

Scale and Sexuation: Toward a Multi-Scalar (Techno)Feminism

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Abstract

Technofeminism has long known that it must be a multi-scalar feminism, that is, able to think, encounter, and negotiate the scalar complexity of our increasingly technically mediated forms of life. In this paper, we examine two recent technofeminist formations, “new materialism” and “xenofeminism,” from the perspective of contemporary theorisations of scale. We find that neither of these forms of technofeminism can, however, adequately think multi-scalarity—each fall into respective versions of what theorist of scale Zachary Horton has termed “scalar collapse,” a reduction in the last instance to a “master-scale” or trans-scalar logic that subsumes scalar difference and multiplicity. We claim that a multi-scalar feminism would, conversely, be able to both mediate across complex and non-hierarchical scalar topologies of difference, *and* do justice to the real and insuperable differences, disjunctions, rifts, and cuts between scalar domains. Such a desire is shared by xenofeminists, though we query whether their neo-rationalist account of rational mediation can adequately account for the form of difference we take to be necessary for a multi-scalar approach. This form of difference has been described by contemporary theorists of scale as a difference of “at least two,” a figure for which we find crucial resources in the philosophies of Luce Irigaray and Gilbert Simondon. Against readings of Irigaray’s concept of sexuate difference as reductive or essentialist, we deploy Simondon’s account of individuation to understand this sexuate “at least two” as ontogenetic—that is, as a claim to a *generative limit* that enables scalar becomings to unfold in indeterminate ways. This allows us to fulfil the requirements we take to be necessary for any multi-scalar account: to have fidelity to the real differences between scalar domains without forgoing their mediation; and to mediate those differences without relying upon one determining ground or totalising form of transitivity. A multi-scalar feminism would not only be able to better negotiate multi-scalar phenomena, but ultimately realise a new form of mediation—one that does not determine the world in its image but is rather open to and makes possible an opening toward radical indeterminacy and transformation.

Keywords

Sexual Difference, Scale, Irigaray, Simondon, Technics, Xenofeminism

Introduction: Scale and Contemporary Technofeminism

Today's technofeminist is confronted by a world composed of ever-more densely layered abstractions: informatized scales of technoscientific address pile up on the philosophical terrain. What theorists today hazard to call the material and the ideal converge and depart at ever-more extreme angles across an ongoing proliferation of scales, from the pharmacological¹ to the planetary-computational.² Technofeminism has long known that it must be a multi-scalar feminism, that is, able to think, encounter, and negotiate this increasing scalar complexity. In response to multi-scalar issues such as global climate change, planetary computation, and the ever-evolving formations of capitalism, Laboria Cuboniks have claimed that a feminism which exclusively valorises the local, both philosophically and politically, "in the guise of subverting currents of global abstraction," is thoroughly insufficient.³ Feminist theory must rather be willing to engage in "constant modulation between different scales of comprehension and intervention—connecting micro, meso and macro levels of complexity".⁴ Product of our increasingly technically mediated forms of life, this complexity demands requisite innovations in feminist thought—our ever-more astonishingly multi-scalar reality requires a multi-scalar feminism, a feminist theoretical apparatus capable of mediating disparate scales of life both in their relation and discontinuity.

Our paper responds to this challenge, taking seriously the question of what theoretical tools such a multi-scalar technofeminism might require. Technofeminism, as we use the term here, covers the diversity of attempts at theorising science and technology from a centrally feminist position,⁵ including but not limited to "Feminist technoscience studies,"⁶ "Feminist Science and Technology Studies"⁷, cyberfeminisms⁸, and, the foci of this paper, "new materialisms" and "xenofeminism." Within these various technofeminisms, scale emerges as a crucial technofeminist concern because contemporary technics itself constitutes the organisation and systematization of multi-scalar relations, which inevitably point to mediations beyond the social and linguistic. Inasmuch as any contemporary feminism wishes to engage with the *technicity* of sex—in all its valences—it must negotiate the hyper

1 Preciado, *Testo Junkie: Sex, Drugs, and Biopolitics in the Pharmacopornographic Era*.

2 Parisi and da Silva, "Black Feminist Tools, Critique, and Techno-Poethics."

3 Cuboniks, *The Xenofeminist Manifesto*, 2018.

4 Cuboniks, "New Vectors from Xenofeminism," 2022.

5 While we use the term in a slightly different way, we acknowledge the influence of Judy Wajcman's *Technofeminism* in coining the term to describe feminist theorisations of the relationship between technics and gender. Wajcman, *TechnoFeminism*.

6 Åsberg and Lykke, "Feminist Technoscience Studies."

7 Schumann, "Feminist STS and the Sciences of the Artificial."

8 Lê, "The Most Radical Philosopher: Putting the Cyber Back in Sadie Plant's Cyberfeminism."

speeds at which multiple domains of difference emerge and transform identities, bodies, economies, affects, norms, social relations, and technoscientific codifications. Such domains of difference entail their own translations, vocabularies, and processes, which each interact in non-trivially distinctive ways. Following recent media-philosophical work on the concept,⁹ we call these domains “scales.”

We claim in this paper that a feminism adequate to *techné* is one that can embrace the real and irreducible differences that exist across complex and non-hierarchical topologies of scale, whilst also deploying a form of mediation that treats these as transformable, non-essential, and non-deterministic. It is this form of difference and its mediation that is key for thinking through the possibility of a multi-scalar feminism, one that can both maintain epistemological and ontological fidelity to the real differences and tensions between scalar domains, without reducing these differences to essentialist, determining grounds. However, this simultaneous negotiation of and fidelity to difference involves addressing difficult internal tensions within feminist engagements with technics. Attention to technical objects has motivated technofeminists to bridge the domains of the material and ideal, the inscriptive and abstract, whose linking has long been a site of contestation within Post-Kantian thought. Whilst on account of its foundational anti-essentialism the feminist project in general has tended to be sceptical of traditional technoscientific accounts of objectivity or universal truth, technofeminisms have not merely critiqued false universals and false objectivities, but boldly and speculatively constructed “hyperstitional”¹⁰ innovations for grappling with the “‘real’ world”¹¹ of technoscience, that patchwork of regularities and systems, empirical relations, and materially effective activities. To adequately engage technics, science, and the political milieu of an increasingly technically mediated world, technofeminism has therefore needed to become a *realist* anti-essentialism.¹² Donna Haraway articulates this technofeminist tension like so:

‘our’ problem, is how to have simultaneously an account of radical historical contingency for all knowledge claims and knowing subjects, a critical practice for recognizing our own ‘semiotic

9 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021; DiCaglio, *Scale Theory: A Nondisciplinary Inquiry*, 2021; Tsing, “On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scales,” 2012; Wilson, *Physics Avoidance: Essays in Conceptual Strategy*, 2017; Woods, “Scale Variance and the Concept of Matter,” 2017; Chakrabarty, “World-Making, ‘Mass’ Poverty, and the Problem of Scale.”

10 Wilson, “Cyborg Anamnesis: #Accelerate’s Feminist Prototypes.”

11 Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective (1988),” 579.

12 Indeed, the turn to various forms of realism has perhaps been the most widely shared rallying-cry of contemporary engagements with science and technology, including feminist ones. While this may be most clearly observed in contemporary technofeminisms, as Katerina Kolozova makes clear, this ‘turn’ to realism was made boldly and speculatively by feminist theory well before the emergence of OOO, new materialism, and left accelerationist neo-rationalisms. Kolozova, “Preface: After the ‘Speculative Turn,’” 2016, 13.

technologies' for making meanings, *and* a no-nonsense commitment to faithful accounts of a 'real' world¹³

Technofeminisms must find ways to commit to both these injunctions: to be anti-essentialist in resisting the dominating (hetero-patriarchal, Eurocentric) tendency towards trans-scalar absolutisation, reduction and determinism, whilst also realist in their commitment to grappling with and staking claim to phenomena that cut across ontologically different scales and siloed epistemologies to engage with the "objectivity" of science and technology in tractable ways.

In this paper, we identify two main tendencies within contemporary technofeminist attempts to negotiate both realist and antiessentialist commitments, which we find in the theoretical paradigm of the "new materialism" on the one hand, and on the other, the more nascent and emergent provocations put forward by "xenofeminism." By examining these approaches through contemporary theorisations of scale, we find that neither of these forms of technofeminism can, however, adequately think multi-scalarity—each fall into respective versions of what theorist of scale Zachary Horton has termed "scalar collapse," a reduction in the last instance to a "master-scale" or trans-scalar logic that subsumes scalar difference and multiplicity. We claim that a multi-scalar feminism would, conversely, be able to both mediate across complex and non-hierarchical scalar topologies of difference, *and* do justice to the real and insuperable differences, the disjunctions, rifts, and cuts, between scalar domains. Such a desire is shared by xenofeminists, though we query whether their neo-rationalist account of reason can adequately account for the form of difference we take to be necessary for a multi-scalar approach, a difference that has been described by contemporary theorists of scale as a difference of "at least two." Toward this end, we draw out two philosophical figurations of this "at least two" which we find in the work of Luce Irigaray and Gilbert Simondon. We gesture toward their philosophies of difference as possible avenues for a feminism that could adequately think real scalar difference without falling into scalar collapse, and, as such, be definitively multi-scalar. Irigaray's notion of "at least two" sexuate difference may appear to be a perfect instance of the kind of naturalising gesture xenofeminism finds to inhibit multi-scalar mediation. However, through Simondon's ontogenetic account of individuation, we gesture toward a rapprochement of these two figures' work that allows us to understand Irigaray's notion of "at least two" sexuate difference ontogenetically—that is, not as a determining essentialist difference or a "fideistic" imposition of the given, but as a claim to a *generative limit* that, rather than being a conservative bulwark against change and transformation, enables scalar becomings to unfold in indeterminate ways. This allows us to think multi-scalarity, that is, the real differences between scalar domains, without relying upon one determining ground or totalising, transitive medial framework. A

13 Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective (1988)," 579. Our emphasis.

multi-scalar feminism would not only be able to better negotiate multi-scalar phenomena, but ultimately realise a new form of mediation—one that does not determine the world in its image but is rather open to and makes possible an opening toward radical indeterminacy and transformation.

Beyond Geometrical Scaling: Multi-Scalarity and Scalar Collapse

Scale, in recent theorisations of it as a fundamental concept,¹⁴ indexes any domain of relatively bounded coherence: a level,¹⁵ structure,¹⁶ or layer¹⁷ that organises a set of relationships between differently structured¹⁸ or sized¹⁹ entities. The terminology used to define scale in the literature is varied—for instance, William Wimsatt writes of “levels” and “divisions of stuff (paradigmatically but not necessarily material stuff) organized by part-whole relations”;²⁰ alternatively, Yuk Hui draws on a lineage from Bachelard and Simondon to describe scale in terms of “order of magnitude,”²¹ where zones and modes of existence can be both differentiated and systematically related, while simultaneously “departing from the Cartesian subject of observation, which favours an absolute localization and permanent individuality.”²² Despite this varied terminology, contemporary theories tend to agree that scale is nontrivial in that it indexes more than purely contingent assemblages, but neither can scales be determined “in advance”—they are not reducible to rigid hylomorphic categories. As Zachary Horton has claimed, scale is “a primary form of difference, a diagrammatic force of *composition* that continually differentiates itself from within, producing new objects of incommensurate sizes.”²³ A scale is thus a stabilisation of relations into topologically complex but structurally non-arbitrary orders or levels, and as such, it is a fundamental element of the *individuation* of coherent entities. This entails, however, that we understand the functions of scale as not simply epiphenomenal categorisations or arbitrary

14 Various authors describe scale as primary, non-arbitrary, basic, or beyond mere epistemology or ontology, claims which we elaborate on throughout this paper.

15 Floridi, *The Philosophy of Information*.

16 Puntel, *Structure and Being*.

17 Bratton, *The Stack*.

18 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021; DiCaglio, *Scale Theory: A Nondisciplinary Inquiry*, 2021.

19 Tsing, “On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scales,” 2012; Wilson, *Physics Avoidance: Essays in Conceptual Strategy*, 2017.

20 While Wimsatt here uses the term ‘levels’ to describe such generic divisions, we see his theoretical elaboration of the concept as broadly equivalent with wider theorisations of the concept of scale. Wimsatt, *Re-Engineering Philosophy for Limited Beings: Piecewise Approximations of Reality*, 2007, 201.

21 Hui, *On the Existence of Digital Objects*, 29.

22 Hui, 29.

23 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 143.

groupings and take seriously the ways that operative disjuncture between scalar domains is necessary for technoscience.

If we are to take science and technology seriously, we must begin from the position that scale is a real and ineliminable aspect of the world. As argued across contemporary theorisations of the concept, scale is a “*deep, non-arbitrary*”²⁴ feature of reality, functioning as more than “mere epistemology.”²⁵ Where some philosophers might emphasise our best physics’ transitivity across all scales of phenomena,²⁶ philosophers and theorists concerned with scale have emphasised that this universal applicability is *insufficient* for our understanding of the world, as there are in practice ineliminable scalar disparities. The ineliminable quality of these scalar disparities is most apparent in applied science and engineering practices, where it is often referred to as the “tyranny of scales,”²⁷ emphasising its constitutive and unavoidable nature. Put simply, the problem is this: our ways of modelling and manipulating things are scale-specific, only functioning correctly at limited spatial and temporal ranges.²⁸ This scale specificity is not merely limited to a dual micro/macro split, but a layering of various sub-scales that each bear their own relevant dynamics—dynamics that are, in a meaningful sense for their manipulability, incommensurable with each other.²⁹ Thus the organisation of even a very simple physical system operates in terms of functional integration of heterogeneous and mutually opaque scales, where, as Reza Negarestani puts it, “the surface character of the system’s function is realized by qualitatively different sets of individuating powers and activities.”³⁰ Rather than having an essential principle of

24 Wimsatt, *Re-Engineering Philosophy for Limited Beings: Piecewise Approximations of Reality*, 2007, 203.

25 Wilson, *Physics Avoidance: Essays in Conceptual Strategy*, 2017, 220.

26 Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, 85.

27 Oden et al., “Simulation-Based Engineering Science: Revolutionizing Engineering Science Through Simulation,” 29.

28 This is observed in a variety of contexts, from physics, to biology, to cosmology. See Green and Batterman, “Biology Meets Physics: Reductionism and Multi-Scale Modeling of Morphogenesis”; Green, “Scale Dependency and Downward Causation in Biology”; Massimi, “Three Problems about Multi-Scale Modelling in Cosmology.”

29 Philosopher of science Mark Wilson provides a useful study of scalar difference in the engineering of materials, taking as a key example the multi-scalar techniques involved in modelling a steel beam in a railway bridge. He notes that in order to predict how a steel beam will behave under the stress of a locomotive repeatedly running over it, the beam cannot be modelled via a single-scale procedure. Subject to Oden et al’s ‘tyranny of scales,’ even such a mundane case as this exhibits scalar difficulties: a complex hierarchy of varying behaviors comes into view as the metal is inspected at ever smaller scales, from its overall hardness and elasticity, to the steel’s grain structure, to its molecular lattice. Wilson, *Physics Avoidance: Essays in Conceptual Strategy*, 2017, 12.

30 Negarestani, “Frontiers of Manipulation,” 1. Is there a connection between the concept of the material and the function of manipulation in the sense that the latter decides the former? Drawing on some of the recent discussions in the field of engineering with regard to models, cross-level causal manipulation and intra-level intervention, renormalization groups, morphogenetic analysis (the science of forms

organisation that holds across a system's various aspects, a system is instead an *integration* of sets of *different* mediating relations: internal zones of incommensurable activity, mediated by processes that individuate the system across the difference of these scales.

Furthermore, scale specificity appears to be not merely a result of our *currently* limited and imperfect techniques, but a constitutive aspect of what it means to model, manipulate, and mediate the world techno-scientifically. This constitutive "reality" of scale can be observed in various other sites and disciplinary contexts, from Earth-systems science³¹ to ecology and entomology.³² Crucially, the ineliminable and constitutive nature of scale is not isolated to particular procedures but functions as a basic condition of situated (that is, practically operable) technological actions. Scale is thus not simply an epistemological epiphenomena of our ways of seeing or knowing, but a constitutive *condition* of any way of engaging materially in the world. As Mark Wilson writes: "it is a profound mistake to view... scale-based dependencies as grounded in 'mere epistemology.'"³³ As such, thinking technics entails thinking real scalar difference—a kind of difference that is not in practice reducible to a more fundamental homogeneity. Derek Woods (in line with others in philosophy of science³⁴) identifies that scale domains, inasmuch as they operate as a necessary part of real empirical and conceptual processes, structurally require (and index) an *irreducible* difference between them; they "presuppose a qualitative difference that is not foundationally a function of measurement,"³⁵ and thus necessitate "ontological rifts"³⁶ between scale domains to function. Inasmuch as scale forms a part of technoscientific practice, its functions *rely* (assuming we acknowledge some degree of indeterminacy or incompleteness in the real³⁷) on scales being understood as overlapping, topological, and non-totalising genericities.

Given that scale is a question of the multi-composability of domains, *and* the reality of differences, it poses the question of how we can understand scalar differences to be both structured non-trivially

31 Steinhäuser, Ganguly, and Chawla, "Multivariate and Multiscale Dependence in the Global Climate System Revealed through Complex Networks," 889.

32 Woods, "Scale Variance and the Concept of Matter," 2017, 206.

33 Wilson, *Physics Avoidance: Essays in Conceptual Strategy*, 2017, 220.

34 Woods primarily draws on the work of Mariam Thalos (see Thalos, *Without Hierarchy: The Scale Freedom of the Universe*; Wimsatt, *Re-Engineering Philosophy for Limited Beings: Piecewise Approximations of Reality*, 2007; Wilson, *Physics Avoidance: Essays in Conceptual Strategy*, 2017.

35 Woods, "Scale Variance and the Concept of Matter," 2017, 207.

36 Woods, 207.

37 This is a point for which we lack scope in this paper, but a crucial upshot of the post-structuralist critiques of universal invariants and totalizing systems, as well as similar results in mathematics, logic, and computing (Gödel, Turing, Church), is that they strongly point to the necessity of scalar (ie. topological, local and generic) ways of thinking. See Cavia, *Logiciel: Six Seminars on Computational Reason*.

(that is, in *real* ways) while avoiding a collapse of their respective identities into determining essences, or reducing their multiplicity to one “master-scale.”³⁸ This is what we term a multi-scalar approach, which has comprised the primary driver of a revival of interest in scale in the humanities. However, whilst within contemporary theory this multi-scalar approach has recently gained traction, scale has, for much of the past few decades, been viewed as an epistemically, ontologically, and politically dubious concept. This has not always been expressed in scalar terms³⁹ but emerges out of poststructuralist critiques across debates in geography, science and technology studies, and media studies, among others. This problematisation of scale argues that the traditional “geometrical”⁴⁰ account of scale, most associated with traditionally humanist paradigms, has tended toward what Zachary Horton has termed “scalar collapse.”⁴¹ Scalar collapse identifies “epistemological and medial practices that unwittingly or deliberately normalise one scale to the dynamics, features, and cultural status of another.”⁴² In doing so, such accounts both *essentialise* fixed and bounded scalar domains, and simultaneously *universalise* transitive architectures for their mediation that are indifferent to the real ontological rifts between scalar domains. This view of scale is “geometrical”⁴³ in the sense that it stages “vertical hierarchies”⁴⁴ of fully articulated and somewhat rigid scales in neat, “precision-nested”⁴⁵ stacks. Examples include the classical figure of the Great Chain of Being or more recent technocratic ambitions towards “scalability”⁴⁶ as a totalising organisational strategy.⁴⁷ This geometric account is critiqued as a holdover from the essentialising and expropriative aspects of Western thought. Such “essentialist”⁴⁸ use of scale

38 As Derek Woods writes: “the linked concepts of scale (in)variance and the scale domain are... a necessary component of the materialisms, realisms, and naturalisms that seek new engagements with the sciences.” Woods, “Scale Variance and the Concept of Matter,” 2017, 216.

39 The criticism of scale has, since the generalized dissemination of post-structuralist ideas from the 1980s on, largely occurred diffusely and in disciplinary siloes. Most fields did not *explicitly* thematize scale itself, instead discussing structures, levels, or other such ‘domain’ questions that we see as isomorphic to those of scale. A notable exception is in the field of geography, where the critique of received notions of scale was central and explicit element of debates beginning in the 1980s, often centred around questions of globalisation and the organisation within world systems of ‘local’ and ‘global’ distinctions. See Herod, *Scale*; Marston, Jones, and Woodward, “Human Geography Without Scale”; Blakey, “The Politics of Scale Through Rancière”; Springer, “Human Geography Without Hierarchy.”

40 Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, 245.

41 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 11.

42 Horton, 11.

43 Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, 245.

44 Marston, Jones, and Woodward, “Human Geography Without Scale,” 417.

45 Tsing, “On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scales,” 2012.

46 Tsing.

47 Tsing.

48 Marston, Jones, and Woodward, “Human Geography Without Scale,” 422.

both reifies distinctions between scalar domains whilst subsuming them to one “master-scale” analytic of trans scalar-zoom, assuming a smooth sliding operation of “premodern microcosm/macrocosm analogies” to pertain universally across scalar distinctions.⁴⁹ Such a view precludes, in-advance, both the messier, more open-ended relations between scalar domains, as well as the radically disjunctive cuts between them, that critiques of scalar collapse have shown to be “really there” and in need of epistemological justice.

In a feminist context, gender essentialism could be understood as an instance of scalar collapse. We could say that a gender-essentialist scalar collapse has occurred when the multiple scales at which gender operates are reduced (whether completely or “in the last instance”) to one irreducible scale that is taken to *determinatively* constitute the “true” reality of gender. Biological sex essentialism posits, and reduces sexuate multiplicity to, a rigid, immutable scale of the biological,⁵⁰ collapsing all other relata of gender (either entirely deterministically or “in the last instance”) to this essential scale, whose internal attributes such as a dimorphic binary notion of sex are made the irreducible ground of all others. Such essentialism is a paradigmatic instance of scalar collapse. Conversely, a multi-scalar technofeminist understanding of gender would be multi-dimensional and intersectional,⁵¹ comprising dynamic relationships across scales including but not limited to identity, morphology, comportment and bodily style, acoustics, organology, and desire.⁵² These scales of operation of gender are not “neatly” ordered, and no one scale supervenes upon all the others: they are complexly organised, relating but doing so in indeterminate and multi-functional ways.

49 Woods, “Scale Variance and the Concept of Matter,” 2017, 203.

50 We note also, that *within* the scale of the biological, the biological gender essentialist reduces the multiplicity of sex to a dimorphism. This is a scalar collapse of the multiplicity of sex biology to the scale of dimorphic gametes. See Fausto-Sterling, *Myths of Gender: Biological Theories About Women and Men*.

51 The question of intersectionality and scale would require an article in itself. As Nash has claimed, today feminism is often, in both positive and perjorative ways, reduced (or collapsed) to a buzzword-ified notion of ‘intersectionality’. We suggest that intersectionality could, in its rich and varied history, be considered the first attempt at multi-scalar feminism. However, intersectionality also has the potential to be used as a tool to reduce complexly topologically ordered differences to a plane of equivalence. See Nash, *Black Feminism Reimagined*.

52 We will later examine Irigaray’s notion of sexuate difference, which does not collapse all the myriad aspects of sexuation to the mediation of ‘gender’. We have, however, used this term here in accordance with the current convention.

Between Romantic Reduction and Rationalist Redux: Two Forms of Technofeminist Scalar Collapse

We propose that a multi-scalar feminism requires a theoretical apparatus which avoids essentialising scalar collapse not only with respect to the gendered subject, but which rigorously avoids such collapse in all aspects of its theoretical approach. We identify two main tendencies within contemporary technofeminist attempts to mediate anti-essentialist and realist commitments. On the one hand stands the vitalist monism of new materialism, and on the other, the more nascent provocations put forward by xenofeminism. In the following section, we examine each tendency's relationship to scalar collapse. While both seek to avoid the "geometric" scalar collapse of traditional humanism, without a sufficient figure of multi-scalar difference, they risk a recapitulation to those same errors they critique.

Emerging largely as a response to the linguistic enclosure⁵³ of poststructuralism, the overlapping currents of what has been termed "new materialism" seek to break free from the strictures of the subject and develop a posthumanist materialist monism. New materialism's realism emerges from its problematisation of poststructuralism's enclosure within the scales of language and the social, as it insists on the reality of the world beyond its subjective mediation;⁵⁴ yet it also retains the post-structuralist critique of hierarchy and of notions of immutable, foundational structure or identity. Instead of locating ultimate agency in the human subject's capacity for reason, new materialism distributes agency among a relational-ontological monism of matter, variously conceived as an a-scalar circuit of ongoing, agential, performative "intra-actions,"⁵⁵ actor-networks,⁵⁶ mutations,⁵⁷ vibrant assemblages,⁵⁸ or queer relationalities,⁵⁹ mingling within a singular field or plane. Bodies and languages, humans and animals, and the social and technological are all placed within an equal ontological register. New Materialism thus tends to view any ordering, structure, or boundary-making within this singular ontological plane as, at most, a contingent arrangement within a fundamentally whole and immanent material universe. The assertion of a flat ontology constitutes a refusal of humanism's cleavage and ordering of nature into a great chain of being, or other "violent" hierarchies that legitimate innumerable forms of exploitation and oppression.⁶⁰ Undermining the human/animal and subject/object distinctions allows it to dissolve, in theory, all other binary, hierarchical distinctions. For Jane Bennett (with Michel Serres), in this

53 Barad, "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter."

54 Barad, 802.

55 Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*.

56 Blakey, "The Politics of Scale Through Rancière."

57 Parisi, *Abstract Sex: Philosophy, Bio-Technology and the Mutations of Desire*.

58 Bennett, *Vibrant Matter*.

59 Morton, "Guest Column: Queer Ecology."

60 Braunmühl, "Beyond Hierarchical Oppositions: A Feminist Critique of Karen Barad's Agential Realism." the article argues that Karen Barad's (2003, 2007

emergence-friendly monism, the “same vortical logic holds across different scales of size, time, and complexity.”⁶¹ By flattening ontology into monistic, vital matter, new materialism offers a justification for the ultimate equality of all things, opening new relational avenues for thought and action. There are no longer essences but rather multiply emergent, contingent entities in constant flux. Boundaries and borders are therefore reconceived not as the result of discrete, determining essences, but messy, contingent, co-evolving relations.

We claim that this monism of a fundamental, a-scalar relationality enclosed within the singular domain of “matter” functions as a form of scalar collapse. There have been multiple criticisms of this monist materialism that generally take issue with its ultimately *reductionist* character. Typical among them is Rosenberg’s claim that the “molecular” quality of new materialist material agency collapses and reduces all other differences (historical, sexual, economic, etc) to one abstract, ontological reality.⁶² In another vein, N. Katherine Hayles has criticised the new materialist tendency towards a one-sided Deleuzianism of universal trans-scalar vitality as a “focus almost entirely on the side ‘facing the body without organs’, eradicating the... forces of cohesion, encapsulation, and level-specific dynamics characteristic of living beings.”⁶³ Many other scholars⁶⁴ have made similar criticisms: generically, they identify ways that the ontological flattening of distinctions and relations to a single immanent scale (i.e. matter, objects, actants) renders important differences unthinkable.⁶⁵ New materialism’s flight from the old metaphysical paradigm of geometrical scale, from a hierarchy of neat, precision nested scalar stacks, therefore ends in a kind of scepticism with respect to scalar differences. This scalar collapse threatens the integrity of new materialism’s realism, as its monism sits in material tension with the real differences between scale domains found to be operational in science and technics. As Derek Woods has argued, “new materialism risks reiterating the same reductionism that it consistently works to avoid, privileging matter as the foundational scale or substance.”⁶⁶ Such scale-scepticism cannot countenance the real, qualitative differences between operations within scalar domains, returning to an image of scale as subsumable to measure. Zachary Horton articulates the scalar realities such a view neglects, writing that:

The scales of the universe simply are not continuous: each is marked by different processes,

61 In Woods, “Scale Variance and the Concept of Matter,” 2017, 217.

62 Rosenberg, “The Molecularization of Sexuality : On Some Primitivisms of the Present.”

63 Hayles, “The Cognitive Nonconscious and the New Materialisms,” 2017, 185–86.

64 A significant example here is Wolfendale, *Object-Oriented Philosophy: The Noumenon’s New Clothes*.

65 Boysen, “The Embarrassment of Being Human: A Critique of New Materialism and Object-Oriented Ontology”; Durham Peters, *The Marvelous Clouds: Toward a Philosophy of Elemental Media*, 30.

66 Woods, “Scale Variance and the Concept of Matter,” 2017, 200.

dependencies, and interactions. These are irreducible scalar dynamics, brought into focus by a consideration of the medial nature and inherent limitations of any attempt to bridge scale.⁶⁷

Accordingly, Anna Tsing, though she is often identified as a new materialist, implicitly recognises the key scalar contradiction in the new materialist position—that the coherence and function of a given scale depends in a partial but basic way on its *irreducibility* to any other, even and especially to any “trans-scalar” process.⁶⁸ In order to be able to posit the reality of any entity that might be then put into relation, there needs to be a recognition of their fundamental non-equivalence. Ironically, new materialism’s epiphenomenalisation of scale therefore ultimately undermines both new materialism’s realism *and* anti-essentialism.

Xenofeminsm is, conversely, extremely aware and critical of the scalar insufficiencies of new materialist monisms. Drawing on the more “Promethean” technofeminist lineages of Shulamith Firestone and Donna Haraway, as well as the philosophical innovations of “neo-rationalism,”⁶⁹ xenofeminism clearly identifies the problems with reverting to monism as a metaphysical strategy for overcoming the traditional geometrical model of scale, claiming that a-scalar, immanent “material networks” and “relational ecologies” are insufficient to contemporary technofeminist tasks. As xenofeminist thinkers Patricia Reed and AA Cavia write:

A common diagram of our time—the flattened network—where nodal points are connected by edges (lines) mapping a system of inter-relationality, is conceptually impoverished, for it speaks nothing of the quality or genre of those relations.⁷⁰

Shared between xenofeminist thinkers is this appreciation of scalar differences’ necessary role in structural coherence, and that moving beyond an essentialist, geometrical model of scale therefore cannot come at the cost of dissolving scalar difference altogether. For xenofeminists, new materialist monism constitutes a problematic liberal-tending flight from abstract systems-scale structures. What is required, they claim, is a feminism capable of trans-scalar mediation; namely, “collective agents capable of transitioning between multiple levels of political, material and conceptual organization.”⁷¹

67 Horton, “Composing a Cosmic View: Three Alternatives for Thinking Scale in the Anthropocene,” 2017, 55.

68 Tsing, “On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scales,” 2012, 147–48.

69 Trafford and Wolfendale, “Alien Vectors: Accelertionism, Xenofeminism, Inhumanism.”

70 Reed and Cavia, “Site as Procedure as Interaction,” 84.

71 Cuboniks, *The Xenofeminist Manifesto*, 2018.

In failing to realise this multi-scalarity, feminists tie their hands, limiting analysis to contingent arrangements and the scale of the local, whilst disavowing wider multi-scalar “systemic thinking and structural analysis.”⁷² Xenofeminist thinkers broadly consider such refusal of multi or trans-scalar mediation as a flattening that, rather than avoiding the ills of humanism and essentialism, simply reinscribes the “givenness” of nature, and reifies it as total and whole.

Against celebrating a monistic material flux, xenofeminism seeks to revive the positive powers of rational speculation, recently articulating their project as a “defense of reasoning, which allows feminism to work at different scales of complexity.”⁷³ This Promethean embrace of the trans-scalar capacities of reason is the xenofeminist panacea for the nominalism and scepticism that hinder feminism’s multi-scalarity, enabling a path beyond the “correlationist” enclosure of poststructuralism and new materialism. The “xeno” prefix comes from the Greek “xenos,” highlighting both the status of the alien and the foreign, as well as the estrangement at play in the process of abstraction itself.⁷⁴ Xenofeminism promulgates an ontological celebration of alienation, one that seeks to expel the myth of an originary naturalness to which we could return. It therefore situates freedom as requiring *more* alienation, an alienation which affords and impels us toward new worlds.⁷⁵ In the rational practice of sifting what is from what could be, xenofeminism locates the epistemological space from which “the given” can be overcome, and the future remade. Whilst feminisms have long rejected rationalism for its supposed androcentrism, xenofeminists instead argue that the historical monopolisation of the practices of science and rational thought by men does not make reason inherently patriarchal or “phallogocentric” but has merely limited its potential—both women and reason “desire” and therefore must be liberated from androcentrism.⁷⁶ As such, their manifesto makes the chiasmatic provocation that, “feminism must be a rationalism... rationalism must be a feminism.”⁷⁷ However, this notion of reason proffered by xenofeminism is no mere revival of transcendent, theologically grounded accounts. For xenofeminists, reason “is not a supernatural faculty,” but rather “simply a rule-governed activity... the faculty of generating and being bound by rules.”⁷⁸ Drawing on neo-rationalist philosophers, this account figures a “normative rift between nature and culture in terms of autonomy,”⁷⁹ a notion they find

72 Cuboniks, *The Xenofeminist Manifesto*, 2018.

73 Cuboniks, “New Vectors from Xenofeminism,” 2022.

74 Cuboniks, “New Vectors from Xenofeminism,” 2022.

75 Cuboniks, *The Xenofeminist Manifesto*, 2018.

76 Cuboniks.

77 Cuboniks, *The Xenofeminist Manifesto*, 2018.

78 Brassier in Wilson, “Cyborg Anamnesis: #Accelerate’s Feminist Prototypes,” 39. *Known as ‘Black’ at time of publication*.

79 Introduction Trafford and Wolfendale, “Alien Vectors: Accelertionism, Xenofeminism, Inhumanism,” 7.

woven throughout technofeminist history in figures such as Shulamith Firestone, whose speculative vision of a world wherein women are free from the labours and dangers of maternity depends upon a radical uncoupling of the is and the ought, supplemented by technical mediation.⁸⁰ In this vein, Laboria Cuboniks write that:

our normative anti-naturalism has pushed us towards an unflinching ontological naturalism. There is nothing, we claim, that cannot be studied scientifically and manipulated technologically.⁸¹

Nothing is, therefore, “transcendent or protected from the will to know, tinker and hack.”⁸² Importantly, however, xenofeminism’s Promethean anti-naturalism seeks to avoid reviving old humanist nature/culture dualisms, as well as new materialism’s posthumanist scalar impotence, by embracing neo-rationalist *inhumanism*. This inhumanism works to disambiguate the functional core of humanism from the historical and biological contingencies of the human animal and, in doing so, finds that “rational agency can be realised in diverse material substrates and divergent forms of life: humans, animals, extraterrestrials, and machines alike can adopt the role of sapient subjects.”⁸³ For xenofeminism, this inhumanist account of rationality enables them to realise their multi-scalar ambitions: “Reason allows feminism to work across different scales of complexity, from the personal to the abstract.”⁸⁴ This is particularly crucial in relation to phenomena that exceed the scale of the experiential, like climate change, which are composed of complex and interconnected structures of effects and causes, as they “need to be confronted in and as a condition of abstraction if they are to be dealt with adequately.”⁸⁵ Contra new materialism, this transitivity of reason allows xenofeminists to recognise the *relative* autonomy of scales, enabling them to take seriously multi- and macro-scale phenomena.

However, as N. Katherine Hayles writes in her discussion of her similarly “inhuman”⁸⁶ notion of the

80 Firestone, *The Dialectic of Sex*.

81 Cuboniks, *The Xenofeminist Manifesto*, 2018.

82 Cuboniks.

83 This is, of course, “provided they possess the corresponding capacities”. Introduction, Trafford and Wolfendale, “Alien Vectors: Accelerationism, Xenofeminism, Inhumanism,” 7.

84 Cuboniks, “New Vectors from Xenofeminism,” 2022.

85 Cuboniks.

86 While Hayles does not write under the banner of the ‘inhuman’, and she has at other times been more aligned with ‘posthuman’ discourses, we see the approaches she has developed in the last decade as having strong resonances with xenofeminism’s inhuman orientations. This is based on their shared desire to “reassess” the traditional forms and boundaries of the human subject, while not evacuating important points of distinction that inhere in different kinds of cognition and subjective organisation, especially that of rationally ‘discursive’ agents. Hayles, “The Cognitive Nonconscious and the New Materialisms,” 2017.

“nonconscious cognition” or “agency” shared by nonhumans and technical objects, “the capacities and potentials of those agencies are not all the same and should not be treated as if they were interchangeable and equivalent.”⁸⁷ We take the emphasis on such differences to be crucial for a multi-scalar feminism that does not fall into scalar collapse. In identifying rational agency across diverse substrates, xenofeminism risks an epistemological iteration of new materialism’s monism. Much as new materialism makes agency immanent to matter, the gesture of inhumanising reason may in turn make this dispersed reason foundational, recapitulating a hylomorphic account of the active (in) forming of passive matter. As we have heard from Horton, Woods, Tsing, and others, appreciation of real scalar differences—including at the level of their mediation—is crucial. By virtue of the rational instrument of this modulation, we consider xenofeminism to risk a certain variant of scalar collapse that Horton has termed a “trans-scalar zoom.”⁸⁸ Consider xenofeminism’s claim that their approach “is one of constant modulation between different scales of comprehension and intervention—connecting micro, meso and macro levels of complexity, without privileging one scale in particular.”⁸⁹ Whilst this approach clearly attempts to avoid the problem of master-scale collapse (such as that of new materialism’s monism), it also puts forward a vision of scalar domains in which they can be ordered, via rational mediation, into a determinate stack of ordered levels—micro, meso, macro. For Horton, as in traditional humanist paradigms informing the old geometrical accounts of scale, trans-scalar zooms collapse scalar differences “in the process of connecting them.”⁹⁰ This zoom “constructs a particular “shape” for the cosmos, as a networked constellation of scales,” and thereby, crucially, provides “not merely a medial form but a *framework for precharacterizing* the scalar spectrum’s differential potentials for encounter.”⁹¹ This form of collapse is instrumental for a project, archetypally of colonial, capitalist, or patriarchal reason, that seeks to reductively traverse differences, “without the indeterminacy of transformation.”⁹² Such trans-scalar zooms have functioned as a means by which Western technocratic rationality has ordered the world for extraction and domination, whether in plantations,⁹³ Silicon Valley,⁹⁴ or the widespread industrial operations that have precipitated our present ecological crises,⁹⁵ via the reduction of differences to forms of equivalence that enable their assimilation into a given system.

87 Hayles, 183. Compare this to Barad’s ‘agential realism’, which reducing all scales to the supposed scale-universal transativity of the quantum scale.

88 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 89.

89 Cuboniks, “New Vectors from Xenofeminism,” 2022.

90 Horton, “Composing a Cosmic View: Three Alternatives for Thinking Scale in the Anthropocene,” 2017, 136.

91 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 34. Emphasis ours.

92 Tsing, “On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scales,” 2012, 507.

93 Tsing, “On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scales,” 2012.

94 Hanna and Park, “Against Scale: Provocations and Resistances to Scale Thinking.”

95 Latour, “Anti-Zoom.”

In the broader critiques of xenofeminism's rational, multi-scalar ambitions, we identify a latent concern about this problem of trans-scalar collapse. These critiques are often framed as a concern with the way rational thought has often been used, or claimed to be used, to apprehend and order differences for the purposes of exploitation. As Luciana Parisi and Denise Ferreira da Silva argue, xenofeminist recuperations of technical rationalities risk recapitulating the hylomorphic sins of "Promethean colonialisms",⁹⁶ which end up limiting technics to merely "the servo-mechanic labour through which the progress of bio-economic Man can be realized."⁹⁷ Rather than serving as an emancipatory gesture, they suggest that neo-rationalist moves towards the separability of domains via the unity of reason restate the colonial gesture of "forceful apprehension"⁹⁸ par excellence. In embracing alienation via rational abstraction, Xenofeminism reinvents proximity to the forces of heteropatriarchal, colonial, and capitalist scalar collapse in ways that go beyond the forms of recuperations they affirm.⁹⁹ Similarly, Jules Joanne Gleeson raises the concern that the xenofeminist embrace of alienation leads only to its acceleration, not as a vector of emancipation, as they claim, but as "a relational feature of class domination".¹⁰⁰ Annie Goh further argues that xenofeminism's rehabilitation of the universal via an embrace of reason risks the kind of scalar collapse antithetical to recent attempts, via the concept of intersectionality, to recognize "the non-equivocal nature of white and Black women's oppressions".¹⁰¹ These critiques highlight the historical tendency for rational abstraction to *elide* crucial differences, as well as delimiting in advance unethical or oppressive forms of relationality between difference, echoing Horton's claim that the medial form of trans-scalar zoom constitutes a "*framework for precharacterizing the scalar spectrum's differential potentials for encounter.*"¹⁰² These critics claim that xenofeminism's attempt to rehabilitate rationality therefore fails to adequately rehabilitate the *formal* quality of transitive relationality characteristic of colonial and patriarchal domination.

It is important to note that xenofeminists are explicitly aware of the potential dangers of their programme, risks they claim are justified by the urgency of the project to develop multi-scalar feminist capacities.¹⁰³ Toward this, their engagement with non-traditional forms such as the manifesto have allowed them to engage *polemically* with philosophical resources that have, on ethical and political grounds, been broadly taken to be foreclosed to feminism. In response to their critics, xenofeminists

96 Parisi and da Silva, "Black Feminist Tools, Critique, and Techno-Poethics," 5.

97 Parisi and da Silva, "Black Feminist Tools, Critique, and Techno-Poethics," 4.

98 Parisi and da Silva, "Black Feminist Tools, Critique, and Techno-Poethics," 10.

99 Gleeson, "Breakthroughs & Bait: On Xenofeminism & Alienation."

100 Gleeson.

101 Goh, "Appropriating the Alien: A Critique of Xenofeminism."

102 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021.

103 Cuboniks, "New Vectors from Xenofeminism," 2022; Cuboniks, *The Xenofeminist Manifesto*, 2018.

claim that what is, in fact, required, is more reason, not less: as they state, “the residues of reason [need] to be *reasoned* with.”¹⁰⁴ They claim reason ought be revived as a feminist tool *precisely* as a means of identifying and responding to the non-equivalences that constitute the multiple of political solidarity. They find nothing to be less rational, for example, than inflating the particular “cosmic vision” of the Western European to the status of universal rationality, a move which confuses rationalism and provincialism.¹⁰⁵ Xenofeminists argue that it is precisely the resources of alienation, abstraction, and reason which are necessary for mapping the very specificities their critics demand (i.e., of race, sexuality, class, and more). As they claim, “reasoned abstraction is, in itself, required for imagining one’s material situatedness.”¹⁰⁶ Lucca Fraser writes that it is rational abstraction which allows us to differentiate between bloated particularities constitutive of false universals, such as “all lives matter,” for example, and “real,” multi-scalar visions of universality, such as intersectionality.¹⁰⁷ Against poststructuralist and new materialist localist accounts, they claim reason allows an understanding of scalar differences not as epistemically siloed, but intelligible *as different* via a rational “synthesis between the specific and the global.”¹⁰⁸

However, the critiques of xenofeminism’s rationalism indicate that rather than affording genuine *relation* between the differences identified by reasoned abstractions, this synthesis of local and global constituting xenofeminism’s trans-scalar rational mediation may continue to rely on an opposition between the passive materiality of “given” differences and the active, alienating abstractions of (re) forming, remediating rational activity. Though inhumanist, the neorationalist account of reason that xenofeminism draws upon nevertheless risks this kind of trans-scalar collapse, if not to the scale of the human reasoner, then to the scale of rationality as an inhuman worldly force. In so doing, they risk recapitulating humanist, hylomorphic “rational” scalar hierarchies, or, in Horton’s words, a “*framework for precharacterizing* the scalar spectrum’s differential potentials for encounter.”¹⁰⁹ The potential problem with such a form of reason is that it places its form of transitivity *before and over* the differences it seeks to mediate, where a reification of self and other, subject and object is prefigured *in advance* by this form of reason and its attendant notion of difference. As Parisi and da Silva argue, the history of the Modern subject that has constituted our understanding of reason has done so by forcing “Difference and otherness... into cultural hierarchies, and [figuring] the relation between European and non-European

104 Cuboniks, “New Vectors from Xenofeminism,” 2022. Our emphasis.

105 Bryant et al., *Continental Materialism and Realism*.

106 Cuboniks, “New Vectors from Xenofeminism,” 2022.

107 Cuboniks.

108 Cuboniks.

109 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 34.

cultures... as a relation between ‘subject’ and ‘object.’”¹¹⁰ Xenofeminists do note, however, that there are difficulties attending their figuring of scalar difference via rational abstraction. As they claim, “xenofeminism remains committed to [the] important intersection between what is known, how that knowledge is potentially put to use, and the crucial dimension of narration for politicising how reason is instrumentalised in relevant and equitable ways.”¹¹¹

Beyond this question of the *content* of knowledge and its narrativisation, we wish to ask whether their notion of reason does, in fact, fail to rehabilitate the scale of the unitary subject—inhuman or otherwise—as the ground of knowing, and with it the subject/object schema which *formally* reproduces the alien “other.” Though xenofeminism has claimed this figure as an emancipatory one, the reproduction of this alien other through the formal schemata of reason—and its attendant trans-scalar zoom form of scalar collapse—threatens to merely reify the alterity of those whom multi-scalar systems like capital and climate affect most brutally. As an opening toward encountering this problematic of a rational but decentred subject, xenofeminism has recently posed the following series of open questions:

From what scale is situatedness mapped? From the scale of a singular human in the world, or from the scale of humanness as such? Do we have to choose scales? When the human is decentred at the planetary scale, can that abstract schematic work upon our understanding of positioning at a personal scale? ¹¹²

These generative scalar questions are of vital importance, but they remain somewhat unanswered from within the xenofeminist account of multi-scalarity. This returns us to the question of scalar difference: if we map differences *within* scale but subordinate them to a single *form* of differentiation (that is, rationality), then this mapping has the potential to reduce any situation to its coordinate system, as the critics of xenofeminism fear. The crucial question regarding an account of scale, therefore, is to do with the *figures of difference that constitute the mediations of rational activity*, figures of difference that are the product of one’s account of the reasoning subject. As we have seen, the challenge for

110 Parisi and da Silva, “Black Feminist Tools, Critique, and Techno-Poethics.” This problematic is also, of course, one of the animating concerns of much continental feminist philosophy since de Beauvoir.

111 Cuboniks, “New Vectors from Xenofeminism,” 2022.

112 Cuboniks. Here Cuboniks reference Haraway’s seminal *Situated Knowledges*, which proposes a feminist epistemology for overcoming ‘god’s-eye-trick’ of impartial knowledge making without abandoning the notion of objectivity. The possibility of a situated epistemology that nevertheless is able to apprehend and content with broader contexts and structural phenomena is a crucial issue for what we gesture toward here as multi-scalar feminism. Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective (1988).”

xenofeminism remains how to revive the multi-scalar capacities of rationalism without also bringing along the trans-scalar collapse of an epistemological framework that subjugates differences to its own fundamental transitivity, threatening a recapitulation of the hylomorphic regime of instrumental reason. We therefore ask: what kind of difference is necessary to square the circle of a realist and anti-essentialist account of scale, and thereby of technics; one that does not collapse scalar difference to a mere epiphenomenon of a fundamental scale of matter, but appreciates the reality of scalar differences; one that also resists grounding itself by implication in the historically hylomorphic, unitary subject of instrumental and technocratic projects; and, one that is capable of both *mediating* scales whilst appreciating the irreducibility of their difference?

Here we find ourselves in the territory of fundamental philosophical problems. Since Kant's claim in the *Critique of Pure Reason* that philosophy's greatest "scandal" was its inability to have yet provided evidence, beyond all idealist temptation, of the existence of the world,¹¹³ philosophy has, particularly within the continental tradition, been occupied with the project of overcoming the fundamental opposition between subject and object. Whilst the rationalist pathway beyond this opposition was forged by Hegel, encompassed in his dictum, "What is real is rational, and what is rational is real,"¹¹⁴ there remain alternatives to this overcoming that may inhere important resources for the problem of thinking scalar difference. As claimed by Deleuze, the "major" post-Kantian tradition epitomised by Hegel "found its ground in a principle of identity."¹¹⁵ In order to develop new ways of understanding difference which do not begin from such a ground, Deleuze collates a "minor" philosophical tradition in which he finds very different solutions to the Kantian problem to those from Hegel.¹¹⁶ Whilst we are in no way able to develop a discussion here of Hegel's system of absolute idealism *vis a vis* our concerns with scalar difference and collapse, and though we do not directly address Deleuze on this matter himself, we note that, through figures such as Deleuze, the problems we have gestured toward concerning rationalist idealism and difference have already been raised. For the remainder of this article, we will, in the spirit of xenofeminist experiments in conceptual bootstrapping, search for alternative figures of difference that might afford an understanding of scalar difference and transitivity that do not err so close to proceeding from a unitary ground of identity, and its attendant problem of the subject, nor to recapitulating hylomorphic schemas.

113 Kant, *Critique of Pure Reason*.

114 Hegel, *Hegel's Philosophy of Right*. Preface. We acknowledge that there have been multiple translations of this passage.

115 Smith, "Deleuze, Kant, and the Theory of Immanent Ideas," 44.

116 Smith, "Deleuze, Kant, and the Theory of Immanent Ideas."

“At Least Two”: Individuation and Ontogenetic Difference in the Theorisation of Scale

As we have seen, the two technofeminist attempts at realist antiessentialism we have examined above—both that of new materialism and xenofeminism—risk recapitulating scalar collapse by subordinating scalar differences, in the last instance, to an immanent principle (matter) or transitive logic (reason). We have claimed that xenofeminism presents a more promising avenue for achieving a multi-scalar theoretical apparatus as its feminist revival of rational mediation explicitly seeks to thematize the importance of transitivity across scalar difference, *pace* new materialism. However, xenofeminism still risks reducing this transitive logic of reason *qua* mediating scalar principle to a determining ground which threatens to undermine the multi-scalarity it purports to afford. Put in terms of attempts to build a multi-scalar technofeminism, we have arrived at the problem of how to understand scales neither as reducible to one ontological plane, nor as geometrically stacked, *absolutely* transitively orderable kinds. Without a clear articulation of the *kind* of difference that would remain unsubordinated to such transitivity, that is, a more robust way of articulating *what scalar difference is*, and what kind of difference *secures its plurality*, this form of trans-scalar mediation risks collapse. As a gestural, prolegomenous response to these questions, we now explore two philosophical resources for thinking this kind of difference: Gilbert Simondon’s philosophy of individuation and Luce Irigaray’s philosophy of sexuate difference. The rest of our paper will sketch a synthesis of these philosophies of difference with recent theoretical work on the concept of scale, toward developing a provisional account of a truly multi-scalar scalar feminist theoretical apparatus.

Within contemporary theorisations of scale, we find a generalised if implicit consensus that scalar difference cannot be thought as metaphysically unifiable within a single immanent or transitive frame. Where the traditional geometric conceptions of scale had been critiqued for their naturalisation of certain entities or relations, we find that the most recent theorisations of scale works to overcome scalar collapse by reorienting their framework to consider scale, and scalar difference, as a *fundamental condition* rather than as given or merely constructed. This recent work in scale theory consistently points towards two necessary elements of scalar difference, which we interpret as a question of *individuation*:

(1) Scalar difference is most adequately thought as something primary, not reducible to hierarchies of being or ways of knowing. That is, scales “themselves” are not strictly ontological or epistemological, but both, because scalar difference forms part of the necessary conditions for entities to emerge as identifiable, coherent individuals.

(2) This individuating function of scale depends upon a *more basic difference*: an irreducible

ontogenetic disparation or rift. In this literature, this kind of difference is often characterised as “at least two.”

Given that the problem of scalar collapse has consistently illustrated the essentialism of demarcating a set of entities as being *in-advance* scaled in some way, then scale—insofar as it is a real property of material relation and thought that we cannot simply do away with—must be understood as a *fundamental condition*. As Horton and others contend, if scale is a “primary form of difference,”¹¹⁷ but one that cannot be reduced to the flat or universally transitive differentiation of matter or reason, then it must necessarily occur as an aspect of the genesis of particular differences themselves.

These recent theories of scale require a philosophical apparatus to support this “ontogenetic” function, which we find in Gilbert Simondon’s philosophy of individuation. The crucial intervention made by Simondon’s project is to understand individual entities not as already-given individuals, but through their *conditions of individuation*. By reversing the analytical priority of individuated entities and their conditions of individuation, Simondon inverts the relation of identity and difference within the tradition of metaphysics. As he writes in his magnum opus, *Individuation in Light of Notions of Form and Information*:

Instead of supposing substances so as to account for individuation, we have chosen to take the different regimes of individuation as the basis of various domains, such as matter, life, mind, and society. The separation, layering, and relations of these domains appear as aspects of individuation according to its different modalities¹¹⁸

Here, different scales—matter, life, mind, society—exist as regimes of individuation and modes of mediation in which certain entities cohere, but not as a set of absolute determinations or essential substances. While Simondon himself does not use the language of scale (he generally speaks instead of “regimes of individuation,”¹¹⁹ “milieus,”¹²⁰ or “orders of magnitude”¹²¹ each of which captures different scalar resonances), we deploy Simondon’s account of individuation to understand what scale theorists have identified as the “primary”¹²² elements of scale.

117 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 143.

118 Simondon, *Individuation in Light of Notions of Form and Information*, 12.

119 Simondon, 12.

120 Simondon, 51.

121 Simondon, 32.

122 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 4.

Zachary Horton, Joshua DiCaglio, and others increasingly frame scale as a kind of *resolution*, a non-trivial parsing of disparities that cohere into a kind of legible frame. Horton expresses this perhaps most neatly when he claims scale ought be understood as “a singular resolution of ontological difference between two surfaces.”¹²³ Thus, scale exists *within* the individuation process, where an incompatible tension, which Simondon terms “disparation,” becomes organized into resolvable differences within coherent milieus: “we can understand scale as a form of mediation that paradoxically engages fundamental scalar alterity as negotiated surface differentials but also produces certain milieus based upon scalar stabilizations.”¹²⁴ Scale is, by virtue of this individuating character, neither merely epistemological nor ontological, but exists at the intersection of the two. It is “beyond” but *productive* of measure,¹²⁵ never “exhaustive”¹²⁶ but still more than “mere epistemology,”¹²⁷ “fully material and fully discursive at the same time.”¹²⁸ As William Wimsatt notes, this gives scale an “almost Kantian flavor [sic],”¹²⁹ though one that points to the same aporia of transcendental thought that, as Alberto Toscano shows, Kant was led himself in his later work: towards that of ontogenesis.¹³⁰ We thus consider Simondon’s paradigm of individuation to offer an important bridging of realism and anti-essentialism, one which might account for multi-scalarity without collapsing all differentiation to one fundamental scalar principle.

Both Simondon’s account of individuation and contemporary theorisations of scale point towards a more fundamental “real” that is not one, an irreducible difference or disparation (in Simondon’s terms), that gives individuation its impulse. While scale appears to have an important role within individuation, serving as the boundarising and stabilising functions of order and milieu that act as the limit-conditions of individuals, for Simondon, this relies on and requires an ontogenetic, real difference that comprises, in turn, first philosophy itself:

Veritable first philosophy is not that of the subject, nor that of the object, nor that of a God or Nature searched for according to a principle of transcendence or immanence, but that of a real anterior to individuation, a real that cannot be sought in the objectivated object or in the subjectivated subject but at the limit between the individual and what remains outside it, i.e. according to a mediation suspended between transcendence and immanence¹³¹

123 Horton, 49.

124 Horton, 25.

125 Woods, “Scale Variance and the Concept of Matter,” 2017, 207.

126 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 135.

127 Wilson, *Physics Avoidance: Essays in Conceptual Strategy*, 2017, 220.

128 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 47.

129 Wimsatt, *Re-Engineering Philosophy for Limited Beings: Piecewise Approximations of Reality*, 2007, 204.

130 Toscano, *The Theatre of Production: Philosophy and Individuation between Kant and Deleuze*, 23.

131 Simondon, *Individuation in Light of Notions of Form and Information*, 300.

Simondon's argument here mirrors our earlier critiques of new materialism and Xenofeminism: one cannot find the principle of scalar differentiation via a monism of matter nor a universalism of reason, as this engages in "substantializing both terms after having separated them."¹³² What is required to avoid such substantialisation, then, is to reverse our analytical priority, and *begin* with a notion of scalar difference itself, "rather than to enumerate it as an attribute of an already unified subject or object."¹³³ To grasp scale in its plurality and irreducibility, then, we require some *more fundamental but non-identifiable form of difference* that is not expressible in a single, preexisting unity. Both Simondon and scale theory recognise the necessity of this fundamental kind of difference, transcendental to individuation—indeed, they continually express it in terms of a basic ontogenetic difference of "at least two." As Derek Woods writes: "scale variance depends on difference and is more than a question of measurement: you need *at least two* scales to get started."¹³⁴ As Joshua DiCaglio writes, a synthesis of perspective is "only rendered scalar if within it is buried the reference to two."¹³⁵ Crucially, for Simondon, a fundamental (for him, informational) aspect of individuation is that it:

is never relative to a single and homogenous reality but to two orders in a state of *disparation*: information, whether this be at the level of tropistic unity or at the level of the transindividual, is never deposited in a form that is able to be given; it is the tension between two disparate reals, it is *the signification that will emerge when an operation of individuation will discover the dimension according to which two disparate reals can become a system.*¹³⁶

The ontogenetic impulse, then, occurs when some fundamental disparity or tension in the real reaches a point of incompatibility, a "disparation"¹³⁷ that must be resolved by becoming topologically structured and temporally operative.¹³⁸ Individuation's "dephasing" is prompted by this ontogenetic "non-relation" of disparation, defining the energetic and material tensions between incompatible tendencies within being.¹³⁹ Such incompatible tendencies, then, index the basic "at least two" form of difference that Woods points to with "ontological rifts"¹⁴⁰ and that Horton identifies when he defines scale as the negotiation of a basic difference between a two that is negotiated and processual but "nonetheless

132 Simondon, 300.

133 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 7.

134 Woods, "Scale Variance and the Concept of Matter," 2017, 201. (Italics ours).

135 DiCaglio, *Scale Theory: A Nondisciplinary Inquiry*, 2021, 35.

136 Simondon, *Individuation in Light of Notions of Form and Information*, 11.

137 Simondon, 226.

138 Seely, "Individuation, Sexuation, Technicity," 25.

139 Toscano, *The Theatre of Production: Philosophy and Individuation between Kant and Deleuze*, 140.

140 Woods, "Scale Variance and the Concept of Matter," 2017, 207.

fully real.”¹⁴¹ What both xenofeminism and new materialism fail to index, then, is this twoness, this basic way that—whether it is expressed as material intra-action¹⁴² or as dialectical rationality¹⁴³—any individuating principle must presuppose an irreducible, ontogenetic difference of at least two to avoid scalar collapse. This leaves us with a question for which neither Simondon nor contemporary scale theorists have sufficient answer: what is the *form* of this difference, such that it does not collapse back into metaphysical, essentialising oneness? It is this question that leads us to an engagement with the philosophy of Luce Irigaray.

Irigaray’s Concept of Sexuate Difference: An Ontogenetic “At Least Two”

This notion of difference understood as “at least two” is familiar to any reader of Luce Irigaray’s philosophy of sexuate difference. Sexuate difference¹⁴⁴ is the central concept of her oeuvre, one that cuts across both the domains of the subjective and objective, fundamentally reformulating their relationship in a philosophically unique way. As Rebecca Hill claims, Irigaray’s concept of sexuate difference is fundamentally a concept of *difference as such*,¹⁴⁵ a form or logic of difference that would be irreducible to one singular ground or referent of “the Same.”¹⁴⁶ Irigaray is relevant to us here because it is this concept of difference that we suggest is required for a truly multi-scalar account—a difference that cannot be located within a singular domain, schema, or frame of reference, nor mediated by a single logic or framework of transitivity. Yet, neither does Irigaray take this irreducible difference to be absolutely unmediable—for Irigaray, mediation across real difference is possible and necessary; however, it requires a different *form of mediation* than the one assumed by theories that do not think difference *qua* sexuate “at least two.” Toward this different form of mediation, Irigaray’s project fundamentally seeks to refashion and unseat the dominant logic of difference in the Western tradition, which she takes to

141 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 47.

142 Hayles identifies how, even in Karan Barad’s account of immanent materiality as intra-action, this presupposes the already-present disparation of at least two agents. Hayles, “The Cognitive Nonconscious and the New Materialisms,” 2017, 184.

143 As we will go on to show, Irigaray’s critique of reason claims that it, too, presupposes at least two sexually different subject.

144 “Sexuate difference” is the term preferred by Irigaray in her later work to avoid a reductoin of her concept of ‘sexual difference’ to sexuality or biology. See Rine, “Maria Redux”; For a longer discussion of this notion of “the sexuate” and its relationship to the more common feminist terminology of sex/gender, see Sares and Rawlinson, “Introduction: Irigaray and the Question of Sexual Difference,” 3–4.

145 Hill, “The Multiple Readings of Irigaray’s Concept of Sexual Difference.” Our emphasis.

146 Irigaray, *Speculum of the Other Woman*, 303.

be a phallogocentric A/not-A logic of difference.¹⁴⁷ For Irigaray, the predominance of this logic has not produced, but has rather emerged *from*, the historically dominant understanding of sexual difference in which the feminine has been defined as the negation of the masculine—as such, there are not (at least two) *different* sexes, but one.¹⁴⁸ Where de Beauvoir claims that man is both the “subject” and the unmarked universal whilst woman is “other,” for Irigaray, this unmarked universal requires that both the subject *and* its paradigmatic other are enclosed within a signifying economy, and corresponding form of specula(riza)tion,¹⁴⁹ which constitutively negate sexuate difference. Against this tradition, instead of the unitary “subject” acting as the ground of knowledge of the “object,” Irigaray locates this very division in the “at least two” difference of sexuate difference. Both the subject¹⁵⁰ and nature¹⁵¹ are, for Irigaray, “not one”, but “at least two.” This move corrects for the solipsism of the subject of reason, for whom the “object” of philosophical science is but a reflection of the (masculine) auto-referential subject—a subject who cannot escape the “autological circle of the transcendental horizon of a single subject”.¹⁵²

Across Irigaray’s considerable oeuvre she describes sexuate difference in myriad ways, including the claims that it is ontological,¹⁵³ natural,¹⁵⁴ irreducible,¹⁵⁵ real,¹⁵⁶ universal,¹⁵⁷ and a fundamental condition

147 Hill, *The Interval: Relation and Becoming in Irigaray, Aristotle, and Bergson*. Whilst Irigaray does not thematise asexuate difference explicitly through the terminology of ‘A/not-A’ logical binaries in her work, rather using the terms ‘asexuate’ or ‘phallogocentric/phallogomorphic/phallogotropic’ to describe this form of difference, we have chosen to use Hill’s reading of Irigaray’s critique of difference via Aristotle as it pertains to the notion of hylomorphism, one Irigaray is concerned with throughout her oeuvre, and which is also a key focus of critique within Simondon’s philosophy of individuation. Following and going beyond Irigaray’s engagements with Aristotle, Hill shows that Aristotle’s metaphysical categories and their relations are themselves sexed, in that they bear determinate relations to his theory of sexual reproduction. Further, his metaphorisations of matter, form, and privation show that his well-known subordination of difference to identity is based in an androcentric and misogynistic conception of femininity and maternity. Irigaray will read this subordination throughout the history of philosophy and psychoanalysis as necessarily coupled with this ‘phallogocentric’ form of negation of disavowal of the feminine *qua* different *subject*, not merely as passive other to his active self nor as merely equivalent.

148 Irigaray, *This Sex Which Is Not One*.

149 Irigaray, *Speculum of the Other Woman*.

150 Irigaray, *I Love to You: Sketch for a Felicity Within History*, 107.

151 Irigaray, 35.

152 Irigaray, *Sharing The World*, ix.

153 Irigaray and Lotringer, *Why Different?*, 71.

154 Irigaray, *I Love to You: Sketch for a Felicity Within History*, 35.

155 Irigaray, *Sexes and Genealogies*, 132.

156 Irigaray, *Conversations*, 2.

157 Irigaray, *I Love to You: Sketch for a Felicity Within History*, 35.

of all life.¹⁵⁸ Irigaray also describes sexuate difference in terms of morphological,¹⁵⁹ psychic,¹⁶⁰ and discursive domains,¹⁶¹ as well as pertaining to (at least two) different sexuate bodily rhythms.¹⁶² These claims about sexuate difference have long been said to evoke the spectre of gender essentialism.¹⁶³ Indeed, if sexuate difference was shown to indeed be essentialist, it would fall into what we have described earlier as a basic form of scalar collapse. We reject this interpretation, though we acknowledge the danger that grounding a notion of difference in the sexuate could be *taken* to indicate a crude essentialism. We rather claim that far from positing a politically regressive and philosophically naïve essentialism, Irigaray's notion of sexuate difference fundamentally *undermines* such essentialism.¹⁶⁴ Whilst there are many ways to approach Irigaray's critique of substance metaphysics and the logic of essence,¹⁶⁵ we do so by turning to the work of Stephen Seely, in which he reads sexuate difference as *ontogenetic*. According to Seely, when Irigaray claims that "the natural is at least two: masculine and feminine,"¹⁶⁶ this "at least two" ought be understood:

as the common nature *from which* human individuation proceeds and not, as is often assumed, attempting to *distribute* every already-existing human individual (whose individuation would be taken for granted) into two preexisting universal categories.¹⁶⁷

Rather than indicating a determinable, predicable difference existing in already-individuated phenomena (i.e., dimorphic bodily sex differences), Irigaray's notion of sexuate difference requires us

158 Irigaray, 35.

159 Irigaray, *To Speak Is Never Neutral*, 249; Irigaray, *An Ethics of Sexual Difference*, 11; Irigaray, *Sexes and Genealogies*, 71.

160 Irigaray, *An Ethics of Sexual Difference*, 125; Irigaray, Bostic, and Pluháček, *The Way of Love*, 130; Irigaray, *To Be Born*, 14; Irigaray, *This Sex Which Is Not One*, 110.

161 Irigaray, *This Sex Which Is Not One*, 68–86; Irigaray, *Speculum of the Other Woman*, 56; Irigaray, *Conversations*, 9.

162 Irigaray, *I Love to You: Sketch for a Felicity Within History*, 99; Irigaray, *Sexes and Genealogies*, 71; Irigaray, *An Ethics of Sexual Difference*, 139.

163 Schor, "This Essentialism Which Is Not One."

164 As Whitford has claimed, Irigaray's call to refigure our logic of difference itself would be fatalistically nullified if subjectivity were simply predetermined by the body, and the 'ought' of gendered expression reduced to some assumed corporeal 'is'. Whitford, *Philosophy in the Feminine*, 106.

165 Notable examples include Grosz, *Becoming Undone*; ideas which are developed, though not explicitly in relation to Irigaray, in Grosz, *The Incorporeal*; See also Hill, *The Interval: Relation and Becoming in Irigaray, Aristotle, and Bergson*; and Stone, *Luce Irigaray and the Philosophy of Sexual Difference*.

166 Irigaray, *I Love to You: Sketch for a Felicity Within History*, 35.

167 Seely, "One, Two, Many? Sexual Difference and the Problem of Universals," 67. Emphasis author's. Here Seely engages Irigaray with Don Scotus to demonstrate the radicality of Irigaray's claims about the universal and realism.

to make the Simondonian move and *invert our ontological priority*. Simondon claims that western thought has “ontologically privileged” the individual,¹⁶⁸ and so have erroneously examined individuation on the basis of an *already constituted* individual. This account mirrors Irigaray’s claims about the unitary subject, whose origin is posited in a singular, unitary ground—an already individuated, and therefore asexually conceived, singularity. Like the theorists of scale we have mentioned above, Seely draws on the resources of Simondon to understand sexuate difference not in terms of two pre-given essences—which we would name scalar collapse and, according to Irigaray’s critique of metaphysics, would require positing a unitary, asexuate/masculine subject—but rather as part of the conditions of individuation as such.

The concept of a “natural body” or “correct” form of sexuate becoming would therefore partake of the form of metaphysical representation that performs a scalar collapse to a transcendent, ideal “nature,” one that is “differentiated” in relation to a phallogocentric economy of (a)sexuation.¹⁶⁹ This single-referent-system is precisely what Irigaray’s philosophy works to dismantle. Insofar as at-least-two difference comprises a feature of individuation, it therefore cannot be a difference that is already “individuated” with respect to what it produces. Difference at the level of ontogenesis must be *irreducibly* at least two. As Grosz indicates, “There may be more than two sexes, but life’s proliferation of variation requires at least two, for the increasing intensification of living differences occurs primarily through sexual difference.”¹⁷⁰ As such, this “at least two” cannot be a “given,” “predetermined”—and ultimately metaphysical—difference.¹⁷¹ The irreducible, real, and ontological element of sexuate difference rather indexes what Simondon (and theorists of scale) describe as the necessary condition for *any* subsequent

168 Seely elaborates: “either as a merger of ‘matter’ and ‘form’ (in hylomorphism) or as eternal substance (in atomism).” Seely, “Individuation, Sexuation, Technicity,” 25.

169 Irigaray has made trans-exclusionary claims in the past, and this is where we insist on reading Irigaray *against* herself. See Murtagh for a reading of the ways in which Irigaray’s philosophy can be used to affirm trans “being” over and against the logics of difference which preside over not only sexism, but transphobia as well. On our reading, the meaning of ‘sexuate difference’ is not normative in the sense of what Talia Mae Bettcher describes as the “natural attitude” (normatively heterosexist, cisgendered, eurocentric etc.); it is, rather, the condition of the emergence of a *different* form of mediating nature, one that would refigure our normative and descriptive notions of ‘the natural’. Though it is not possible to do justice to these claims here, we would hope that the form of difference and mediation we gesture toward would open onto the “new kinds of self [and] new modalities of intimacy” Bettcher claims trans lives urgently require to overcome transphobic culture. Murtagh, “An Onto-Ethics of Transsexual Difference”; Bettcher, “Full-Frontal Morality: The Naked Truth about Gender.”

170 Grosz, “Foreward,” x.

171 As Simondon writes, a disparation pair, understood in terms of the ontogenesis of some resolvable scale, would “not be a predetermined element but a problem to be resolved, a pair of two distinguished and rejoined elements in a relation of disparation.” Simondon, *Individuation in Light of Notions of Form and Information*, 229.

genericity to (in)form and (trans)individuate: an irreducible “disparation” of at-least-two. Far from being a notion of difference and identity collapsible into an essence, sexuate difference thought through individuation shows that “essence” would itself be not-one.

However, from the perspective of xenofeminism, wouldn't the notion of Irigaray's “at least two” *qua* irreducible sexuate difference seem to impose a limit, in advance, on the transitivity and therefore transformative powers of reason, which xenofeminists have claimed is the very possibility of multi-scalar mediation? As she claims, “I am not the whole... I am not simply a subject, I belong to a gender. I am objectively limited by this belonging.”¹⁷² Recall that for xenofeminism, it is fundamentally conservative to stake claim to “given” limits. This is particularly so for limits that are taken to constrict, or as ought to constrict, human transformation of ourselves and of the world, as these claims imply that such “remaking” is a hubristic, dangerous, and totalitarian fantasy that risks upsetting the equilibrium between the world as given and the world as (man)made.¹⁷³ For xenofeminists, this is politically conservative as it limits thought and action to an ethical project of conserving the “given,” and rejects the instrumentalising transitivity of reason. This leads to the notion that a “return to nature” will secure man's salvation, further producing an attendant technophobia. Conversely, xenofeminists claim that embracing the transitive powers of reason, particularly its capacity for materialisation in technics, can enable risky but liberatory techno-Promethean augmentations of the world, particularly of those “givens” in nature that have been taken to be the ground of woman's oppression.¹⁷⁴ As their manifesto declares, “‘Nature’ shall no longer be a refuge of injustice, or a basis for any political justification... If nature is unjust, change nature.”¹⁷⁵ Crucial for our purposes here, xenofeminists have claimed reason is also the means via which feminism could “work across different scales of complexity.”¹⁷⁶ Xenofeminism has critiqued Irigaray's generation of “poststructuralists” for rejecting abstract reason, and therefore limiting themselves to “subjectively-organised claims that caution against extending beyond themselves for fear of imposing a microimperialism,”¹⁷⁷ thereby inhibiting the realism of multi-scalar feminism on account of its anti-essentialism. From this perspective, Irigaray's notion of an irreducible sexuate difference—and her claim that “it is from the natural that we should start over in order to refound

172 Irigaray, *I Love to You: Sketch for a Felicity Within History*, 106.

173 Wilson, “Cyborg Anamnesis: #Accelerate's Feminist Prototypes” Now known as Black. Black explains that this “fideistic” notion has been prevalent in continental philosophy since Heidegger, and his ontologisation of Kant's notion of finitude.

174 Cuboniks, *The Xenofeminist Manifesto*, 2018. See specifically their engagements with Shulamith Firestone.

175 Cuboniks, *The Xenofeminist Manifesto*, 2018.

176 Cuboniks, “New Vectors from Xenofeminism,” 2022.

177 Avanesian and Malik, “Introduction,” 6.

reason”¹⁷⁸—could seem a problematically conservative and refusal of reason’s mediation of “nature,” as well as its multi-scalar capacities.

However, such a critique would fail to take seriously the novel way Irigaray approaches the question of the difference *vis a vis* the subject. Irigaray’s critique of reason can be distinguished from those of her poststructuralist cohort, and from a naïve, essentialist realism, by the way she routes it through the kind of *sexuate* difference we have described above as a difference of “at least two.” In doing so, Irigaray can be seen to make two crucial claims:

(1) The “subject,” or that which thinks, is *not one*—for Irigaray there is no possibility of a shared universality at the level of that which thinks.¹⁷⁹

(2) However, the ontogenetic-dialectical inversion proper to Irigaray’s philosophy is her claim that this is due to a *universal difference*, where nature is this universal *sexuate* difference—while she claims *sexuate* difference is natural, she does not do so without also claiming that nature is *sexuately at least two*. Far from rejecting rational capacities, by starting from a properly *sexuate* notion of that which thinks, one which does not derive its capacities for abstraction from a negation of the material resources that sustain it, Irigaray finds mediations that afford a “real universal”¹⁸⁰ and a “refound[ed] reason”.¹⁸¹

Irigaray thus goes beyond the caricature of poststructuralism, as her critique of the subject implies that within its paradigm not only is “knowledge... ‘subjective,’ but also that the access to the real, to the ‘out-there,’ is a priori barred.”¹⁸² This is because the *asexuate* status of the subject¹⁸³ fundamentally *limits* it, enclosing it within a form of mediation wherein the “subject of the speculative mind mirrors the object and posits it as the real instead of the real.”¹⁸⁴ For Irigaray, then, it is the refusal to acknowledge *sexuate*

178 Irigaray, *I Love to You: Sketch for a Felicity Within History*, 37.

179 Unless one presupposes a level of abstraction she claims to be a philosophically untenable. This claim also relates to the influence of Lacanian notions of the subject upon her thinking, in which sexual difference—not reducible to biological sex—is figured as a necessary and insuperable non-relation that conventional notions of sexual difference and philosophical notions of the subject imaginarily attempt to cover over.

180 Irigaray, *Conversations*, 2.

181 Irigaray, *I Love to You: Sketch for a Felicity Within History*, 37. “Thus it is from the natural that we should start over in order to refound reason.”

182 Kolozova, “Preface: After the ‘Speculative Turn,’” 2016, 13.

183 Crucially, this also applies to a posthuman or inhuman ‘subject’ or ‘that which thinks’ which would be reducible to, or imply, one *asexuate/singular* ground—what we have termed a scalar collapse.

184 Kolozova, “Preface: After the ‘Speculative Turn,’” 2016, 13.

difference *itself* that imposes a kind of fatalistic limitation on thinking, reason, and life, a predetermined limit that would order becoming, and therefore any form of techno-scientific intervention, within a “precharacterized” framework.¹⁸⁵ In this way, though she does not put it in scalar terms, Irigaray could be said to share our concern regarding a use of reason that grants it absolute scalar transitivity. Such a form of rational speculation may well be able to extend us beyond the limitations of the given and to embrace the powers of technoscientific transformation. However, an Irigarayan perspective would ask: what is the relation of this speculation to its material conditions of possibility?¹⁸⁶ Does its abstract flight require an expropriative relation to a material ground, be that the mind’s “grave,”¹⁸⁷ the philosopher’s wife, the empire’s slaves, the colony’s natural and human resources, and, eventually, the rendering surplus of entire populations, human and nonhuman, as the “servo-mechanic labour” of “bio-economic”¹⁸⁸ expropriation?

For Irigaray, the response of “more alienation,”¹⁸⁹ and a doubling down on the abstractive powers of rationality, would not suffice, due to the relationship between the *form* of speculative reason and this exploitation and expropriation of the “other.” This expropriation of the other is a fundamentally sexuate issue, as it is the product of a form of subjectivity and mediation which disavows difference *qua* at least two. Rethinking the question of sexuate difference is therefore, for Irigaray, the *philosophical* gesture which would allow for a *different* kind of difference to emerge, and therefore, “mediations that could permit the existence of a feminine subjectivity—that is to say, *another* subject,”¹⁹⁰ where the emphasis is not merely upon the emergence of a “repressed feminine,” but more crucially, on the emergence of a *different* logic of difference.¹⁹¹ This different logic would afford a new, non-expropriative form of

185 Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 34.

186 This is the key argument from Irigaray, *Speculum of the Other Woman*.

187 Sampson, “Sôma , Technê and the Somatechnics of Sexual Difference.” Kristin Sampson draws attention to Socrates’ claim that the “living body (sôma) as the grave (sêma) of the soul (psuchê).”

188 Parisi and da Silva, “Black Feminist Tools, Critique, and Techno-Poethics.”

189 Cuboniks, *The Xenofeminist Manifesto*, 2018.

190 Hirsh, Olson, and Brulotte, “‘Je—Luce Irigaray’: A Meeting with Luce Irigaray,” 95.

191 We acknowledge here the problematic nature of prioritising sexuate difference over other differences, specifically race. We would point here to the parallels between the structure of Irigaray’s argument with Afro-Pessimism, where Blackness, and not ‘the feminine’, constitutes the ontologically negative underside of metaphysics and the paradigmatic form of resource for *white* specul(ar)ization. For Jared Sexton, “Afro-pessimism’ . . . [is] a disposition that posits a political ontology dividing the Slave from the world of the Human in a constitutive way.” Jared Sexton, “Ante-Anti-Blackness: Afterthoughts,” *Lateral* 1 (2012). We would claim that a minimal difference between sexuation and race is that the former is ontogenetic, whilst the latter is scaled—race emerges not as a part of ontogenesis or as a principle of all individuation, but within the scales at which racism operates, it does so as a real, technical-material force. Indeed, it could be possible to claim that, “in the context of the racializing logic that structures the transatlantic world, [where] anti-Black racism overcodes the dereliction of sexual difference”, the

relation across all axes of difference, not merely the sexuate:

Substituting the two for the one in sexual difference therefore corresponds to a decisive philosophical and political gesture, one which renounces being one or many in favor of being-two as the necessary foundation of a new ontology, a new ethics, and a new politics in which the other is recognized as other and not as the same.¹⁹²

As such, whilst Irigaray maintains a (“poststructuralist”) concern with the appropriative relation of specular reason to the other, she does not totally reject the powers of transitive mediation, but only the appropriative tendency of what she terms “single-subject transcendence.” Irigaray seeks to maintain fidelity to the difference of the other *without* foregoing the possibility of the rational mediation of such difference. To do so, she claims that sexuate difference is a universal-natural, and natural-universal, difference:

All the speculation about overcoming the natural in the universal forgets that nature is not one. [. . .] Before the question of the need to surpass nature arises, it has to be made apparent that it is two... No one nature can claim to correspond to the whole of the natural. There is no ‘Nature’ as a singular entity.¹⁹³

In this gesture, Mary Rawlinson sees Irigaray to be radicalising Hegel’s “concept of identity in difference, of difference as constitutive of identity... by acknowledging the difference of the other to be *irreducible*,”¹⁹⁴ and “an irreducible feature of my experience.”¹⁹⁵ As Irigaray claims:

scale of racialisation plays a more dominant role in structuring the becoming of an individual’s ongoing individuations than gender. See Jones, “Sexuate Difference In The Black Atlantic: Reading Irigaray with Hartman.” For more on Irigaray and Afro-pessimism, see Emily Parker, “Elemental Difference and the Climate of the Body / Emily Anne Parker.” (Oxford University Press, January 1, 2021); For critical engagements with Irigaray’s neglect of race and racism in her work, see: Sexton, “Ante-Anti-Blackness: Afterthoughts”; Parker, “Elemental Difference and the Climate of the Body”; Hom, “Between Races and Generations: Materializing Race and Kinship in Moraga and Irigaray”; Chanter, “Irigaray’s Challenge to the Fetishistic Hegemony of the Platonic One and Many”.

192 Irigaray, *Democracy Begins Between Two*, 141.

193 Irigaray, *I Love to You: Sketch for a Felicity Within History*. 33. We see a link between the claim made in this quote and the post-French Hegelian celebration of freedom as the overcoming of first nature, and the way the feminist tradition, especially Butler, has framed the motivations and methods of anti-essentialism.

194 Rawlinson, “Chapter Two. Opening Hegel?,” 46.

195 Rawlinson, 46.

As soon as I recognize the otherness of the other as irreducible to me or to my own, the world itself becomes irreducible to a single world: there are always *at least two* worlds. The totality that I project is, at any moment, questioned by the other. The transcendence that the world represents is no longer one, nor unique.¹⁹⁶

Through this notion of sexuete difference being a *universal* difference, she offers a *situated* form of transitivity. This acknowledgement therefore opens up not the vertical transcendence of the single-subject model, but a “lateral transcendence,” grounded in a relation to a sexually different other, which cuts across “metaphysics’ traditional vertical transcendence from the sensuous toward the idea.”¹⁹⁷ It is this notion of a “lateral transcendence” that constitutes Irigaray’s notion of “at least two,” which Rebecca Hill has described as not merely a limit but an “interval” between, an interval constituting the “threshold of difference, the condition of possibility of identity, matter, and space that exceeds all attempts at calculation and prediction.”¹⁹⁸ For Irigaray this interval of sexuete difference is necessarily *sexuate*, by virtue of which it is both spatial and temporal, as well as material and transcendental.¹⁹⁹ This interval is both the real condition of the becoming of all life, as well as an open-ended, non-determining yet structuring difference. Sexuate difference thought as this “at least two” is therefore a *philosophical* concept, but one that serves to fundamentally reorient the very matrix of the relation between thought and life which philosophy has traditionally assumed. *Pace* xenofeminism, then, it is not therefore nature or the given which has, for Irigaray, determined women’s oppression. It is rather the way this nature has been *taken to be*—by the form of the singular experiencing, knowing subject—which has constituted this oppression, by collapsing it into this form of asexuate difference. We therefore claim Irigaray’s invocation of the “limit” invoked by the “at least two” is not an imposition upon human freedom, but rather its *generative condition*.

Scale Is Not One: A Provisional Account of the Multi-Scalar Subject

Irigaray’s philosophy of ontogenetic sexuete difference thus offers crucial resources to support the philosophical requirements of a multi-scalar feminism. This is because it allows us to understand

196 Irigaray, *Sharing The World*, ix–x.

197 Rawlinson, “Chapter Two. Opening Hegel?,” 46; See ‘Sharing The World’ for Irigaray’s broader discussion of this notion of lateral transcendence, and the way it opens up Hegel’s ‘autological circle’ toward a notion of what Malabou and Ziarek have described as a gesture toward a ‘double dialectic’ of sexuete difference. Irigaray, *Sharing The World*; Malabou and Ziarek, “Negativity, Unhappiness or Felicity.”

198 Hill, *The Interval: Relation and Becoming in Irigaray, Aristotle, and Bergson*, 115.

199 Hill, *The Interval: Relation and Becoming in Irigaray, Aristotle, and Bergson*. See Chapter 5.

difference as real and irreducible, yet, through her rehabilitation of the situatedness of its mediation, also allows for multi-scalar transitivity. Situating this figure of difference within fundamental processes of ontogenesis affords us a more robust understanding of the scalar differences involved in the ongoing individuations of life. Crucially, what this allows us to consider is the way in which a multi-scalar subject might be understood beyond a form of scalar collapse. This is because, as in Irigaray's account of the "at least two" quality of nature, individuation processes cannot be reduced to a *single* essence, form, substance, or process. As Simondon writes:

There is no single essence of the individuated being, because the individuated being is not substance, not a monad: its entire possibility of development comes to it from what is not completely unified or systematized [. . .] the genesis of the individual is a discovery of successive *patterns* that resolve the incompatibilities inherent to the basic pairs of disparation.²⁰⁰

As we have noted, for Simondon, individuation is not something that only occurs at the time of the genesis of a living being—such individuals continue to individuate throughout their lives by responding to and resolving in themselves multiple problematics.²⁰¹ Simondon therefore describes life as an ongoing "theatre of individuation"²⁰² that individuates in terms of multiple orders or regimes. Indeed, as Seely writes:

what Simondon calls 'the subject' [. . .] is a polyphasic, transductive more-than-unity, consisting of a superposition of vital, psychic, and collective structures and operations as well as of the unstructured potential of the associated milieu and is 'infinitely richer' than any notion of 'identity.'²⁰³

Subjects are as such comprised of multi-scalar topologies which are themselves structured processes of different kinds of relation. A human being is physical, vital, psychic, and collective, legible via scales of morphology, discourse, identity, or bodily rhythms. The biological scale of the individual may have some *relation* to the scale of its psyche, for example, but the very intelligibility of the difference between

200 Simondon, *Individuation in Light of Notions of Form and Information*, 229.

201 Indeed, especially for complex individuals, such as multi-cellular life, ongoing existence relies on being able to continually enact and resolve ontogenetic disparations. It may be possible to also read this ongoing individuation in other, non-living complex systems, or in superorganisms. What is crucial is that the 'individual' (*qua* coherent system) contains some set of unresolved potentials as disparations, nentropic bifurcations which continue to generate further (trans)individuations as the individual interacts with its milieu. See Stiegler, *The Neganthropocene*.

202 Simondon, *Individuation in Light of Notions of Form and Information*, 9.

203 Seely, "Individuation, Sexuation, Technicity," 29.

these two scales *presupposes* their non-reducibility to each other, as does the fact that the individual is not a simple automaton.²⁰⁴ Scales can overlap, in incompatible ways, indexing different sets of relations that express different processes.

We therefore differentiate the claims Irigaray makes about *sexuate* difference into two broad kinds: “ontogenetic” and “scaled” aspects of *sexuate* difference. The *ontogenetic* aspects of *sexuate* difference are those we claim to be part of the conditions of individuation as such, in the sense elaborated above with Seely. These include her claims that *sexuate* difference is ontological, natural, irreducible, real, universal, and a fundamental condition of life. We understand these aspects of *sexuation* to be ontogenetic in the sense that they can be understood as primary and “anterior” to individuation.²⁰⁵ This is what we have articulated earlier as the basic “at least two” form of difference that comprises the ontogenetic “‘non-relation’ of disparation, defining the energetic and material tensions between incompatible tendencies within being.”²⁰⁶ As such, we can understand the scales of reality to be ontogenetically propagated by this fundamental difference—a difference we are reading as a *sexuate* disparation—which implies and secures the necessity of thinking the real in a multi-scalar way.²⁰⁷ Within this account, there is no metaphysical plane of absolute differentiation, or platonic ideal of *sexuate* difference. The “pre-individual” functions not as a metaphysical plane, but is rather relative to particular individuations, indexing unstructured incompatibilities between “at least two” scales that form its generative disparation.²⁰⁸ By enabling a limit between “self” and “other,” *sexuation* “is an

204 Yet, those different processes, inhering within particular scales, *do* communicate and interrelate across these boundaries, though in indeterminate and heuristic ways. It is in this sense that Horton describes scales as performing a resolution that, “through a process of negotiation, produces a set of determinate properties for and between two surfaces that are nonetheless fully real.” The ‘interval’ between these surfaces is irreducible, but this is productive of a multi-scalar dimensionality that can hold this negativity in ongoing relation. This process is iterated innumerable times, producing any number of multiply articulated scales in topological relation. Horton, *The Cosmic Zoom: Scale, Knowledge, and Mediation*, 2021, 47.

205 Simondon, *Individuation in Light of Notions of Form and Information*, 300.

206 Toscano, *The Theatre of Production: Philosophy and Individuation between Kant and Deleuze*, 140.

207 This dynamic, multi-scalar architecture could further be used to think the kinds of relations the concept of intersectionality works to map, for example, whilst constitutively retaining their *materialist* dimensions—that is to say, without reducing the material to the linguistic or the normative or the ideational, without, however, discounting the *constructive* power of these scales as they operate at the scale of psychic individuation.

208 This is somewhat different to the dominant, Deleuzian reading of the notion of the preindividual. While the pre-individual indexes unstructured potentials and tensions, we argue that it should not be read in the metaphysical tenor that many Deleuzians, especially within new materialism, give it. The relevant aspect of the preindividual to any individuation is not simply the unstructured potentialities it inheres, but that these potentials are the result of irreducible tensions, that is, the fundamental *disparateness* between at least two as-yet unstabilised orders of being. These tensions are what Simondon

operation of limitation that creates the difference necessary for... an informatic relation with another individual to take place.”²⁰⁹ It is this sharing of information that *makes possible the transformation of the individual* through encounters with multi-scalar architectures that differ from its own, though this transformative sharing is predicated on a difference which enables an exchange of information between at least two. Far from constituting a determining ground, sexuation is precisely that which “makes the individual *more-than-itself* by linking it to sexuate other(s) and to its “own” pre-individual potentiality.”²¹⁰ In addition to these ontogenetic aspects of sexuation, within a multi-scalar account of the subject there are also what we are terming its *scaled* aspects. Recall that individuals continue to individuate throughout their lives, and these ongoing individuations entail the continual resolution of problematics across multiple distinct scales of an individual’s existence. Therefore, what we term the *scaled* aspects of sexuation refer to the multiple scalar domains in which sexuate difference is operationalised and topologically structured in ongoing individuations, of which each individuation nevertheless requires an ontogenetic moment of (sexuate) disparation. These scalar aspects of sexuation include but are not limited to the morphological, psychic, and the discursive. We claim that sexuate difference is not necessarily ‘in’ these scalar domains, but that it *structurally* organises them in irreducible but open-ended ways. As Carter explains, for Irigaray, “sexuation is not reducible to any single event, process, domain, or outcome”.²¹¹ As such, sexuation is not *reducible* to its ontogenetic aspects; the sexuated individual is comprised of many topologically overlapping scales, including those, for example, of morphology. As Irigaray claims, whilst the “morphological organization of bodies provides a background for the development and evolution of subjectivity,”²¹² morphology itself is an “incompleteness of form” and

situates as heterogeneous reals, which provide the basis for all subsequent individuation. Indeed, it is tension which is left as yet unresolved by this fundamental splitting that preserves and enables the ongoing and open-ended becoming of the individual. While Deleuze takes from Simondon much of the latter’s account of ontogenesis, ultimately Deleuze moves away from the concept of disparation, recasting it in terms of differences in intensities. Rather than disparateness as incompatible separation, as in Simondon, in Deleuze we find an internal preindividual difference in intensities. The strata - as scalar differentiations - are thus less fundamental here than the scalar orders of magnitude and milieu in Simondon. This alters the dynamic of difference in that, rather than proceeding from the requirement of a fundamental ontogenetic interval as a split between incompatible orders, difference falls back onto a sliding scale (or a scalar collapse) of intensities: pluralism as monism. What (the dominant reading of) Deleuze’s reformulation of the preindividual constitutes then, for us, is another illustration of the refusal of sexuate difference that results in scalar collapse. We see the emergence of the possibility of the at-least-two of disparation in Simondon as a radical moment in the history of philosophy, one which encounters the sexuate, from which Deleuze’s uptake recoils.

209 Seely, “Individuation, Sexuation, Technicity,” 32.

210 Seely, 35.

211 Carter, “An Uncontainable Subject: Thinking Feminine Sexuate Subjectivity with Irigaray,” 181.

212 Carter, 173.

an “open volume that can’t be circumscribed,”²¹³ indicating its important structuring function, but its ultimate open-endedness.²¹⁴ In this way we claim that morphology is a scaled aspect of sexuation; it is not itself “sexuate difference” *qua* the originary difference we are locating in the moment of “disparation” in Simondon’s account of ontogenesis, but one of the multiple scales that bears a mutually structuring but ultimately indeterminate relation with all others, such as the psychic, the discursive, the social, the economic etc.²¹⁵ These scales are related but not reducible to one another: there is no collapsible trans-scalar unity that would give a single frame for all scales at which an individual exists, be this transcendent, top-down rationality or immanent material substance. Instead, an individual must be understood as a multi-scalar, topological process: it is an ongoing individuation that still participates in ontogenesis by virtue of the disparities that emerge between and within its scales.

The ontogenetic aspect of sexuate difference is thus the *condition* by which the indeterminacy, multiplicity, and transformability of such scales is maintained. Reading Irigaray’s claims about sexuate difference via this distinction of the ontogenetic and scaled aspects of sexuation allows us to move away from a modality of interpretation structured by an essentialist/anti-essentialist binary, and opens up a reading of her philosophy whereby sexuate difference is neither “given,” essentialist, nor merely constructed,²¹⁶ but is rather the fundamental, irreducible, *and* non-determining and non-locatable difference (sensibly-) transcendental to the ontogenesis of multi-scalar reality. The scales of any complex system therefore must be understood in this topological way, as having multiple possible articulations to each other, and communicating in an indeterminate fashion. The multi-scalarity of individuals is therefore a real (that is, necessary) feature productive of their indeterminacy, an indeterminacy which, in the last instance, is only erroneously collapsed into one form or telos. Thus, we claim that Irigaray’s sexuate difference of at least two, understood ontogenetically, does not arbitrarily limit multi-scalar mediation, nor constitute an imposition upon human freedom, but is rather their generative condition. Such a provisional synthesis inheres possibilities for a technofeminism adequate to multi-scalar phenomena—namely, computation, climate change, and capital—yet one that also maintains fidelity to scalar difference, and is itself, therefore, adequately multi-scalar.

213 Irigaray in Hirsh, Olson, and Brulotte, “Je—Luce Irigaray’: A Meeting with Luce Irigaray,” 98.

214 See also Stone, *Luce Irigaray and the Philosophy of Sexual Difference*, 96 for a discussion of the “open ended” way Irigaray understands “growth into presence” through Goethe and Heidegger’s notion of “physis”.

215 Each of which are themselves multiply scalar.

216 Irigaray, *Sharing the Fire: Outline of a Dialectics of Sensitivity*, 84–85.

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