social meaning, and how the resulting conception of nature as inert and law-governed authorised intervention. Her critique is directed at a formation (mechanistic natural philosophy and its Baconian methodology) and not at empirical inquiry. This is why her positive proposal can include partial perspectives in science alongside dialectical systems approaches and chaos theory: she is arguing for a differently constituted science, not against science. In this she stands within a broader feminist critique of scientific reason developed in the same period, of which Keller's analysis of the gendering of objectivity is the closest analogue: the object of criticism is the way a knowledge practice has been constituted, not the possibility of knowledge.

Shiva's critique operates at the level of the relation between knowledge systems. Her claim is that the universality attributed to modern Western science is a political achievement rather than an epistemic property: the displacement of other systems of knowledge, which she documents in forestry, agriculture and dairying, was accomplished by institutional power, not by demonstrated superiority across the relevant domains. Her account of monocultures of the mind (Shiva, *Monocultures*) names the epistemic dimension of the same process that produces monocultures in fields: the reduction of a plural knowledge landscape to a single authorised variety.

At their strongest these are compatible, and Haraway's account of situated knowledges supplies the framework that holds them together. If all knowledge is produced from somewhere, then the claim to a view from nowhere is itself a positional claim, and the question becomes which situated knowledges are granted authority and by what means. Merchant's language of partial perspectives converges on Haraway's position; Shiva's insistence that development-era agronomy dismissed as primitive what was in fact sophisticated is a claim about the misallocation of epistemic authority. Garrity-Bond reads Shiva's Prakriti in this register, as an epistemology in which nature is known as a living interdependent force and women are included as sources of expertise rather than as objects of study.

5.2 Where the convergence breaks

The convergence breaks when Shiva's argument shifts from the misallocation of authority to the constitution of science itself. The claim that development-era forestry mistook forests for timber is an empirical and methodological criticism, and it is well supported. The claim that modern science is a patriarchal enterprise is a different kind of claim, and it does not follow from the first. Nanda's objection is that this slide has consequences: an argument that renders scientific knowledge one local tradition among others does not, in the Indian political context, reliably strengthen the position of the marginalised, and can be recruited to purposes its author would reject.

Merchant's position is more guarded, and deliberately so. Her argument requires that the mechanistic construction of nature be historically specific, a seventeenth-century European development with identifiable sources and consequences, because its specificity is what makes the counterfactual thinkable. If domination were intrinsic to knowing nature at all, there would be no reconstructive project. The cost of this caution is that Merchant's critique remains largely internal to the Euro-American intellectual tradition whose transformation she narrates. The knowledge systems that Shiva's account foregrounds, and the colonial encounter through which they were subordinated, are largely outside Merchant's frame; her history of how Europeans came to think about nature is not a history of what that thinking did elsewhere.

The comparison thus repeats, at the epistemological level, the structure identified in Section 3: Merchant offers precision about the internal transformation of a tradition and relative silence about its external effects, Shiva the reverse. Neither is a simple deficiency; each follows from where the analysis is positioned.

Natural Resources for Human Health
eISSN: 2583-1194

6. POLITICAL ECONOMY AND ECOLOGICAL AGENCY: PARTNERSHIP ETHICS AND THE SUBSISTENCE PERSPECTIVE

6.1 Merchant's partnership ethic

Merchant develops the partnership ethic in *Earthcare* against three alternatives that she takes to exhaust the available positions: egocentric ethics, grounded in individual self-interest and associated with capitalist appropriation; homocentric ethics, grounded in the social good of the human community; and ecocentric ethics, which subordinates human interests to those of the biotic whole. Her objection to the first is straightforward. Her objection to the second and third is that each resolves the human–nature relation by subordinating one term, and so reproduces at a higher level the hierarchical structure the ethic is meant to dissolve.

The partnership ethic is built instead on relation. It posits equality between human and nonhuman communities without denying their difference; it acknowledges human dependence on a nonhuman world that functions independently of human intervention, and simultaneously acknowledges the human capacity to destroy it; and it extends ethical accountability to those excluded from it, naming women, minorities and the nonhuman community together. Merchant traces its formulation to the Planeta Femea proceedings and the Code of Environmental Ethics and Accountability developed there, in which women's environmental model was characterised by cooperative rather than competitive values (Merchant, *Earthcare*). This origin matters, since it locates the ethic in the experience of women in the Global South rather than in academic philosophy.

Merchant's own statement of the ethic's limits is the most materially specific part of her argument and deserves more attention than it usually receives. The standard framing of global environmental debate as a conflict between Southern overpopulation and Northern overconsumption, she argues, omits production, which is where the decisive determination lies. Economic production oriented to profit must be redirected toward the reproduction of human and nonhuman life (Merchant, *Earthcare*). This is a structural claim about political economy, and it brings Merchant closer to Shiva than the rest of her argument does. Vergara-Camus puts the sharper version, arguing that capitalist accumulation rather than growth as such is the root of the ecological crisis. The relational half of the ethic has been extended by work that reconceives care as reciprocal and more-than-human: Silberzahn argues that ecological justice requires humans to understand themselves as care receivers from other earth dwellers and not only as caregivers, a reading that develops Puig de la Bellacasa's account of care as an ethico-political practice rather than a benevolent disposition.

6.2 The subsistence perspective and Shiva's biodiversity argument

The positive proposal advanced in the 1993 volume is the subsistence perspective (Mies and Shiva). An attribution caution is needed here. *Ecofeminism* carries no chapter bylines, and its introduction describes two authors who arrived at shared concerns through separate activism rather than through joint composition, so the volume cannot safely be mined for the individual views of either author. The subsistence perspective is in substance Mies's contribution, developed before this book in *Patriarchy and Accumulation on a World Scale* (Mies, *Patriarchy and Accumulation*) and after it with Bennholdt-Thomsen (Mies and Bennholdt-Thomsen); Shiva's cognate positive proposal is the biodiversity and seed argument examined below, which she develops in her own single-authored work. This article accordingly attributes arguments to the joint volume unless they are also developed in one author's independent writing. Its content is an inversion of the development model's valuation: production oriented to the direct provision of life rather than to exchange; self-provisioning agricultural systems with closed cycles of production and consumption; diversity rather than uniformity as the organising principle of both cultivation and knowledge. Where the development model treats subsistence economies as backward stages to be superseded, the subsistence perspective treats them as functioning alternatives whose displacement was a loss.

The gender content of the proposal is where the two thinkers separate most visibly. Mies and Shiva argue that women, and particularly women in the South working and fighting for survival, stand closer to the subsistence perspective than urban middle-class women and men in the North (Mies and Shiva). Read as a claim about position, about who has retained the practices and knowledge that the perspective describes, this is defensible and follows from the division of labour. Read as a claim about disposition, it becomes the essentialism problem again.

Shiva's linkage of gender to biodiversity is the most developed version of the positional argument. Her claim is that women's work spans sectors that formal agricultural science separates (forestry, cultivation, animal husbandry), and that biodiversity conservation as practised in this work is relational rather than additive: each element is understood in relation to others, in

contrast to the fragmentation by which modern conservation isolates elements and reduces diversity to an inventory of varieties. The navdanya or nine seeds, in the Indian context, are presented as symbolising the renewal of diversity and balance across plant, planetary and social worlds (Mies and Shiva). And the contrast Shiva draws between women producing through biodiversity and corporate science producing through uniformity culminates in a specific institutional claim: that the seed is being converted from a self-reproducing means of production into a purchased input, and the farmer correspondingly from a seed producer into a seed consumer (Mies and Shiva; Shiva, *Monocultures*).

Three distinct mechanisms are at work in this conversion, and they should be separated, since the texts under discussion here engage only two of them. The first is agronomic: hybrid varieties yield well in the first generation but their progeny segregate and do not come true to type, so that saved seed carries a performance penalty rather than an inability to germinate. The second is legal: plant variety protection, patents and the intellectual property provisions negotiated through the Uruguay Round of the GATT restrict seed saving by contract and statute rather than by biology, and it is this mechanism that Shiva addresses most directly in the 1993 volume. The third, genetic use restriction technology (the so-called terminator seed, engineered to render harvested grain sterile), belongs to a later period: it was patented in 1998, has never been commercialised, and has been subject to a de facto moratorium under the Convention on Biological Diversity since 2000. It therefore cannot be read back into arguments published in 1988 and 1993, and the durable core of Shiva's claim does not require it. That core is a claim about intellectual property, agricultural input markets and the structure of the seed industry, and it is the part of her argument that has best survived.

6.3 Agency: two accounts of who acts

Both thinkers ground their prescriptions in an account of women's environmental activism, and the accounts differ instructively. Merchant examines movements in the United States, Sweden and Australia between the 1960s and the 1990s, industrial-capitalist societies she knew at first hand, and finds women organising against nuclear power and weapons, pesticide use and hazardous waste dumping, and for alternative forestry and agriculture. Her explanation of why women predominated is partly embodied: the threat that toxic and radioactive substances pose to bodies, and to the reproduction of bodies, is a threat women have had particular reason to organise against. But her account is careful not to make the activism an expression of a natural affinity; it is a response to a specific and gendered exposure.

Shiva's examples are drawn from a wider geography and a different economy of harm: the antinuclear mobilisation at Wyhl in southwest Germany, the Green Belt Movement in Kenya, Japanese women organising against agricultural chemical contamination and for producer–consumer networks, women in Ecuador defending mangrove forests as fish and shrimp breeding grounds, and struggles across the South over water management, soil conservation and access to forests, fuel and fodder. The Indian cases she and others foreground (Chipko, the Narmada movement) have themselves become contested terrain, as Rangan and Guha have shown from different directions: Guha reading Chipko primarily as peasant resistance over forest rights, Rangan arguing that the ecological-feminist reading obscures the movement's developmental demands.

What distinguishes the two accounts is not the fact of women's activism but its explanatory basis. In Merchant, women act because of a particular bodily exposure under industrial capitalism; in Shiva, because their means of subsistence are being removed. The second is the stronger account of material interest, the first the more careful about what follows from it. The pattern recurs.

7. MERCHANT AND SHIVA IN TENSION: SYMMETRY, DIFFERENCE, AND RESPONSIBILITY

The comparison can now be stated directly. Merchant and Shiva confront the same structure (the coding of nature as female, passive and available) and adopt opposed strategies toward it. Merchant seeks to break the equation; Shiva seeks to revalue it. Each strategy is coherent given where its author locates the cause of domination, and each incurs a cost that the other's strength exposes.

The cost of degendering. Merchant's partnership ethic distributes ecological responsibility across genders, which is its point: it releases women from an obligation grounded in an association Merchant regards as ideologically produced. But the distributive logic that achieves gender symmetry does not by itself distinguish between those whose consumption drives ecological harm and those who bear its consequences. Merchant is not unaware of this, since her critique of the overpopulation/overconsumption framing and her insistence on production as the decisive variable show otherwise, but the ethic itself is not constructed to track the asymmetry. A partnership between humans and nature, and among humans, that does

not specify how responsibility is differentiated by position within the world economy risks a universalism that is formally egalitarian and substantively indeterminate. Sultana's account of climate coloniality names what such a framework struggles to capture: the persistence of colonial relations in the distribution of climate harm and the terms on which responses to it are governed.

The cost of revaluation: Shiva's strategy captures exactly that asymmetry. Her account is positional throughout: it specifies who is dispossessed, by what institutions, and to whose benefit. But the revaluation of the woman–nature association requires an account of why women in particular hold the knowledge at issue, and Shiva's cosmological answer exceeds what her materialist premises supply. The consequence is not merely theoretical vulnerability. As Jackson and Leach document, the policy uptake of the idea that women are naturally environmental custodians has produced interventions that increased women's unpaid labour while being described as empowerment. A theory that cannot distinguish between women's knowledge as a product of a division of labour and women's knowledge as an attribute of women will not reliably resist that use.

What exactly is in tension. It is worth being precise about the kind of disagreement this is, because it is easy to overstate. At the level of propositions the two positions are combinable, and Section 4.4 combined them: one can hold both that the woman–nature association is an ideological artefact carrying no ontological weight and that women in particular locations have acquired ecological knowledge worth recognising, because the second claim concerns a historically produced division of labour and not a natural affinity. Nothing in logic forbids this pairing, and the more successful recent work adopts it.

The tension lies instead at the level of strategy and emphasis, where it is real. A theoretical programme must decide what to foreground. Merchant makes the dissolution of the association the organising move of her positive ethic, with the consequence that the ethic is specified without reference to the positions from which different people act. Shiva makes the recognition of women's ecological knowledge the organising move of hers, with the consequence that the association is continually reasserted at the very point where it most needs qualification. Each thinker treats the chosen emphasis as generally correct rather than locally appropriate, which is why the divergence cannot be dissolved by observing that the two wrote from different places. A difference of region would license both; a difference of theoretical priority does not.

The article's claim. The comparison identifies a tradeoff rather than a contradiction. Foregrounding degendering tends to produce a universalism that loses grip on the differential distribution of ecological harm; foregrounding women's situated ecological knowledge tends to reinscribe the association the theory set out to contest. Merchant and Shiva are not two halves of a complete position, but neither are they mutually exclusive: they are two coherent settlements of a tradeoff that any ecofeminist programme has to settle somehow. The claim made here is calibrated to its evidence. Four texts cannot establish what the whole field must do, and this article does not argue that every ecofeminism must fail in one of these two ways. It argues that this tradeoff is visible in the two most canonical statements of the position, that it is not an artefact of their authors' locations, and that tracking it explains features of the subsequent literature that are otherwise puzzling.

Plumwood's analysis suggests why the tradeoff is hard to escape. If the woman–nature association is produced by a dualistic structure that simultaneously feminises nature and naturalises women, then both affirming and denying the association operate within that structure: affirmation accepts the pairing and contests its valuation; denial contests the pairing while leaving intact the devaluation of nature that made the pairing derogatory. Escaping requires dismantling the dualism rather than choosing a side within it, which is easier to formulate than to carry out and which neither Merchant's nor Shiva's programme fully accomplishes.

8. CONTEMPORARY RELEVANCE: FEMINIST POLITICAL ECOLOGY, MATERIAL FEMINISMS, AND DECOLONIAL ECOLOGY

If the tradeoff identified above is real, then the most significant developments in the field since the 1990s can be read as attempts to work within it rather than as departures from ecofeminism.

Feminist political ecology emerged precisely at the junction the comparison identifies. Rocheleau et al. proposed gendered knowledge, gendered rights to resources, and gendered environmental politics as analytical categories that ground women's environmental position in material relations rather than in disposition, retaining Shiva's attention to who does what and loses what, while declining the cosmological framing. Resurrección traces the intellectual movement from women, environment and development to feminist political ecology as substantially this shift. Nightingale's demonstration that gender, caste, class and

environment are materially coproduced supplies the differentiation that the critique of Shiva demanded, and does so without abandoning the claim that environmental relations are gendered.

Material feminisms and the new materialist turn have approached the same problem from the other direction. Alaimo and Hekman and Gaard argue that the poststructuralist reduction of nature to discourse left feminism unable to say anything about materiality, and that a feminism able to take the material seriously need not be essentialist. On this account, Merchant's degendering was overcorrected by the subsequent theoretical settlement; what is required is not the denial that bodies and environments matter but an account of how they matter that does not fix them. Mallory argues, against the tendency to rename the field, that ecofeminism's specific insight is worth retaining under its own name.

Decolonial environmental scholarship supplies the specification that the partnership ethic calls for but does not provide. Sultana on climate coloniality, Figueroa Helland and Lindgren on the coloniality of power, and the broader critique of development as discourse (Escobar) establish that the geography of ecological harm is structured by colonial histories that a universalist partnership ethic cannot address without specification. Meanwhile, work on multispecies justice (Celermajer et al.) has taken up the question Merchant's partnership ethic posed, namely how to construct a relation of justice with nonhuman beings without either subordinating human interests or reducing nonhuman ones to inputs, and has done so with conceptual resources neither Merchant nor Shiva had available. Foster traces the reappearance of ecofeminist insights in contemporary environmental governance debates under other descriptions.

Read together, these literatures do not resolve the tension between Merchant and Shiva. They distribute it. Each holds one of the two commitments more securely than the other, and the question of how to hold both remains the field's live problem.

9. CONCLUSION

This article set out to determine what a comparison of Carolyn Merchant and Vandana Shiva yields beyond the observation that both connect patriarchy with ecological degradation. The answer is a difference of theoretical priority that the standard complementarity framing conceals: the two locate the cause of ecological domination differently, Merchant in the epistemic and metaphorical transformation of early modern European natural philosophy and Shiva in the material appropriation of subsistence bases under colonial and developmental capitalism, and their opposed treatments of the woman–nature association follow from this.

The article's contribution is the argument that these strategies stand in a tradeoff rather than a simple complementarity. Foregrounding degendering achieves gender symmetry at the cost of a universalism that loses purchase on the geopolitical asymmetries of ecological harm. Foregrounding revaluation tracks those asymmetries at the cost of an essentialism that, as the policy record shows, can be turned against the women it was meant to defend. Neither cost is an accident of execution; each follows from the emphasis. The position defended here is that women's ecological knowledge should be understood as materially situated and socially produced, which preserves Shiva's strongest claim while declining the cosmological framing that makes it vulnerable, and that Merchant's degendering, while correct about the association's ideological character, requires supplementation by an account of differentiated responsibility that the partnership ethic identifies as necessary but does not itself specify.

Several limitations qualify these conclusions. The analysis rests on four canonical texts and does not exhaust either thinker's development; Merchant's later work, particularly her response to critics of the Bacon interpretation, and Shiva's subsequent writing on seed and agricultural policy, refine positions examined here. The two bodies of work differ in genre, audience and evidentiary convention in ways that complicate direct comparison. The categories on which both rely ("women," "Western science," "the Global South") are internally heterogeneous, and while this article has treated that heterogeneity as an analytical problem, it has not resolved it. And the historiographic disputes surrounding Merchant's reading of Bacon remain open; the account given here brackets them rather than settling them.

The implications run in two directions. For ecofeminist theory, the comparison suggests that the essentialism debate has been conducted at the wrong level. The question is not whether a given thinker is or is not an essentialist, but how a theory can retain the positional specificity that makes it politically useful without converting position into nature, a problem that feminist political ecology addresses more successfully than either thinker examined here. For the wider environmental humanities, the comparison indicates that critiques of scientific rationality and critiques of extractive political economy are not interchangeable,

and that arguments which treat them as a single target lose the ability to specify what should change. Merchant and Shiva remain worth reading together, but for the difference between them rather than the agreement.

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