WEAVINGS. A SPATIAL ONTOLOGY BEYOND RELATIONISM AND SUBSTANTIALISM

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ABSTRACT: Contemporary ontology faces a fundamental challenge: How can entities exist in relation to their environments without reducing them to mere relations or isolated substances? This paper develops a spatial ontology that goes beyond the relationism-substantialism debate by examining how entities relate to their surroundings through what I term "spatial weavings". Drawing on phenomenological analysis and biological examples, I argue that entities exist through dynamic spatial engagements that are neither reducible to network effects nor explicable as interactions between pre-given objects. Using Heidegger's analysis of spatial existence and Sartre's inversion of essence and existence, I demonstrate that spatiality is not a container for entities, but the fundamental structure through which entities become what they are. This approach contributes to post-correlationist ontology by grounding ontology in the concrete spatial practices through which entities encounter their environments. The paper concludes by extending this analysis beyond human existence to develop a general theory of spatial being that encompasses biological, technical, and material entities.

KEYWORDS: Object Oriented Ontology; Heidegger; Sartre; Things; Existence; Spatiality

INTRODUCTION: WHAT IS NOT WEAVING?

When I bite into an apple, the apple yields a piece of itself and surrenders to the morphology of the open: It receives a new form, no longer the compact and closed roundness of the apple, but a globular cavity; the non-integrity of the peel allows the manifestation of oxidation, and oxidoreductase enzymes catalyze reactions that release phenolic compounds that give electrons to the oxygen, to the air, to which the nakedness of the apple is now exposed. And not only that: On the other hand, the consumed piece begins a path of dissolution and absorption that nourishes my body and its intestinal members, nourishing the complex microbial ecosystem of the microbiota.[1]

[1] All translations into English of texts not in English are made by Elia Gonnella.

Nothing else happens when I stroke a stone, when a lamp presses on a desk, when a dog barks at a lizard, and ivy embraces a low wall. In inhabited space – and as long as there are beings, it is inhabited – braids, knots, interweavings are constantly being created; and when it gets a little more intense: Ganglia, connections, right up to conjunctions, junctions, welds, and synusia.

If one now tries to reflect on the encounters just alluded to, it is easy to conceptualize with *bons à penser* leaps that placate us rather than confront us with the nature of the real. This evasion takes two diametrically opposed but enantiomorphic forms, as they ultimately overlap in their essential simplification. One way is the predominant one: To explain the nature of the encounter, it invokes the incommensurable omnipresence of relations. According to this way, we should not worry about mutations, variations, bites, kisses, and deteriorations: Everything is determined by its relationships and everything is relationship. We think we have a hammer in our hands and instead we have a flow of relations that, depending on the approach – or the argumentative moment of the proponents of this thesis – can be reduced to social, cultural, technical, historical, physical relations, and so on. In order to distinguish this thesis, which I refer to here with the general term of *relationism*, to be distinguished from relationalism[2], "[r]ealities are not explained by practices and beliefs but are instead produced in them. They are produced, and have a life, in relations"[3]. For relationism it makes no sense to question objects; the effort must be directed towards relations – which, with a metaphysical cataphract leap, relations themselves become objects, old and new *objects*[4]. While sophisticated relational approaches such as Karen Barad's agential

[2] By relationalism we can understand any philosophical theory that proposes as the center of its investigation the relations between two or more objects while maintaining the referential unity to the same objects involved in the relations. In other words, relationalism holds the following elements of analysis: The objects in relation and the relations themselves (Carmine Gorga, *Concordian Economics. Vol. 1. Tools for Economists and Social Scientists*, Cham, Springer, 2023, p. 246). For an application of relationalism to the perceptual field, see Jonathan Knowles, *Relationalism, Berkeley's Puzzle, and Phenomenological Externalism*, in J. Knowles, T. Raleigh (Eds.), *Acquaintance. New Essays*, Oxford, Oxford University Press, 2019, pp. 169-190, as well as the classic Joseph Kaipayil, *Relationalism. A Theory of Being*, Bangore, JIP Publications, 2009. Relationism, on the other hand, focuses on relationships: There are only relationships, no objects, organisms, ideas, etc.

[3] John Law, *After Method. Mess in Social Science Research*, London and New York, Routledge, 2004, p. 59.

[4] A theory that I will mention immediately that is in dialogue with what is proposed here (the encounter between human and non-human, nature and culture, which attempts to overcome the opposition between constructivism and realism, that is, idealism and realism) proposes a view of relations and relations between relations as central (there would be a mutual constitution of an infinity of interwoven and entangled

realism or Bruno Latour's Actor-Network Theory avoid crude reductionism by acknowledging material agency, they nevertheless subordinate spatial specificity to network effects or entanglements. This position, which welcomes a plethora of contemporary philosophical approaches and occasionally traces substructures back not only to the 16th century but to the very beginnings of philosophical thought[5], is opposed by those who claim the exact opposite: What exists are not relations, which at best "construct" objects without denying them *in toto*, but precisely objects, real and definable entities with which we primarily interact. So, if we have to counter the idea that "an object is nothing more that its effects on or relations with other objects"[6], the most comfortable position is *substantialism*. For this, only objects exist, closed entities that can more or less interact with each other, and at best produce other objects, at worst a factual nothingness or empty sensual elements that are existing only for the subject that experiences them, but not real at all[7]. Substantialism asserts that there are immovable objects and that at most they precede relations, not the other way around. A more or less hidden enemy of substantialism, which is always relationist in its view, is what is called *correlationism* and is attacked by Meillassoux[8]. To uphold correlationism is to believe that what exists is the object-subject correlation, or if you want world-consciousness, that is being and thought, and not one without the other – which

agentivities in which there are intra-actions and relations between relations in addition to interactions, that is, relations between things). It thus falls back into the relationist limitations, namely that there are no objects and then relations, but that the former arise through intra-actions. See Karen Barad, *Meeting the Universe Halfway. Quantum Physics and the Entanglement of Matter and Meaning*, Durham and London, Duke University Press, 2007.

[5] Harman indicates Peirce, James, Husserl, Whitehead, Foucault, Derrida, Latour – although he takes numerous cues from some of these – and regarding the most current ones I point out, although being a sympathizer/fellow traveller, Jane Bennett (Graham Harman, *Object-Oriented Ontology: A New Theory of Everything*, London, Pelican Books, 2018, pp. 240-243), who on her part had already responded to the criticisms moved against her by Harman and Morton (Jane Bennett, 'Systems and Things: A Response to Graham Harman and Timothy Morton', *New Literary History*, vol. 43, no. 2, 2012, pp. 225-233).

[6] Graham Harman, 'Realism Without Materialism', *SubStance*, vol. 40, no. 2, 2011, pp. 52-72, p. 64.

[7] According to Harman, an infinite number of other objectivities can be generated in encounters between two objects. This does not undermine the foundations of the approach – which does not seem to explain the interactions – while the restrained classificatory activity continues to work. For Harman "very genuine relation *forms* a new object" (Graham Harman, 'Time, Space, Essence, and *Eidos*: A New Theory of Causation', *Cosmos and History. The Journal of Natural and Social Philosophy*, vol. 6, no. 1, 2010, pp. 1-17, p. 13).

[8] Quentin Meillassoux, *Après la finitude. Essai sur la nécessité de contingence*, Paris, Éditions du Seuil, 2006.

makes this a relationist theory[9].

I argue that relationism makes a mistake when it claims that there are only relations: A basic argumentative datum reminds us that there is no relation without something that enacts the relation – and even if one redefines an object as the result of linguistic, social, cultural practices, etc. one proposes that there are linguistic, social, cultural objects, etc. that are capable of determining the conditions of the relation (and if this were not so, one would have to explain action according to a further relation, and take up the *third man argument* again). This would not change even if one wanted to abolish entities altogether in favor of equating them with today's physical theories: There would still be protons, electrons, quanta, as minimal units – minimal entities, i.e. objects – of descriptions.

Substantialism, errs instead, when it claims that there are always and only objects, that these cannot interact without creating new objects – without a subject intervening to define them as such; without therefore welcoming states, variations, events, happenings that touch objects and sometimes determine new ones. Substantialism, in its deep batophobia, transforms everything into discrete objects in an attempt to avoid confronting emptiness or indeterminacy, namely the disdainful attempt to schematize the void.

What the haughty attempt I propose is that both simplify the real, that they prove to be two drifts resting on an evasion of the problem, and that we therefore need neither relationism nor substantialism, neither idealism nor realism.

WHAT IS A WEAVING?

Having shown the possible inadequacy of both relationist and substantialist approaches, I now turn to developing the concept of weavings as an alternative framework. Let us return to the apple, to the stroke, to the pressure – without simply cataloguing entities in the manner that Ian Bogost critically terms "Latour

[9] Similar would be the position of some philosophically motivated interpretations of quantum mechanics that "repropose correlationism in the form of *relationism*, which in philosophy had proposed itself as a minority variant of correlationism in authors engaged in direct confrontation with philosophy of nature [...], for which relations precede *relata* [...]. From the ontological point of view, differently from correlationism, for quantum relationism objects exist only in relation to other objects; however, from the epistemological point of view, as in correlationism, objects exist only in relation to those types of objects that are subjects" (Maurizio Ferraris, *Documanità. Filosofia del mondo nuovo*, Roma-Bari, Laterza, 2021, p. 383, n. 11).

litanies" (endless lists of heterogeneous actors)[10] – and look at the bite, the touch, the pressing, the lapping. What happens immediately afterward is the creation of a new equilibrium, a new arrangement, a new form; the disruption opens up into something new, that is determined neither solely by the potentiality of the entity nor solely by the relations that flow into it. The entity is there (there are not only relations), but it has entered into relation (there are not only objects); it is useless to say that these relations constitute the object, it takes them up because it precedes them; it is useless to say that it can take them up because it is a closed, adamantine and ankylosed entity: It is a singular entity precisely because it can enact contacts. One must therefore think, and here we come to the intertwining, that entities – I use the term "entity" rather than "object" to emphasize the openness that allows engagement across multiple domains of existence and, in particular, not to have to re-establish themselves each time in the classical metaphysical dichotomy of subject and object – are what they are because of their ability to make, create and refine contacts with the environment.

I use "weaving" to denote the general ontological structure, "interweavings" for specific relational connections, and "interweaving" for the dynamic process through which entities engage spatially.

Three empirical criteria prove to be decisive in distinguishing weavings from usual causal relationships. Firstly, constitutive reciprocity: Unlike unidirectional causality, in which the cause precedes the effect, weavings are entities that constitute each other spatially. Think of mycorrhizal networks, in which fungi and plant roots do not simply exchange nutrients, but undergo permanent structural changes – new cellular architectures that neither possesses independently. Second, emergent spatial capacities: Weavings create new environmental possibilities that cannot be reduced to their components. Lichens are an example of this: Neither algae nor fungi alone can colonize bare rock, but their interweaving creates entirely new habitable spaces. Thirdly, permanent spatial traces: While mechanical causal effects cease when the causes are removed, weavings leave permanent spatial signatures. Dead tree roots continue to shape the soil structure for decades, creating channels that enable future organismic encounters.

These criteria distinguish weaving from both mechanical causality and

[10] The lists of objects given as examples in Latour's texts, cf. Ian Bogost, *Alien Phenomenology, or What It's Like to Be a Thing*, Minneapolis-London, University of Minnesota Press, 2012, pp. 38 ff.

existing systems theory. Unlike feedback loops or emergent properties in complexity theory, weavings are fundamentally spatial phenomena – they not only organize matter, but actively create the environmental conditions for further spatial encounters. The example of the coffee cup that we will see illustrates this: Bacterial biofilms are not passive contaminants, but co-creators of the aquatic environment, by creating pH gradients and micro-niches that form the spatial conditions for other organisms to exist.

Each entity engages in a series of contacts that form the web that defines it: Humans, animals, microbes, plants, fungi, minerals, objects and things reside in space and absorb, hold on, let go, give, weigh, release. Everything they do is the seat of weaving.

By holding fast to the unity of the entity, one does not run the risk of slipping into relationist aporias – nor into the dilemmas of relativism; while welcoming relations as the indispensable datum of the definition of the entity, one does not fall back into the rigid and somewhat cardsharp naivety of substantialism. Weavings are thus the concrete extrusions that every entity weaves, rooted in spatiality. The latter denotes nothing other than *what* is constituted by the various ways, the *how*, that each entity welcomes as a dwelling in the world[11].

> Such gathering shelters things in their region and allows them to be the things that they are. Thus, making-room takes its special character from the collecting of places. Fundamental to the reigning of places of a region through which abstract spaces are created is the simple act of dwelling. Places are dwelling places.[12]

If spatiality is a gathering, then weaving is something in which we are always already involved and in which we therefore constantly participate. "A web compresses, narrows, and obstructs the straight clear view inside its mesh"[13]; for this reason, one resorts to the act of unraveling, separating and dividing, which is the way of analysis: To simplify. Keeping the web alive seems to be a complex

[11] These phenomena cannot be reduced to systems theory or complexity science because weavings are irreducibly spatial – they not only exhibit emergent properties, but actively generate new spatial configurations that become the ontological basis for further encounters. Unlike network effects, which remain analytically decomposable, spatial weavings form irreducible ontological units.

[12] John Pickles, *Phenomenology, Science and Geography. Spatiality and the Human Sciences*, Cambridge, Cambridge University Press, 1985, p. 167.

[13] Martin Heidegger, *On the Way to Language*, trans. P. D. Hertz, New York, Harper & Row, 1971, p. 113.

process – and thus belongs to complexity theory[14]. Something that Heidegger was already aware of when he linked weaving with complexity in the lectures on Nietzsche[15]: "The real that is defined in its reality by the will to power is in every instance an interweaving of perspectives and valuations, a construct of a 'complex kind'"[16]. But weaving is the plastic image of dwelling in the world: The world is the weaving of relations and references[17], events and entities. It is precisely from the perspectives of such an intricate worldview that the various narratives of spatiality branch out, which can be examined *ab antiquo*[18].

The way of weaving can then be thought of as an experience *in loco*, immersive, enclosed and seated, or as a description *ex loco*, what Lefebvre calls "seen from the window" (where the original sounds: *vue de la fenêtre*).

> He who walks down the street, over there, is immersed in the multiplicity of noises, murmurs, rhythms (including those of the body […]). By contrast, from the window, the noises distinguish themselves, the flows separate out, rhythms respond to one another. Towards the right, below, a traffic light. On red, cars at a standstill, the pedestrians cross, feeble murmurings, footsteps, confused voices.[19]

In the second case, the path of classical analysis is possible: Separating, distinguishing, localizing, schematizing, defining, an experience that is rather immersive, not at all tangled. As we will try to understand, the entanglements keep the world structure compact, they are what is always already entangled even where one thinks of untangling them: If one dissolves, there are others. The apoplexy caused by the detachment of the interweavings – actually a separation of the fabric – leads to a change in the cycle, to the interruption of the flow, to the collapse and loosening of the fabric. It is therefore not a question of separating, splitting off or isolating, but of thinking the encounter between outside and inside, between experience and reflection, between space and the gradually defining

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[14] Within complexity theory, some authors have suggested maintaining an active link between simplicity and complexity, cf. Alain Berthoz, *La simplexité*, Paris, Odile Jacob, 2009 and Murray Gell-Mann, *The Quark and the Jaguar. Adventures in the Simple and the Complex*, New York, Freeman, 1994.

[15] Cf. Martin Stumpe, *Geviert, Gestell, Geflecht. Die logische Struktur des Gedankens in Martin Heideggers späten Texten*, Norderstedt, Books on Demand, 2002, p. 180.

[16] Martin Heidegger, *Nietzsche*, trans. F. A. Capuzzi, vol. 4, San Francisco, Harper & Row, 1982, p. 65.

[17] Cf. Peter Trawny, *Martin Heideggers Phänomenologie der Welt*, Freiburg-München, Karl Alber, 1997, p. 36.

[18] Cf. Robert T. Tally, *Spatiality*, London-New York, Routledge, 2013.

[19] Henri Lefebvre, *Rhythmanalysis. Space, Time and Everyday Life*, trans. S. Elden and G. Moore, London and New York, Continuum, 2004, p. 28.

spatialities.

SPATIALITY AS WEAVING

Even if space is conceived as populated by entities that reflect different degrees of spatiality – that is, with different spatial approaches (we will see what this means in a moment) – such an argumentation does not deny, as *terminus ante quem*, that these different entities have a relation to space, that they enact a form of spatiality in their existence. If Heidegger denies that animals have a relationship to the world like human beings, i.e., they are poor in world (*weltarme*), and stones are worldless (*weltlose*), this does not mean that animals and stones do not first have a relationship to the world[20] and then to spatiality[21]. Man as world-forming (*weltbildend*), the poor in world (*weltarm*) animal and the worldless (*weltlos*) stone, insist on the same world, which the latter two are unable to grasp and which only the former models[22]. Animals enact dense relations to the determining *Umgebungen* (surroundings), on the basis of the dense relations that are constituted there, determine different *Umwelten* (environments) which compose the bundled-up pieces of the world. Uexküll attempted precisely to dilute this complexity in order to make a particular *Umwelt* visible and thus to work out its essential elements. The result was nothing other than "all the subjective realities that always surround me"[23]. A warm and plastic horizon in which different actions take shape, through different tonalities (*Sitzton*, *Suchton*, *Schutzton*, *Wohnton*, and so on). The theoretical contribution of Uexküll's analysis concerns the conception of space: There is no longer only the rigid space of calculating geometry, nor the projective and

[20] The animal does without it (*entbehren*), is not simply deprived of it, but both has and has not world (cf. Martin Heidegger, trans. W. McNeill and N. Walker, *The Fundamental Concepts of Metaphysics: World, Finitude, Solitude*, Bloomington, Indiana University Press, 1995, p. 199) and not having is a mode of having, cf. Jacques Derrida, *De l'esprit. Heidegger et la question*, Paris, Éditions Galilée, 1987.

[21] In Heidegger, the animal has assumed a *benommen* relationship to its surroundings, but it is precisely a relationship, an insistence on space; the stone in Heidegger's example persists on the ground, welcoming the pressure of the lizard and the heat of the sun. This certainly marks the role of the innerworldly entity that has been assigned to nature at least since *Being and Time* (Min Seol, *Das Ansichsein der Natur in Weltoffenheit bei Martin Heidegger*, Würzburg, Königshausen & Neumann, 2014, p. 75) but is also a form of possession of access to entities (Markus Enders, *Transzendenz und Welt. Das daseinshermeneutische Transzendenz- und Welt-Verständnis Martin Heideggers auf dem Hintergrund der neuzeitlichen Geschichte des Transzendenz-Begriffs*, Frankfurt am Main, Peter Lang, 1999, p. 288).

[22] Ultimately, it is the absence of human language in the animal that keeps the cut between the two alive, cf. Peter Trawny, *Heidegger Fragmente. Eine philosophische Biographie*, Frankfurt am Main, Fischer, 2018, p. 230.

[23] Jakob von Uexküll, *Theoretische Biologie*, Berlin, Springer, 1928, p. 228.

ideoplastic space of spirit, since the conception of the living being changes: Neither mechanism nor vitalism[24]. Spatiality, Uexküll reminds us, is a network of different spaces; the *operative space*, that is, the space in which living beings primarily act – the space of orientation, the peripersonal space, in which action takes place and is controlled; the *tactile space*, in which it is not the movement of the orientation step that is important, but the rubbing and feeling of the haptic gesture; the *visual space*, which in animals without eyes such as ticks pours out into the reception of light stimuli through tactile means.

> After the tip of the tongue, which feels around the inside of the mouth, the tips of our fingers have the smallest areas and are therefore able to differentiate the most places. As we feel out an object, we confer a fine mosaic of place upon its surface with the touch of our finger. The mosaic of place of the objects of the places of an animal is a gift from the subject to the things in its environment in visual as well as in tactile space, one which is not at all available in its surroundings.[25]

In this sense, namely in the sense of a theory that accounts for the different perspectives on the world, space is not something that is given once and for all; it emerges from the active participation and reception of every living being that inhabits it. The environment is not a physical-geometric circle, but rather a fabric that applies wherever a living being orients itself, touches and perceives. Animals are in environments and environments enable animals. Environments and animals thus form the links of the complicated web that we call space, in the paths of spatiality gradually declined by the links of encounter – the *how* of space[26].

A central point is that it is never a plastic model that is shaped by the will of the living being, "the epistemic apparatus has been calibrated on the resistances

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[24] Uexküll belongs to a "materialistic" current of vitalism, for which a pluralistic approach should be chosen: What is empirically observable in living matter is also legitimately interpretable mechanistically – if not reductionistically; however, it is assumed that extra-material forces exist and act on matter. Uexküll gives this approach a solid theoretical foundation based on the Kantian approach. Cf. Carlo Brentari, *Jakob von Uexküll. The Discovery of the Umwelt between Biosemiotics and Theoretical Biology*, trans. C. Graciet, Dordrecht, Springer, 2015, p. 54.

[25] Jakob von Uexküll, *A Foray into the Worlds of Animals and Humans. With A Theory of Meaning*, trans. J. D. O'Neil, Minneapolis, University of Minnesota Press, 2010, pp. 60-61.

[26] Organisms change both their own environment and that of others through actions and metabolic processes. These changes occur not only across space (diatopically) but also across time (diachronically), generating long-term variations at the level of natural selection, cf. F. John Odling-Smee, Kevin N. Laland, Markus W. Feldman, *Niche Construction. The Neglected Process in Evolution*, Princeton and Oxford, Princeton University Press, 2003.

of reality"[27]; it always resists and from the dialogue between entities (entities exist) and their relations (also relations) the environmental configuration of space is established[28]. Environments as plastic spatial configurations are in fact committed by microbes, lichens, viruses, bacteria, microorganisms and fungi, which spread in infinite numbers[29] and in infinite places[30]. What presents itself as an "environment" is therefore a continuous network of extensions that are interwoven with each other: Mycorrhizal hyphae, *Bacillus subtilis*, butyric acid released by mammals, terrestrial pressure from beetles, emissions from the air, CO_2.

Indeed, if this spatial constitution applies to living beings, we must ask: What prevents us from extending this analysis to all entities? The methodological principle is that spatiality, as a condition for any kind of encounter, cannot be

[27] Roberto Marchesini, '*Intus-Legere*: Knowledge as an Actualization Process'. In R. Marchesini and M. Celentano, *Critical Ethology and Post-Anthropocentric Ethics. Beyond the Separation between Humanities and Life Science*, Cham, Springer, 2021, pp. 171-214, p. 207. The cognitive systems develop in response to the constraints and affordances of their environments, see Francisco J. Varela, Evan Thompson and Eleonor Rosch, *The Embodied Mind. Cognitive Science and Human Experience*, Cambridge (MA), The MIT Press, 1991.

[28] Provided that the activity of animals always produces variations in these resistances, which then create a different environmental landscape. For example, if one uses the term "construct" in a different meaning than the one we mean here – since it also includes the meaning "to cause a reaction to one's own change through an action of another entity" –, Lewontin recalls that "glaciations occur periodically, and organisms must adapt to them. But even in these cases, their biology determines the external conditions. When insects adapt to insecticides, they become more resistant, prompting farmers to spray insecticides more frequently and change the product. In this way, they create an environment that will be hostile to them" (Richard C. Lewontin, *Gene, organismo e ambiente. I rapporti causa-effetto in biologia*, series of lectures held at the University of Milan, translated in Italian by B. Tortorella, Roma-Bari, Laterza, 1998, p. 59. Certainly, Lewontin's position insists on the construction of the environment by the living being and should be interpreted within the framework of a critique of evolutionism declared as "adaptation to an autonomous external world". Nevertheless, the author asserts "the co-evolution of organism and environment, in which both are both cause and effect" (Lewontin, *Gene, organismo e ambiente*, p. 92).

[29] Indeed, "each cubic meter of soil and humus within it is a world swarming with hundreds of thousands of such creatures, representing hundreds of species. With them are even greater numbers and diversity of microbes. In one gram of soil, less than a handful, live on the order of ten billion bacteria belonging to as many as six thousand species" (Edward O. Wilson, *The Creation. An Appeal to Save Life on Earth*, New York, W. W. Norton & Company, 2006, p. 18).

[30] The mycelium, the filiform body consisting of the hyphae of what we call "mushrooms" – the union of mycelium, hyphae and fruiting body – creates "sprawling, interlaced webs strung through the soil, through sulphurous sediments hundreds of meters below the surface of the ocean, along coral reefs, through plant and animal bodies both alive and dead, in rubbish dumps, carpets, floorboards, old books in libraries, specks of house dust and in canvases of old master paintings hanging in museums" (Merlin Sheldrake, *Entangled Life. How Fungi make Our Worlds, Change Our Minds and Shape Our Futures*, London, Vintage, 2021, p. 52).

restricted to consciousness without falling back into correlationalist assumptions, which Meillassoux has shown to be untenable. Even the aseptic and calm environment of the coffee cup in the kitchen is populated by a microscopic network of multiple actants. Not just H_2O, $C_8H_{10}N_4O_2$ (caffeine), quinic acid and polysaccharides, but

> [a]ccording to recent research, groundwater harbors a surprising wealth of crustaceans and other minuscule creatures. They paddle blindly through dark currents, and, every once in a while, they probably end up in the water you use to make your morning coffee. Most treatment plants pump water into their reservoirs from deep below the surface, tapping into what until their intrusion was basically a hermetically sealed habitat. Tiny creatures in your coffee despite elaborate filters in water treatment plants? Yes, despite all efforts to keep them out, pesky little creatures such as water lice (which can grow to almost an inch long) often make it through to live happily in the water pipes on the other side of all those purification systems. […] When you start the flow, some of those little scoundrels [*Wicht*] lose their grip and are swept along in the stream of water – and end up in your stomach by way of your coffee. But water lice are not the only creatures in the water system; many others are smaller still. Bacteria, for example, form a thick layer that coats the inside surfaces of the metal pipes. And there are traces of them too in every sip we take.[31]

Every environment appears as a web and the individuals, understood as singular units inserted into an environment in which they orient themselves and exist spatially, as the temporary fruit of a microbial and heterogeneous network[32].

That the environments are a coming together of different species, involving different organisms, and that these are the result of cooperation, an intricate *Mitsein* and sometimes so intricate that analysis is impossible, is a recurring element in the history of biology. Humboldt spoke of a general concatenation (*allgemeine Verkettung*) constituted by a fabric woven like a net (*netzartig verschlungenem Gewebe*)[33] and in the course of biological thought it is not difficult to find other supports for such a theorization (the *milieu ambiant* which Saint-Hilaire already

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[31] Peter Wohlleben, *The Secret Wisdom of Nature. Trees, Animals, and the Extraordinary Balance of All Living Things. Stories from Science and Observation*, trans. J. Billinghurst, Vancouver, Greystone, 2019, pp. 47-48.

[32] Thomas Pradeu, *Qu'est-ce qu'un individu biologique?*, in P. Ludwige, T. Pradeu (éd. par), *L'individu: Perspectives contemporaines*, Paris, Vrin, 2008, pp. 97-125, p. 119. Cf. also Scott F. Gilbert, Jan Sapp, Alfred I. Tauber, 'A Symbiotic View of Life: We Have Never Been Individuals', *Quarterly Review of Biology*, vol. 87, no. 4, 2012, pp. 325-341.

[33] See Alexander von Humboldt, *Kosmos – Entwurf einer physischen Weltbeschreibung*, Erster Band, Stuttgart und Tübingen, J. G. Cotta'sche Verlag, 1845, p. 33.

used in this sense[34], the environment that is not "something definite and static but is continuously forming commensurably with the development of the organism and its activity" for Goldstein[35], the co-evolution of organism and environment for Lewontin, the plastic interdependence of organism and niche for Hutchinson[36], the Gaia hypothesis, which postulates an earth on which the climate and chemical composition are constantly stabilized in a form favorable to life, thanks to the incessant interaction between living beings and their environment[37], or the reciprocal interaction of the units in the organism-system and in the environmental-system of Bertalanffy[38]).

More complex, in the sense that it invites a more articulated and multicentric reflection, is to question the weave as a cipher of spatiality; the weaving as the ultimate limit of the dimensional organization of space.

WEAVING AS ESSENCE OF SPATIALITY

In order to attempt to sketch such a structure of the real, one must think back to the roots of Western metaphysical thought. When Heidegger endeavors to rethink the categories that tradition carries forward, he makes a decisive philosophical break that, by severing them, decides the beginning: "There is nothing before, for every before is now translated into the vision of the (new) beginning"[39], Sini does indeed remind us of this. Heidegger will always return to the past, to determine the philosophical ground for his argumentation. Some examples of this cut are the use of *Dasein* to overcome the dichotomous dyad subject-object, or *Befindlichkeit* to rethink the emotional fabric of the human entity; but what proves crucial here

[34] Cf. Étienne G. Saint-Hilaire, *Études progressives d'un naturaliste*, Paris, Roret, 1835, p. 107.
[35] Kurt Goldstein, *The Organism, A Holistic Approach to Biology Derived from Pathological Data in Man*, New York, Zone Books, 1995, p. 85.
[36] See G. Evelyn Hutchinson, 'The Influence of the Environment', in D. K. Skelly, D. M. Post, M. D. Smith (Eds.), *The Art of Ecology. Writings of G. Evelyn Hutchinson*, New Haven and London, Yale University Press, 2010, pp. 231-235.
[37] Cf. James Lovelock, *Gaia. A New Look at Life on Earth*, Oxford, Oxford University Press, 2000.
[38] Cf. Ludwig von Bertalanffy, *Kritische Theorie der Formbildung*, Berlin, Gebrüder Borntraeger, 1928, p. 59. In the substantially modified version of 1933, he recalls that every system (including the organism) is capable of existence in relation to a given environment, Ludwig von Bertalanffy, *Modern Theories of Development. An Introduction to Theoretical Biology*, trans. J. H. Woodger, London, Oxford University Press, 1933, p. 11.
[39] Carlo Sini, *Inizio*, Milano, Jaca Book, 2023, p. 109.

is the recourse, in delineating the essence of being-there, *das Wesen des Daseins*, to the inversion of another dichotomy, that between essence and existence. If for the tradition *essentia* and *existentia* collide insofar as the first denotes the "what is" of the entity and the second the effective giving of the same in reality, Heidegger claims that the "*The 'essence' ['Wesen'] of Dasein lies in its existence [Existenz]*"[40] and that "the *'substance'* [»*Substanz*«] of human being is not spirit as the synthesis of body and soul; it is rather *existence* [*Existenz*]"[41]. In this operation, Heidegger dissolves the opposition and arrives at an apparent enantiodromia, which, however, soon becomes comprehensible. This fundamental interweaving appears throughout Heidegger's corpus, developing from early works like *The Basic Problems of Phenomenology* (1927)[42], *Metaphysical Foundations of Logic* (1928)[43], through *Fundamental Concepts of Metaphysics* (1929-30)[44]. Later, Heidegger returns to this theme in *Anaximander's Saying* (1946)[45], the *Introduction to: "What is Metaphysics?"* (1949) and in the *Letter on "Humanism"* (1946), where he condenses this insight into the expression "the essence of being-there lies in its existence", seeking to summarize the meaning of what *Being and Time* intended to show with the word being-there[46]. In *The Basic Problems of Phenomenology* (1927), Heidegger had already articulated that "[i]t belongs to the nature of the Dasein to exist [*existieren*] in such a way that it is always already with other beings"[47] and therefore "always already *stepped out beyond itself*, ex-sistere, it *is in* a world"[48]. *Dasein* is spatial in essence, is

[40] Martin Heidegger, *Being and Time*, trans. J. Stambaugh, revised by D. J. Schmidt, Albany (NY), State University of New York Press, 2010, p. 41, cf. also pp. 114 (but where *Wesen* is replaced by *Essenz*, [Martin Heidegger, *Sein und Zeit*, Tübingen, Max Niemeyer, 1967 [1927] (*HGA*, Band 2, hrsg. von Friedrich-Wilhelm von Herrmann, Frankfurt am Main, Vittorio Klostermann, 1977) p. 117]), 221.

[41] Martin Heidegger, *Being and Time*, p. 114.

[42] Cf. Martin Heidegger, *The Basic Problems of Phenomenology*, trans. A. Hofstadter, Indiana University Press, Bloomington and Indianapolis 1982.

[43] See Martin Heidegger, *The Metaphysical Foundations of Logic*, trans. M. Heim, Bloomington and Indianapolis, Indiana University Press, 1984, pp. 169-170.

[44] Cf. Heidegger, *The Fundamental Concepts of Metaphysics*.

[45] Cf. Martin Heidegger, 'Anaximander's Saying', in *Off the Beaten Track*, trans. J. Young and K. Haynes, Cambridge, Cambridge University Press, 2002, pp. 242-281, p. 255.

[46] Cf. Martin Heidegger, 'Introduction to "What is Metaphysics?"', in *Pathmarks*, trans. W. Kaufmann, Cambridge, Cambridge University Press, 1998, pp. 277-290, p. 283. Martin Heidegger, 'Letter on "Humanism"', in *Pathmarks*, trans. F. A. Capuzzi, edited and revised by W. McNeill and D. Farrell Krell, Cambridge, Cambridge University Press, 1998, pp. 239-276, p. 248. He also returns to the question in the Zollikon Seminars (especially on July 14, 1969), cf. Martin Heidegger, *Zollikon Seminars. Protocols – Conversations – Letters*, trans. F. Mayr and R. Askay, Evaston (Illinois), Northwestern University Press, 2001, pp. 227-228.

[47] Heidegger, *The Basic Problems of Phenomenology*, p. 157.

[48] Heidegger, *The Basic Problems of Phenomenology*, p. 170.

essentially spatial (*es wesenhaft räumlich ist*) and this means that subjective interiorization is actually always an outside, an external: Being-there stands *inside* the *outside*, in the *in* of *there*[49].

This fundamental intertwining has to do in a radical way with the determination of the spatiality of the entity, and we understand this when we remember that a few years later Sartre, whose metaphysicality of the proposal Heidegger denounces[50], tightens the knot between essence and existence by turning the terms of the problem around. Existentialists, Sartre maintains, say "that existence precedes essence"[51]. A book or a paper knife is the work of an artisan – who, for Sartre, is inspired by a concept (the artisan refers to the concept of the paper knife and to a production technique as a "recipe" of the concept to bring the paper knife into shape). Book and paper knife are thus fabricated objects with a specific use, so we cannot imagine a person making a paper knife without knowing what it is to be used for. In these cases, essence (a set of technical knowledge and properties that enable its production) – and production – precedes existence. With the human being it is exactly the opposite, and that means that he "first exists: he materializes in the world, encounters himself, and only afterward defines himself"[52]. Freedom[53], the possibility of shaping oneself, in contrast to the things of the world, determines the nature of man[54]. This is the difference between the thing-man and the things; the former can decide what it wants to do with

[49] Enders recalls: Da Heidegger die Welt in einem ausschließenden Sinne als >eine Bestimmung des In-der-Welt-seins< und damit als >ein Moment der Struktur der Seinsart des Daseins< versteht, kann für ihn die Welt nicht vorhanden, d.h. nicht von der Seinsart eines Vorhandenen sein, sondern sie muß – als eine existenzial-ontologische Bestimmung – >existieren<, d.h. die Seinsart des Daseins besitzen. […] Die Annahme, daß dieser >Vorwurf der Welt< das zentrale Strukturmoment des In-der-Welt-seins ist, kann Heidegger mit der etymologisch ursprünglichen Wortbedeutung von >Existenz< bzw. *ex-sistere* als ein >Aus-sich-Heraus-Treten< sachlich verbinden» (Enders, *Transzendenz und Welt*, p. 95).

[50] The reversal of a metaphysical statement remains a metaphysical statement, see Heidegger, 'Letter on "Humanism"', p. 250.

[51] Jean-Paul Sartre, *Existentialism is a Humanism*, trans. C. Macomber, New Haven and London, Yale University Press, 2007, p. 20.

[52] Sartre, *Existentialism is a Humanism*, p. 22.

[53] On which already in Jean-Paul Sartre, *Being and Nothingness. An Essay in Phenomenological Ontology*, trans. H. E. Barnes, New York, Pocket Books, 1966, he insisted, maintaining that "[h]uman freedom precedes essence in man and makes it possible; the essence of the human being is suspended in his freedom. What we call freedom is impossible to distinguish from the *being* of 'human reality'" (Sartre, *Being and Nothingness*, p. 25).

[54] Cf. Mario Lo Conte, *Esistenza e morte. Heidegger e Sartre*, Napoli, La Scuola di Pitagora, 2019, pp. 55-56, as well as Christina Howells, *Sartre. The Necessity of Freedom*, Cambridge, Cambridge University Press, 1988.

itself, can project (*se projeter dans l'avenir*) while things cannot. However, this projecting and this acting in freedom, which always shows itself in the other (*l'autre, comme une liberté posée en face de moi*), is soon the place of its counterpart. Precisely because there is a choice, humans can experience the anguish of freedom, feel condemned to freedom (*condamnés à la liberté*), and thus encounter nothingness. And then what really distinguishes the thing-human from the other things is – to put in a word – a nothing, the nothingness[55].

Sartre wanted to ward off any reduction to materialism, since it regards man as an object, "which is to say as a set of predetermined reactions indistinguishable from the properties and phenomena that constitute, say, a table, a chair, or a stone"[56]. And materialist monism, he will later remind us, has displaced the dualism of thought and being – still so invoked by today's speculative realism – in favor of a total being (*être total*), grasped in its materiality[57]. But what then becomes of things against the background of an inversion of the essence-existence relationship? Is it possible to "[e]xist slowly, softly, like these trees, like a puddle of water, like the red bench in the streetcar"[58]?

> The essential thing is contingency. I mean that one cannot define existence as necessity. To exist is simply *to be there*; those who exist let themselves be encountered, but you can never deduce anything from them. […] But […] contingency is not a delusion, a probability which can be dissipated; it is the absolute, consequently, the perfect free gift.[59]

When such a thought is realized – for there is no thought that is not incarnate and received by carnal support – "it turns your heart upside down"[60] because "[e]xistence is not something which lets itself be thought of from a distance: it must invade you suddenly, master you, weigh heavily on your heart"[61]. Thus, if we push the thesis according to which existence precedes essence towards the metaphysical and concrete adventure of *Nausea*, we come across an even more

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[55] Cf. Hazel E. Barnes, 'Sartre's Ontology: The Revealing and Making of Being', in C. Howells (Ed.), *The Cambridge Companion to Sartre*, Cambridge, Cambridge University Press, 1992, pp. 13-38, p. 13.
[56] Sartre, *Existentialism is a Humanism*, p. 41.
[57] Jean-Paul Sartre, *Critique of Dialectical Reason. Volume 1: Theory of Practical Ensembles*, trans. A. Sheridan-Smith, London and New York, Verso, 2004.
[58] Jean-Paul Sartre, *Nausea*, trans. L. Alexander, New York, New Direction, 1959, p. 210.
[59] Sartre, *Nausea*, p. 176.
[60] Sartre, *Nausea*, p. 176.
[61] Sartre, *Nausea*, p. 177.

radical thesis: We find that all entities are spatial in their essence; insofar as they are spatial, that is, insofar as they exist in an environment and can be changed by it, they are existent; all entities, insofar as they are spatial, have existence in their essence: Entities are those whose existence *precedes* essence, or, if you like, whose essence *is* existence[62].

This extension from human to general ontology is not arbitrary, but results from the logic of spatiality itself. If existing means being-in-an-environment – as both Heidegger's analysis of the essential spatiality of *Dasein* and Sartre's description of existence as an absolute contingent being-there show – then spatiality cannot be a purely human characteristic without falling into the correlationist trap. The methodological principle is clear: Either spatiality is a fundamental structure of being in itself, or we must explain how consciousness somehow "creates" space, which leads us back to idealism. The phenomena of weaving suggest the former[63].

Nausea is an impetus for such recognition, precisely because it is "the state of mind of the subject, which gradually ceases to be a subject. In this sense, Sartre describes to us a metaphysical adventure, the becoming thing of a human being"[64]. This points to an anthropological passage, because the desubjectivized human being means something else. And it means neither thinking of man in such a way that he needs a hybridization with technology ("still human, but a human beyond the human"), nor an absolute overcoming in a new form ("a completely new humanity") – neither transhumanism nor posthumanism. Rather, it means the embodiment of existence as a cipher of extrusion, of *Offenheit* to the surroundings, of fullness, which as such also inhabits the human being in a radical

[62] Obviously, Sartre's starting point was human existence, which is also linked to the basic notion of freedom, as Flynn notes (cf. Thomas R. Flynn, *Sartre. A Philosophical Biography*, Cambridge, Cambridge University Press 2014, p. 183). What I have just attempted to do is to extend this theory according to the metaphysical and concrete adventure of *Nausea*, and thus to try to describe the fact that to exist always means to exist in an environment, that is, to point beyond anthropocentrism to what we could call, extending Sartre's insights but without betraying them, a general spatial ontology.

[63] Even when phenomenology frees itself from idealistic elements, it still maintains a constitutive consciousness and must therefore acknowledge that, to encounter something as the transcendent object through which the noema is formed by the *Erlebnis*, consciousness must engage with an element outside itself – a hard residue that ultimately guarantees both the relationship between consciousness and the transcendent object and the evidence of the entire process.

[64] Felice Cimatti, *Cose. Per una filosofia del reale*, Torino, Bollati Boringhieri, 2018, p. 81.

way. Existence means fullness, full (*plein*); now one "only encountered completion"[65]. Existence means an expansion in which time merges with space[66], in which spatiality manifests itself in the fibers of every thing[67].

CONCLUSIONS

Such an approach suggests that spatiality is defined as an interweaving between essence and existence, between existence and existents: What each entity gives and receives. Its essence is existence, which as such is a continuous synallagma of entities that exist spatially in the surroundings. That is, each entity's essence lies in its existence, understood as ongoing reciprocal exchange with other entities. Humans interweave with the surroundings, as do the animals that inhabit their *Umwelten*, leaving perceptual and operational traces; the plants that respond to tactile and contact stimuli with their thigmotropism; the bacteria and microbes that form carpets that extend from my intestine to the stem of a rose; fungi, then, whose mycelium is the reticular and slowly proteiform map, that insist in the surroundings on occupying the surrounding terrain, always interwoven with plants, the rhizosphere; and so objects, encompassing things, mute entities that surround us, that meet the directives of the surroundings and vectorialize the minuscule fields of a *tiny ontology*[68], respond to environmental conditions and create localized fields of interaction.

This analysis suggests that spatiality emerges neither from pure relations nor from isolated objects, but from the dynamic weavings through which entities engage their environments. This framework offers a middle path that preserves both the reality of entities and the constitutive role of their relational engagements.

In this radical formulation of spatiality, existence is the actual matter of things, their dough, their paste (*c'était la pâte même des choses*). Following on from the Darwinian intuition expressed in the *Notebooks*, we could ask ourselves "[w]hy is thought, being a secretion of brain, more wonderful than gravity a property of

[65] Sartre, *Nausea*, p. 178.

[66] Cf. Cimatti, *Cose*, p. 86.

[67] Sartre writes that "[t]he true nature of the present revealed itself: it was what exists, and all that was not present did not exist. The past did not exist. Not at all. Not in things, not even in my thoughts" (Sartre, *Nausea*, p. 130).

[68] See Bogost, *Alien Phenomenology*.

matter? It is our arrogance, it our admiration of ourselves"[69].

Outside of this anthroponoetic, previously anthropocentric, philautia, this human-centered self-regard and self-love, metaphysics thinks the entity as if it were being; Heideggerian anti-metaphysics tries to think being just before the entity; contemporary speculative realism and its philosophical offshoots think the entity. Here we have tried to think the interweaving of spatiality, which is nothing other than the interweaving between entity and being: The entity *as that which is*, which welcomes existence insofar as it is present in an environment from which it constantly nourishes the space that generates spatiality. The philosophical dimension of thought invites us to reflect on the essential characteristics of space, of spatiality, by recognizing it as a fabric whose constant outflow defines the free and full essence as existence – an erupting existence in the outside: An existence that emerges through openness to the world.

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[69] Charles Darwin, 'Notebook C', p. 166, in *Charles Darwin's Notebooks, 1836-1844. Geology, Transmutation of Species, Metaphysical Enquiries*, transcribed and edited by P. H. Barrett, P. J. Gautrey, S. Herbert, D. Kohn, S. Smith, Cambridge, Cambridge University Press, 2008, pp. 237-328, p. 291.

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