Amplification, nature and the scope of the transindividual

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Abstract [inglês ou português]

This paper resorts to a brief passage of Simondon's text dedicated to the concept of amplification in order to examine his concept of transindividual. Simondon suggests that the processes that characterize psychical, psychosocial and social realities can be ascribed to any natural phenomena, not only human collective and individual activity. This suggestion resembles in many respects Tarde's forecast according to which modern science tends to generalize the method not of physics, but sociology, so that indeed one should refer to societies when speaking of molecules, atoms, and planets. Tarde develops an original form of relational metaphysics that emphasizes "having" over "being" and in which the condition of being is a reciprocal possession among open monads. The article explores the proximity between these authors, arguing that the transindividual is not only a regime of human societies, but applicable to any collective or relational system. It is further argued that any ecosystem is virtually transindividual. The first part of the development discusses Simondon's concepts of information and "domain of transductivity". The second part tackles Simondon's text Amplification in the process of information*, where three kinds of amplification (transductive, modulating and organizing) are distinguished. The third part deals with Tarde and his generalized sociology. The collective regime of individuation, named transindividual, is the subject of part 4. The discussion and the conclusion develop the claim that contemporary issues and theories that address them are expressions of this understanding of the transindividual and its scope.*

Keywords: *Gilbert Simondon. Gabriel Tarde. Monadology. Transindividual. Psychosocial.*

Resumo

Este artigo recorre a uma breve passagem do texto de Simondon A Amplificação nos Processos de Informação *para interrogar sua concepção do transindividual como regime de individuação e, sobretudo, o alcance desse conceito. Simondon sugere que os processos que caracterizam as realidades psíquica, psicossocial e social podem ser atribuídos a qualquer fenômeno natural, não apenas à atividade humana, coletiva ou individual. A sugestão se assemelha em muitos aspectos à previsão de Tarde, pela qual a ciência moderna tende a generalizar o método não da física, mas da sociologia, de modo que é possível empregar o termo "sociedades" para tratar de relações entre moléculas, átomos ou planetas. Tarde desenvolve uma forma original de metafísica relacional que enfatiza o "ter" sobre o "ser", em que a condição do ser é a posse recíproca entre mônadas abertas. O artigo explora a proximidade entre esses autores, a fim de argumentar que o transindividual não é apenas um regime das sociedades humanas, mas aplicável a qualquer conjunto coletivo ou sistêmico de relações. Argumenta-se ainda que qualquer ecossistema é virtualmente transindividual. A primeira parte do desenvolvimento discute os conceitos de Simondon sobre informação e "domínio de transdutividade". A segunda parte aborda o texto* Amplificação*, onde se distinguem três tipos de amplificação (transdutiva, moduladora e organizadora). A terceira parte trata de Tarde e sua sociologia generalizada. O terceiro regime, coletivo, de individuação – o transindividual – é objeto da parte 4. A discussão e a conclusão desenvolvem a afirmação de que algumas questões contemporâneas e as teorias que as abordam são expressões dessa compreensão do transindividual e seu alcance.*

Palavras-chave: *Gilbert Simondon. Gabriel Tarde. Monadologia. Transindividual. Psicossocial.*

Resumen

Este artículo recurre a un breve pasaje del texto de Simondon La Amplificación en los procesos de information*, para examinar su concepción de lo transindividual como régimen de individuación y, sobre todo, los alcances de este concepto. Simondon sugiere que los procesos que caracterizan las realidades psíquica, psicosocial y social pueden atribuirse a cualquier fenómeno natural, no solo a la actividad humana, colectiva o individual. La sugerencia es similar en muchos aspectos a la predicción de Tarde, según la cual la ciencia moderna tiende a generalizar el método no de la física sino de la sociología, de modo que es posible emplear el término "sociedades" para tratar las relaciones entre moléculas, átomos o planetas. Tarde desarrolla una forma original de metafísica relacional que enfatiza el "tener" sobre el "ser", en la que la condición del ser es la posesión recíproca entre mónadas abiertas. El artículo explora la proximidad entre estos autores, con el fin de argumentar que lo transindividual no es sólo un régimen de las sociedades humanas, sino aplicable a cualquier conjunto colectivo o sistémico de relaciones. Se argumenta además que cualquier ecosistema es virtualmente transindividual. La primera parte del desarrollo discute los conceptos de Simondon sobre la información y el "dominio de transductividad". La segunda parte aborda el texto* Amplificación*, donde se distinguen tres tipos de amplificación (transductora, moduladora y organizadora). La tercera parte trata de Tarde y su sociología generalizada. El tercer régimen, colectivo, de individuación – el transindividual – es el objeto de la parte 4. La discusión y la conclusión desarrollan la afirmación de que algunos problemas contemporáneos y las teorías que los abordan son expresiones de esta comprensión de lo transindividual y sus alcances.*

Palabras clave: *Gilbert Simondon. Gabriel Tarde. Monadología. Transindividual. Psicosocial.*

Introduction

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This article develops from the following question: what is the scope of Gilbert Simondon's concept of transindividual, understood not as the realm of psychic, psychosocial, or social individuations, but as a *regime* characterized by *collective activity*? My primary motivation is a passage from the text *L'Amplification das les processus d'information* (henceforth *Amplification*), the transcription of Simondon's lecture at the 1961 Royaumont colloquium, where he explains his understanding of information. In the closing paragraphs, Simondon (2010, pp.172-173) proposes to undertake:

> (...) an extension of the notion of social relation: molecules, elementary cells, can be (...) in a social type of relation, implying control, modulation, reduction of activity; the psychosocial phenomenon would then be just the transductive propagation of a disturbance, which (...) resounds at the collective level by recruitment of every element. (...) [E]ven the notion of society, first defined for man, can be extended to animal species; but it can be further generalized, encompassing relations between plants and molecules; likewise, the psycho-social relation, first defined for human interindividual links, is susceptible of being generalized.

If we interpret individuation regimes as levels of reality (physical, biological, psychosocial), this is a shocking statement. How can the "upper" layer of psychosocial processes exist in the "lower" physical layer? However, individuation regimes are not levels of reality, but modalities of information, processes that determine their own *domains of transductivity* within, not above, other processes (regimes). This misunderstanding is consequential and partly derived from Simondon's writing itself. In *Individuation in Light of Notions of Form and Information* (henceforth ILFI), when introducing psychical and social individuation, Simondon writes that "the psychical is the nascent transindividual" (Simondon, 2020, p.179); it is a "transitory path" (*idem*)*;* and "the resolution of the intra-individual psychical problematic (perception and affectivity) leads to the transindividual" (*idem*). The idea that the transindividual is born from the psychical seems to reinforce the idea of regimes as levels of reality. However, as we will see, the psychical is associated to the transindividual not as a particular case, but because the psychical involves the demand for greater relationality and a potential for collectivity.

Conversely, if one follows *Amplification* and accepts to extend the psychical, psychosocial and social to vital and physical processes, the problem consists in understanding how one can speak of collectivity in these domains. In other words: how to reconcile what Simondon proposes in *Amplification* with his theses about the psychical, psychosocial and transindividual in ILFI? The term "transindividual" is absent from *Amplification*, as are the regimes of individuation. Is it even licit to read this text as an exposition of the transindividual?

In this sense, the paper aims to be a contribution to the scholarship on what may be Simondon's most compelling concept, which over the last quarter century has attracted the attention of philosophers, sociologists, and readers from various disciplinary backgrounds. The transindividual, which practically only appears in ILFI but is suggested in other writings by Simondon, is a central theme in one of the earliest books entirely dedicated to this philosopher, namely Combes' *Gilbert Simondon and the Philosophy of the Transindividual*, published in France in 1999. It has been interpreted from two preferred perspectives (Bruschi, 2010): firstly, the transindividual appears as an open and indetermined field of collective life, where psychosocial individuations take place; secondly, it is considered as a regime of individuation on par with the physical and the biological, but achievable only if a collectivity is involved.

These two views on the transindividual are not incompatible, which is a reason for the interest this concept has aroused, as the interplay between its role in connecting the individual to the collective *in general* and its description of social reality gives rise to ethical and political implications. As Rodrígues & Heredia (2019, pp.675-677) point out, the transindividual as siege of the psychosocial contains at least five senses: metaphysical; sacredness and spirituality; related to meaning; ethical; technical[1]. These fields share a reliance on acts of decision, shaping, becoming, relating. The transindividual has also been identified as suggestive of a Simondonian politics already in Combes' book, as she shows how invention is rooted in the transindividual, which accounts for the permanence of nature in the collective. Indeed, invention, technical and otherwise, is the core of political action in Simondon.

[1] Rodríguez & Heredia's article contains an in-depth reconstitution of the reception of Simondon's concept of transindividual, from Stiegler and Balibar in the 90s until the mid 2010's, on which I rely heavily for this discussion.

A similar claim is held by such authors as Morfino (2007) and Read (2016), both of whom resort to Balibar's (1997) influential essay on transindividuality in Spinoza.

This paper focuses on the second perspective over the transindividual (as a regime), in order to highlight the first (as field of the psychosocial). This means that only by fully exploring the implications of the transindividual as a regime of individuation can one grasp the transindividual as a sense of the collective. Morfino identifies a "genealogical path" (Morfino, 2014, p.7) linking such authors as Spinoza, Machiavelli, Lucretius, Althusser and Simondon, where the themes of politics, nature, technics, and becoming are intertwined. The transindividual performs this link, and this article hopes to contribute in elucidating how that takes place.

Another motivation for exploring the passage quoted above is its Tardian tinge. Simondon seems to paraphrase Gabriel Tarde when suggesting something lilke a universal sociology, especially the concluding arguments of *Monadology and Sociology* (1893). Tarde's monadology identifies matter with spirit, so that physical forces are occurrences of desire and belief: the continuity between the physical, biological, psychical and social is treated as a matter of intensity and differentiation, not essence. Was Simondon repeating Tarde, to the point of spiritualizing the physical?

Finally, these questions also resonate with contemporary issues. In sociology, Actor-Network Theory insists on the nonexistence of a "social substance", from whence to deduce how human activity is determined. Bruno Latour, who claimed to be a heir of Tarde, writes that sociology treats *the social* as this self-determined reality (Latour, 2005, p.43). ANT attempts to characterize collective phenomena through all possible activities and connections. This approach problematizes the range of relations one can call social, as the introduction of differences and affects is ascribed to entities of all kinds, individual or collective, human or animal, imaginary or concrete, physical or institutional. It may not be a question of affirming a social character of atoms or planets, but the problem of communication is posed, insofar as the mutual actions of animate and inanimate beings, sentient and thinking or not, constitutes the social assemblages.

Developments in the natural sciences also introduce the problem of a potentially "social" character of nature, provided that the social is thought non-substantially. In the 1920s, Alfred Whitehead stated that, once the paradigm of physics

ceases to be classical mechanics and becomes thermodynamics, the world is no longer understood as material and substantial, but as organic (Whitehead, 1948, p.65): nature appears as the evolutionary reality of processes (*idem*, p.74) where the components of reality have experience (prehensions) of one another.

Our own time requires such questions. It is a time of climate crisis, at the threshold of the Anthropocene. Today, thinking means facing the Gaia hypothesis (Latour, 2017); engaging with Earth-systems sciences (Veiga, 2019), multinaturalism (Viveiros de Castro, 2002; Valentim, 2018) and Terrapolis (Haraway, 2016). One cannot refrain from co-implicating the social, the biological, and the physical, in face of the evidence of systemic feedback, so that the systems constitute, for all purposes, a collective. This context invites us to consider Simondon's transindividual via his Tardian suggestion to extend to nature a certain understanding of psychosocial and social processes. The reflections that follow explore the hypothesis that this extension consists in recognizing in the transindividual regime a modality of taking form that is intrinsically collective and applicable to nature in general. I also examine how this extension could be conceived.

1.Information and transductivity

To grasp the scope of the transindividual, one should start with how Simondon thinks information, inspired by cybernetics, but as a critique of its limitations. Shannon's (1948) information, developed for the needs of a theory of communication, is eminently semantic, as it implies the transmission of meaning based on a code, with a finite number of variations, and quantifiable. In contrast, two passages explain Simondon's approach to information. One is found at the beginning of *Amplification*: information as an operation that produces changes in a system. In Simondon's words: "information is not a thing, but the operation of a thing affecting a system and producing a transformation" (Simondon, 2010, p.159).

The second is found in ILFI, where information is treated through a philosophy of nature. Information is "signification that emerges when an operation of individuation discovers the dimension whereby two disparate reals become a system", and thus "an initiation of individuation, a requirement for individuation" and "that through which the non-resolved system's incompatibility becomes an

organizational dimension in the resolution" (Simondon, 2020, p.11). Information is once again defined as a modification of the system, but now it can also be the opening of a system, introduced by a singular "crystalline germ" or disturbance that jumpstarts a structuration in a metastable milieu. Individuation being an extension of the singularity, the operation is information acting.

Simondon's information differs from Shannon's not only because it is an operation, but because it is not previously determined. Simondon claims that his conception does not invalidate (Shannon's) quantitative information theory, but rejects its dependence on a predefined code, i.e. form. Simondon's information requires a preexisting tense, indeterminate state, named *preindividual*, and it defines its own field of meaning, its forms, by propagating.

This difference is better expressed in Simondon's concept of "domain of transductivity" or "transductive domain", "a domain that includes a transductive reality, the polarity of a gradient" (*idem*, p.288), wherein an individual is inserted by its relationality. For Simondon, the electromagnetic field is a domain of transductivity, and also the collectivity for psychosocial individuation: "the psychological individual, like the physical individual, is a being constituted by the coherence of a domain of transductivity" (*idem*, p.308). The domain is the pre-individual tension whence a code or form is structured in the act of information, as the associated milieu is constituted with the individual.

Information thus understood is plural. There is no universally valid measure of information, since each structure or individual generates a qualitative transformation of the milieu as information propagates. The more difference the incidence of a disturbance engenders, the more information there is. This plurivocity is noticeable in Simondon's epistemology, as he insists on the discovery of "domains of transductivity" with each scientific advance (*idem*, p.121). The same occurs with technical invention, which directly links physical, cognitive and social processes.

Simondon bases his theory of regimes on information, allowing him not to invoke "new substances" (*idem*, p.8) with each regime. What regimes *do* introduce are domains of transductivity, modes of information in action. If the regimes seem to overlap, it is because they consist in occurrences of information over other processes, so that the systems communicate as "two speeds of the evolution of the real" (*idem*,

p.365). A new regime is a mode of organization of a system that returns on itself, opening new domains of transductivity in being: new information processes, at the heart of previous processes, so that modes of signification and rhythms of activity feed back on each other.

What differentiates the regimes is how information propagates and develops as activity. If crystallization is a paradigm of physical individuation (*idem*, p.169), it is due to its simplicity. Crystallization is the shaping process with the least variation, a one-dimensional propagation, leaving behind structure and stability as residue. This does not mean that every physical process is reducible to the transductive propagation of crystallization. If a physical entity endures due to constituting a system, it implies at least one vector of propagation returning over itself, an activity within its information, even if it presents itself as a fixed structure.

The return over itself characterizes vital individuation. The living perpetuates individuation, maintaining the "margin of metastability" that prevents a complete physical stability. Moreover, this safeguard of metastability introduces a domain of interiority unknown to the physical. For a crystal, the "present", the individual, is only on the margins, where crystallization is taking place. For the living it is everywhere. The living being's interiority is entirely made of margins: life's keystone is the membrane (*idem*, p.251), constantly communicating an inside and an outside. So life communicates a reality *smaller than the individual* and another *greater than the individual*: the biochemical and the cosmic, in the case of a plant seeking sunlight and nutrients from the soil to generate its own energy, to feed its internal metastability.

2.*Amplification*

Amplification is where Simondon suggests the possibility of extending the psychosocial and the social beyond the human and even living being. It was presented in 1965, during a colloquium on *The Concept of Information in the Modern Sciences*. The definition of information cited above opens the text. Based on this definition, Simondon analyzes three modalities of the becoming of information, as encountered in technics and the psycho-social continuum. The operative analogy exercised in *Amplification* is a cornerstone of Simondon's thought, but how this analogy operates must be made explicit to emphasize its link to Simondon's philosophy of nature.

The link appears in the text *Allagmatics*, published as supplement to ILFI. Simondon defines his methodology of the "analogical act" (Simondon, 2020, p.665) as knowing by "defining structures based on operations that dynamize them" (*idem*, p.666), as opposed to the ontological privilege of structures between which operations occur. The analogical act draws its logical validity from the transfer, in the act of knowing, of "an operation that reproduces the operative schema of the known being" (*idem*) to the being yet to be known. For Simondon, the elaboration of thought is analogous to the natural process one wants to understand. Knowledge is a relation between two domains of transductivity, the cognitive and the natural, knowing and knowable. It is one among several processes that bring two domains into relation. This is the operative analogy Simondon describes in *Amplification*, as much an analogy between domains as an analogy of knowledge thereof. Hence the possibility to deal with them in the same terms: they put in operation the same processes, i.e., modes of genesis and becoming of information, in different transductive domains.

Simondon analyzes amplification in three instances: transduction, modulation, organization. *Transduction* is "the most elementary amplification" (Simondon, 2010, p.161), the linear passage of an information stimulus from one layer of the supersaturated milieu to the next, with a tendency to continuous expansion as long as the stimulus persists. Simondon applies the language of communication to the model of crystallization: the solution is equated with a receiver of incident information, corresponding to the crystalline germ or a disturbance.

For Simondon, *psychosocial* processes are transductive: a localized act propagates among individuals and modifies an aspect of collective life. Transductive processes have psychical input and social output. The passage from one to the other occurs by propagation, the advancement of borders. Participation in psychosocial propagation is characterized by the generation of a difference, a flow of information: "information is an incidence in a given group that causes a change in other individuals similarly charged" (*idem*, p.163). A process is psychosocial if it reshapes the social field. What jumpstarts the process is an "act of incidence"; there is no "institutional privilege" and "rumors can be more effective than the communiqué" (*idem*, p.164).

This propagation requires a supersaturation, given by existing polarities in the psychosocial field, a properly transindividual domain of transductivity. This polarity

is guided by affects and emotions, some of which Simondon lists: fear, restlessness, hope. Affect-emotivity is like a modulator inherent in individuals endowed with psychism. It is turned inwards and outwards[2] and operates the passages between the psychical and the social. Furthermore, polarity and metastability predetermine the stimuli they inform, so that the openness for stimuli is selective. Individually, a stimulus initiated at a point in the tensioned social field propagates when it engenders stability, i.e. when it depolarizes. It leaves a residue, like physical crystallization, except that the polarity is not depleted in the case of life and consciousness, which return on themselves and constantly feed on energy. The psychosocial leads to communication between the individual, psychical scale, and the institutional, social scale. As with life, the internal and the external are constitutive of the transindividual.

Modulation, the second kind of amplification, is presented as a process of control, a selection from transduction. In the energy flows of a system passing from metastability to stability, devices govern the progression of information. In open systems like organisms or societies, metastability is permanently renewed by the input of energy. Modulation "tames" the transductive propagations (*idem*, p.165) and fixates sources of energy and information, thus obtaining repeatable and controllable results. Modulation introduces the choice either between "two values (all or none, full or void regime, closure or opening of the circuit connecting the energy source to the charge), or between an infinity of values comprised between a maximum and a minimum, saturation and clipping" (*idem*), suggesting a possibility of finality in the system.

Modulation devices make a system pass from weak to strong energy, like the passage of a baton from a tired to the fresh runner in a relay race (*idem*, p.166). This "rejuvenates" energy. The incidence of information occurs when the previous system and the next are in contact, as sender and receiver. Simondon evokes "an exchange between cycles of existence": a new beginning, a regeneration. In the biological regime, modulation corresponds to a capacity to stabilize despite variations; self-regulation is an instance of this capacity. Simondon repeats the operative analogy between the biological, the technical and the collective, stating that:

[2] For Simondon's treatment of affect and emotion, *cf*. Viana(2019).

> "these effects of homeostasis are found in organisms, whether living individuals or social bodies" (...). Social groups, and also organisms, have functional unity because the different subsets that constitute them admit a common polarization, which varies for all simultaneously when it undergoes readjustments. The unity of the social group is based on the homogeneity of the norms of action (*idem*, pp.168-169).

Here, Simondon associates modulation with integrated control and the differentiation of organs. Ultimately, it is about producing a degree of unity, while maintaining enough openness to continue responding to external stimuli. Stabilization is obtained from affects that propagate transductively, which cease to propagate and become fixed as internal structures of the group. Thus modulation acts upon previous affects and emotions, collectively constituted via propagation. Modulation implies an ability to obtain responses within the system. The norms that determine a way of acting "are not (...) signals, contents that trigger a specific action at a specific time, like a program"; they are "a scale of values constitutive of the previous polarity of each member of the group, giving this individual the capacity to appreciate certain information, a behavioral scheme, as a positive or negative magnitude in relation to the initial polarity (*idem*, p.169)".

Simondon illustrates the relation between polarization and information by distinguishing between religion and morality. The latter contains a code, a content of signals for action, a ritualized program of activity, while morality is "polarization without program, providing a scale of values in each circumstance, but without a programmed development, without rituals" (*idem*). Morality thus understood is not prescriptive, otherwise it would become religion. It is neither deontological nor rational. For Simondon, it is constituted by the crystallization of modes of behavior.

Organization completes the triad. With a selective process, whereby modulations of some transductive movements are reinforced and others weakened, finality is introduced into what had been assembled as organism or collective. At this moment, a system with its own mode of existence is present; selection occurs at each stage of transduction. In organization, "information intervenes as demand" (*idem*, p. 171), requiring the invention of a "system of compatibility", a "more elevated dimensional axiomatic". Information is more than a "passage of energy".

For Simondon, "organization becomes possible via the correlation of transductive and modulation processes" (*idem*). We have seen that the former are processes beginning at the singular, the element, that reach the collective and cross orders of magnitude; a modification is in motion, a disturbance, an expenditure of energy affecting a system with available energy; a movement that introduces homogeneity in its path, in the form of structure or stereotyped action. Modulations are a "complementary and inverse path", whereby "macrophysical structures driven by weak energy govern the evolution of a perpetually new population of microphysical elements determined close to the origin of their free path, such as the population of electrons leaving the cathode vacuum tube" (*idem*). In the analogy, the relationship between the electrons and the triode corresponds to the relationship between individual and group: the device controls the potency of the transductive amplification, so that modulation becomes a frame and information, a form. Simondon summarizes the relation thus: "control of the nascent by the ancient reality defines the social mode of the informational process: the triodic model is the functional analogue of a social structure" (*idem*).

Organization is possible "when there is compatibility between these processes, according to a mode of *real synthesis*", i.e. "[w]hen control is exercised not by a *single* structure, but a group, a core of tension between two or more structures" (*idem*). How does the synthesis take place? Transduction is positive and boundless as long as supersaturation is available. Modulation involves isolated organs, fixed posts. The organ, a subsystem, exists to limit transduction, keeping being as a process, preventing it from becoming residue or pure stability, even if it is allagmatically translated as structure, a stability that preserves metastability. Structure is the logical opposite of residue, the mode of stability that remains linked to the process, the stable as a state of the mobile, rather than the exhaustion of being. In organization, a *determined* being is an *indeterminate* being *under modulation*, the positive as it works through the negative. Organization recovers the positive that persists in the negative, the *indeterminate* acting in the *determined*, in multiple points, different devices, and makes them communicate. It has finality because it involves selection, as affirmative transductions are modified by negating modulations. A body's organs, a system's subsystems, are modulations, if taken individually, or components of an organization, if taken together.

Simondon refers to transduction as an instantaneous impulse facing the future, citing as an example instinctive action, which triggers other instinctive actions, and associative processes that bring together increasing numbers of individuals. Modulation refers to the past acting forcefully on the present, the existing on the nascent. Modulating activities involve abstraction and generalization; they are controlled by formal reasoning, which applies acquired schemes to new content[3]. Organization implies a thick present, keeping the past capable of absorbing energy while projecting a future. Herein lies the possibility of invention: "acts of organizing invention have both the fecundity of associative processes and the formalizing capacity of modulation" (*idem*, p.174).

3.Tarde's generalized sociology

There is no explicit reference to Tarde in Simondon[4], but his suggestion in *Amplification* seems to reproduce Tarde's reasoning in *Monadology and Sociology*. The apparent affiliation between the sociologist and the philosopher is no novelty. In Combes' 1999 book, one reads that "[in] his attempt to think (...) the collective at a molecular level, (...) both infraindividual and infrasocial, Simondon moves closer to Tarde, who (...) desubstantializes the approach to social phenomena by describing them as processes of imitation" (Combes, 2013, p.52); yet what is imitated are not people, but "flows that traverse" them, i.e. information in a transindividual field; and as Combes points out, invention – the core of transindividual politics – is born from the encounter of such flows. More recently, Read (2016, p.234) writes that:

> Tarde's similarity with Simondon is thus not only in overcoming the individual/society opposition through a conception of relations that could be described as transindividual, but that this is done through an examination of the constituent elements of individuality itself, what could be called the 'pre-individual'.

[3] Simondon develops the difference between "minor" and "major" forms of access to technics and knowledge in *On the mode of existence of technical objects* (Simondon, 2017, pp.103-128). See also Viana(2022).

[4] For a close reading of the connections between Simondon and Tarde, *cf*. Veiga, 2016.

Indeed, Simondon's ontogenetics and Tarde's monadology seem to intersect at several points. These intersections go beyond the reference to Tarde's laws of imitation, as noticed by Combes. In this section, I will explore how these two authors elaborate similar proposals to generalize the understanding of the social way beyond human interactions.

Tarde claims that science tends to "oddly generalize the notion of society", as it "tells us about animal societies(...), cellular societies, and why not atomic societies?(...) [Or] planetary societies, solar and stellar systems. Every science seems destined to become a branch of sociology" (Tarde, 2007, p.81). Although it is impossible to address Tarde's argument in full, some points may be underscored that will better illustrate our question of the reach of the transindividual. Tarde emphasizes that between the 16th and 19th centuries, science progressively shifted its focus to interactions and compositions, on a cosmic scale (planets in the solar system, their moons, meteors) and the infinitesimal: molecules and (then hypothetical) atoms. An emergent systems science had not been named[5], but was intimated in theories with relational and historical inclinations, such as hegelianism. For Tarde, his system-as-society analogy is the reverse of the society-as-organism analogy (e.g., the Hobbesian monarchy; the Church headed by Christ; Plato's *Republic*). He suggests "all things are societies, each phenomenon a social fact" (*idem*, p.82), and concludes: "[w]hy wouldn't the molecule(...) be a society, as well as a plant or an animal? (*idem*, p.83)"

For Tarde, this evolution of modern science vindicates Leibniz's monadology. He sees monadological traces in universal gravitation – where masses are understood as aggregates, not units – and cell theory – where bodies are characterized by multiplicity (*idem*, p.54). The same goes for thermodynamics, where the statistical behavior of atoms leads to organization and entropy. Tarde considers the tendency towards multiplicity as expressing an ontological principle, whereby being is apprehended as relation, process, difference. Difference acts in similar ways on multiple scales, as in Simondon's informational analogy between regimes. Thus, Tarde justifies the homology between physical and social; by introducing a

[5] Bertallanfy(1969) names the general systems theory in the 1930s; Wiener(1985) argues for cybernetics in the 1940s. Bogdanov's tektology dates from the 1910s (see Gorelik, 1980).

"psychomorphism" (*idem*, p.65) that rejects the Cartesian dualism of matter and spirit, he denies that matter is inert. Tardian matter acts and engenders modifications; hence its ontological similarity to spirit. Monadology must start from the opposite attitude to that of idealism, Tarde claims: the latter considers that "the whole universe is in my spirit". One should rather consider the universe as "composed of spirits like mine" (*idem*): a material world endowed with dynamism, potency and indeterminacy.

If Simondon advances allagmatics as the correlative study of structure and operation, Tarde synthesizes the principles of movement and permanence as *belief* and *desire*. The first is a "static force"; the latter, a "dynamic force" (*idem*, p.70). They move societies and history (*idem*, p.72), and are present in each monad. In all scales of matter, organized through relations, there is movement and difference, but also permanence and repetition. From this perspective, Tarde says, "movements of bodies are merely kinds of judgments or purposes formed by the monads" (*idem*, p.67). Consequently, one may speak of "plant psychology", "cellular psychology", "atomic psychology" (*idem*). The association of desire and belief results in a framework wherein stability is logically subordinated to movement. This does not imply rejecting stability, but grasping it as it emerges from genesis. It is a state of a system. As in the relation between transduction and modulation, the fixed is a modification of the mobile. Tarde states that "order and simplicity are middle terms, stills where the elemental diversity, powerfully transfigured, is sublimated" (*idem*, p.102). The relation between "chemical series", "vital series" and "social series" of processes (*idem*, pp.102-103) is one of infolding, resuming movements in another regime. Thus, "[t]ypes are only brakes, laws are only dams, vainly opposed to the overflow of revolutionary, intrinsic differences, where laws and types of tomorrow are elaborated in secret" (*idem*, p.106).

Tarde criticizes the "widespread prejudice" according to which "the result is always more complex than its conditions, the action more differentiated than the agents, whence it follows that universal evolution is necessarily a march from the homogeneous to the heterogeneous, a progressive and constant differentiation" (*idem*, p.94). The description of a living system may have more variables than that of a physical system, nonetheless the complexity is not necessarily greater, as both systems rely on the same force of differentiation, captured by variables in their moment of greatest iteration. For Tarde, "difference differs, change changes and, by making

themselves into their own goals, change and difference present their necessity and absoluteness; but it is not nor could it be proved that change or difference increases or decreases in the world" (*idem*).

Contrary to Leibniz's system, for Tarde monads are open and interpenetrate each other. There is no established harmony (*idem*, p.79). The permanence usually called *existence* lies in engendering difference, initiating movements. For Tarde, "[to] exist is to differ; difference is, in a sense, the substantial side of things, both their most proper and their most common feature. One must start from here and avoid explaining this fact, to which all returns, including identity, whence one falsely starts" (*idem*, p.98). To debase identity is to strike Western metaphysics in the heart, as thinking being is predominantly to think the One (*cf.* Gilson, 1962); difference and becoming are problems to explain.

This is the origin of Tarde's claim that *having* (*avoir*) should take the place historically occupied by *being* in philosophy. By downgrading identity, Tarde thinks of existence as the reciprocal imbrication of monads, which entangle and form systems that appear as entities to an ontology of being. Having or possessing is not limited to a psychic subjectivity that thinks it "possesses" another as property. "Having" the other consists in determining oneself in a certain way (individuating oneself) via the relation with the other: to exist in such a way that the other is part of one's singular determination. Tarde defines society as "reciprocal possession, in extremely varied forms, of all by each" (*idem*, p.112). Possession is not merely an intersubstantial relationality, as each entity endowed with desire and belief, principles of movement and permanence, is constituted through its relations, each one "having" the other that relates to them ("has" them). Being is subjected to having in the sense that a being is formed through having; structure is constituted through processes. Relation is the condition of individuation. This logic of process and relation can be said of a chemical compound, where the entity results from the combination of molecules; an atom, where particles attract and repel each other to form an element; and a galaxy governed by gravitational fields. In Tarde's terms (*idem*, p.115):

> The property of any owner is a collection of other owners; (...) each mass, each molecule (...), for example, has as physical and mechanical property not extension, motility, etc., but all other masses, all other molecules; each

> atom of a molecule has as a chemical property, not atomicities or affinities, but all the other atoms of the same molecule; each cell of an organism has as a biological property, not irritability, contractility, innervation, etc., but all other cells of the same organism and especially of the same organ.

Tarde's *possession* is at the heart of any system; the ultimate social reality is thus the ecosystem, from the intestinal to the planetary. A single organism is made up of a complex organization among different species. The intestinal flora is a well-known case, as is the ecosystem that inhabits the airways. More than Leibniz's image of a fish pond, each organism is an ecosystem; each ecosystem, a society. The individuality of any node in an ecosystem subsists only to the extent that the *haves* are sustained and reiterated.

To explain his argument regarding the social *stricto sensu*, Tarde resorts to technology: "[w]hen a newly inaugurated railroad allows a town in the hills to supply itself with fish for the first time, the domain of the inhabitants is increased with the fishermen who are now part of it, and likewise increases the clientele of the latter" (*idem*, p.114). The passage expresses how a minute disturbance in a system propagates and reconfigures it, as relations are transformed. The case of technical invention sounds Simondonian, as it implies the redesign of geography as experienced by a population [6]. In producing difference, the new technical element becomes a component of the social: *having* the population and *being had*, a railroad is *as social as* the townspeople.

4.Transindividual

We can now examine the third regime of individuation. The first reference to the transindividual reads: "the notion of transindividual corresponds to the collective taken as the axiomatic that resolves the psychical problematic" (Simondon, 2020, p.11). The mark of transindividual is thus the operation of the collective; it is presented through the psychical and, later, social problematic, but cannot be reduced to either of them, since in transindividual reality the processes of taking form do not consist in the genesis of an individual (already individuated physically and

[6] *Cf.* Simondon (2017), pp.55-58.

biologically), but in the reconfiguration of an affective-emotive field, a *transductive domain*, traversing a collectivity. The collective does not concern mere intersubjectivity, the emergence of a plane of reality composed of connections between beings of the same kind. The relations appearing in what Simondon sometimes calls *transindividual universe* are not univocal; it harbors different modes of relation. The collective involves psychical individuals, groups, territories, technical objects, and anything with which relations of meaning can be established. Meaning signals the presence of the collective. It is at the heart of the transindividual.

What circumscribes or limits the transindividual? Any process capable of composing a collective, maintaining relations with the bodies via the psychical, can participate in composing a transindividual domain. As a regime of individuation, the transindividual involves a mode, or several modes, of operations of information. It also involves the emergence of domains of transductivity corresponding to how the information operates. The transindividual performs a new return over the previous regimes, on an expanded scale, affecting their flows and resolutions of problematics. Based on the aforementioned claim that more unfinished and open beings rely on the more finished and stable as associated milieu, the transindividual is where entities are most open and unfinished: in the vocabulary of *Amplification*, they are quasi-systems.

The transindividual designates a mode of propagation and regulation of information wherein individuations are superimposed. Its domains of transductivity have high indeterminacy; they are variable, multiple, resorting to undefined virtualities. In the transindividual, an indeterminate quantity of individualities and milieus is composed. Simondon's critique of the concept of homeostasis as mark of the living and horizon of social organization extends to the transindividual: the rigorous stability implied in homeostasis would stifle the openness of relations that characterizes life. Even more than for life in general, the necessary condition of the collective is openness to adapt and disadapt (*idem*, p. 353), to form, dissolve and change bonds. Thinking the social as a closed system is incompatible with the transindividual. The processes of control characteristic of modulation (social in *Amplification*) are but one of the components of the social field.

Simondon differentiates individuation and individualization, a "type of process more restricted than individuation", which "requires the support of the already

individuated living being in order to develop" (*idem*, p. 296), therefore "the individuation of an individuated being [that] results from individuation" (*idem*, p. 297). Individualization concerns the constitution of a psychical personality, which does not refer to an addition of completeness (stability or individuality), but almost a partial renunciation of that stability. This is why psychical life immediately unfolds as collective: the modes of stability occur through bonds not intersubjective, but constitutive of the subject. If psychosocial individuation operates as transductive amplification, believing that this process can be completed corresponds to expecting the crystal-like stability that denotes the elimination of individuality, i.e. the relationality that is constitutive of the being. Individuation in the transindividual is not about conforming atomic individuals or a holistic unity. What then?

To answer this, Simondon develops a modified sociology of groups (*cf.* Bardin, 2015). The psychical subject's social existence is characterized by taking part in "in-groups", for which the "out-group" designates the domain of collective transductivity which, for the in-group, is like an associated milieu. Simondon states that the group "can be considered as the subject's social body" (Simondon, 2020, p.329), and the subject, in acting collectively, is determined by meanings crystallized in the group's normativity. The group acts as a modulator of the affect-emotivity disseminated by the bodies and the collective, i.e., the domain of transductivity that feeds that collective. The group limits the spread of energy, shaping it as a past reaffirming itself in the present. It is the irruption of modulation onto transduction.

How many groups are involved in a subject's constitution is not given in advance. Biologically, one could say the body's existence corresponds to relations of an internal/external kind (associated milieu, *Umwelt*); in the transindividual, the body virtually involves multiple modes of existence, *indeterminately determined*. The groups keeping the operations active as structure are capable of articulation among themselves[7], establishing an energetic, affective-emotive, circulation *functionally* similar

[7] This articulation is best explained in *Imagination and Invention* (Simondon, 2022). Simondon emphasizes the role of images, called "quasi-organisms" (Simondon, 2022, p.9), loaded with affectivity and emotion, which constitute intermediary beings between subjects and objects, materializing as objects and giving form to ideas. As symbols, images stand out from consciousness, interacting with other components of the collective and among themselves. They constitute networks inseparable from the social and may result in the invention of objects depending on the mode of relations established with the processes of nature and the social, organizing themselves as key-points for action and memory.

to a living being's organs, or subsystems of a technical network. If the social involves transductive and modulating amplifications, it involves the triadic structure of expansion, limitation and organization (*Amplification*). Analogically, the collective organized after a domain of transductivity, where bodies carry pre-individual nature within, as affectivity and emotion, has a *functional* similarity with systems of all kinds.

As announced, Simondon does not summon new substances when thinking the subject, which is no substantial reality, but procedural and relational. In Simondon, relations proliferate as differences proliferate, as information flows engender compatibilities. Subjectivity is the modality of connections in group relations, through which the body determines its modes of being; it results from information vectors in the transindividual, due to the triadic structure of amplification: transductive (psychosocial, proliferating, contagious), modulating (social, regulatory, controlling) and organizing (synthetic, selective, binding). In the transindividual, connections pertain to the group and involve the determined modes of individuation of bodies. For a singular subject, relating to alterity means superimposing its subjectivity (in one or some of its determinations) and associated milieus to the subjectivity (also in one or some of its determinations) and associated milieus of the other. The transindividual engenders worlds composed of multiple parallaxes, irreducible to unity. Nor is social reality substantial. Simondon declares his preference for the expression "the social", rather than *society*, because the former does not designate a milieu for the individual, the term of a relation with this individual, but a "system of relations" (*idem*, p.330); the social appears "substantialized as society" only for "the delinquent or the alienated, perhaps the child" (*idem*). Simondon intends to name a web of heterogeneous information flows, wherein individuality is disseminated (as an unfinished mode), and the associated milieus overlap: one cannot make a complete description of transindividual reality, which does not form a whole, nor is it univocal, and is characterized by operations, i.e., change. An effort to describe a social configuration is itself a modification.

Having recognized that the hallmark of the transindividual is the collective, one may ask the opposite question: is any instance of collectivity a sign of a transindividual universe, of processes characteristic of the transindividual as regime of individuation? This is what Simondon seems to suggest in *Amplification*, when

extending the notion of social to all of nature. Is the tangle of roots, fungal hyphae and treetops that characterize forests a transindividual universe? Is every ecosystem transindividual? Can the set of ecosystems currently called Earth-system be examined in light of the transindividual?

Yet not every individuation occurring to a being that lives collectively is collective: The physical and biological individuations of beings implicated in collectives are not collective. Simondon himself differentiates psychical from psychosocial operations. What then can the notion of transindividual achieve? It can express the virtuality of the collective in every polarity, every conceivable compatibility. At least, for the transindividual regime to be attested, it suffices to have a collective, inasmuch as there are subjects problematizing themselves. This does not seem to be the case with molecules or planets. Nonetheless, where there are virtually relations involving living and psychical beings, technical objects and physical systems, there is potentially problematization and the transindividual is conceivable.

5.Discussion

Simondon extends the (psycho)social to the physical universe in two senses, which are not incompatible. Understanding how these senses converge helps to develop the question of the transindividual's scope.

One is the operative analogy in *Amplification*. Simondon arrives at the extension of the social to nature by examining the interior/exterior relation in living beings, recovering Lamarck's hypothesis (Simondon, 2010, p.172) that evolution advances by introjection of processes that occurred in the environment. For Simondon, by stabilizing in its functions, internally, what was previously external, the organism acquires a capacity to control, i.e. organize. To some extent, it fuses with its environment: flows of information cross its membranes back and forth, being alternately internal and external. By perceiving and acting in the environment, the organism is its component: in Tardian terms, it possesses an environment that possesses it in turn. This symmetry is significant and points to an intimation of collectivity: it contains a reciprocity between body and collective characteristic of the transindividual. Thus, for Simondon, "[the problem posed is made] of terms that are

exterior and interior [to the organism] in a complex relation of correlation and partial incompatibility" (*idem*).

Simondon seeks the "common conditions of consciousness and life"; indeed "consciousness is not made only of contents binding it to itself. It concerns the correlation between autogenous and allogenic terms; this relation is the problematic base" (*idem*). Life and consciousness constitute a *continuum*. Consciousness, as a solution to "vital problems", is a "function of life", source of "organizing amplification" – processes that select from expansive transduction. A "functional correlation" exists between the biological and psychical processes of the living being: in both, it is a matter of reconciling tensions between relations internal and external to the organism. The expansion of the "field of consciousness" that occurs when compatibility is found is organization. The newly discovered dimension modifies the relations between internal and external processes and perpetuates a quasi-system.

Simondon adds: "nothing allows to deny that elementary aspects of life are endowed with consciousness"; this claim is based on the assumption of an "*a priori* possibility of social and psychosocial aspects" (*idem*): aspects of amplification by contagion, control and selection (modulations), synthesized as systematic organization. The hypothesis seems to make cognition a particular case of consciousness, admitting under this name any purposeful action: any activity involving communication could be considered an instance of consciousness. It is similar to Tarde's psychomorphism, inasmuch as the energy, polarity and information called upon to justify the claim operate like Tarde's belief and desire. But Tarde's thought implies a monadology, which is incompatible with Simondon, given the substantial character of the monad. However, Tarde's monad is less substantial than Leibniz's, given the reciprocal possession, which resonates with transductive individuation: each singular process, establishing layers of interiority and exteriority, determines an entity, singularly, as a node of relations, which *in allagmatic terms* is a structure founded on the operations that dynamize it.

The second sense is that of a communication without hierarchy between regimes, even if ultimately the organism is paradigmatic. What makes the organism paradigmatic is that its subsistence depends on the perpetuation of metastability. While individuation follows from the metastability of a system, the system itself

persists while metastability lasts. The organism, a system that absorbs energy, renews metastability and keeps entropy low, is the most immediately graspable instance of systemic being. Systemic thinking is intrinsically metastable: imbalances and compositions are hallmarks of systems, which subsist due to their ability to organize and modulate transductive amplifications. This also means that systematic thinking absorbs the processes occurring in all the regimes, with no *a priori* distinction or hierarchy. A system is affected by physical, biological, social, psychical, psychosocial, technical events, which are only ranked *a posteriori* by the observer, who carries within their own hierarchies. The ranking is abandoned once an *allagmatic* understanding of structures through the processes that dynamize them is added to the understanding of processes through the structures between which they occur.

Still in *Amplification*, the complexity of organizing amplification is said to imply "memory and prediction" (*idem*, p.171), which sustain the meaning of actions (processes). Simondon applies to amplification in general the Bergsonian time of duration, that Wiener (1985) and Whitehead (1948) ascribe to organisms *as* paradigm, and that characterize systems with metastability and feedback – including technical systems, Wiener underscores. The capacity to thicken becoming and generate presence is a cornerstone of life and consciousness, which characteristically integrate temporality, as distinguished from the external time of the physical as incarnated in the crystallization paradigm.

Simondon's reasoning seems to be twofold because it has two stages. First, regimes of individuation are neither substantially distinguished nor do they emerge from each other. They imply different domains of transductivity, which, although heterogeneous, can communicate by discovering another domain that renders them compatible. The social and the psychosocial known in human experience are made up of communication and cannot be considered foreign to vital and physical modes of communication: disturbances propagate, consume energy, engender structures and stereotypes, modulate. Second, Simondon goes beyond merely stating that forms of communication between molecules are psychosocial and social, only because they operate in an analogous fashion, as per *Amplification*. The point is that these forms of communication can be made compatible with other physical, biological and psychical relations, thus constituting a broad collective field. This idea of compatibility is central

in Simondon; it is found throughout his texts, applied to and incorporating technical objects, images, territories. This conception grounds the possibility of a "general organology" as envisaged by Canguilhem (1945) and Stiegler (2020). Ultimately, anything that can become compatible with other modes of communication is communicable, and can take part in transindividual realities.

In sum, the transindividual regime's mode of operation has the amplitude of the biological regime, but incorporating the physical by mingling with the environment, as a system. An operative analogy binds all regimes, but the "*a priori* possibility" (virtuality) of the social and psychosocial suggests that the living can be raised to the status of paradigm, and so can the social (Tarde). Beyond Tardian panpsychism, one finds an inscription of the living in the "informational amplification processes" (Simondon, 2010, p.173), a recognition that communication, typical of life and consciousness, is based on nature's virtuality, so that the transindividual is made of affections, modulations, amplifications, in all its instances. It is an energetic regime that does not *emerge* from nature, but performs it in the multiplicity of information; as communication, language and biosemiosis are informative processes, inserted in the indeterminacy of the preindividual.

We have seen that organization introduces finality; this is why finality is found wherever life is present, not only within the living or the psychical being itself, but in everything with which it communicates: the entire constituted collective. It is as if by communicating, the living *steered* the physical, to the extent that if there is life, the universe is a universe of the living and is therefore transindividual. In this sense, the short answer to our question is that the limit of the transindividual is nature, provided that we recognize that nature as such, *naturans*, has no limit; it designates the indeterminate that envelops all determination – all "*naturation*"; it is preindividual.

Conversely, this feature allows for a precise and ecological understanding of Simondon's extension of the social and psychosocial to the entirety of nature. It allows to follow him in denying human exceptionalism. The indeterminate possibility of organizing amplifications and modulations, connecting individuated forms as a collective immersed in the preindividual, means that nothing is beyond the relationality of life *or* consciousness. There is communication and finality, a virtual collective, wherever there is polarization and metastability. The transindividual, as an

iterated plunging in preindividual nature, is the regime that performs existence as collective – reciprocal possession, in Tardian terms. What it requires is openness to nature, an openness as indeterminate as nature, the preindividual.

Finally, as Simondon insists in the *Note Complémentaire*: the transindividual is inseparable from invention, the ultimate connection to the preindividual. Invention institutes new relations and reaffirms the open and expansive character of the collective, as opposed to the closure of a perfectly structured community. This is one reason why in another text published together with ILFI, namely *Forme, Information, Potentiels* (FIP), Simondon insists that the technical object can be the *model* of a unified axiomatic of the human sciences, based on becoming, relation, and *learning*: the technical object is the fruit of invention *par excellence*; its structure expresses aspects of nature, and incorporates a human. As he writes in *The Mode of Existence of Technical Objects* (MEOT) (Simondon, 2017, p.252):

> The technical object taken according to its essence, (...) insofar as it has been invented, thought and willed, becomes the medium and symbol of th[e](...) *transindividual.* (...) The technical object that is appreciated and known according to its essence, i.e., according to the human act that has founded it, penetrated it with functional intelligibility, valorized it according to its internal norms, carries with it pure information.

Conclusion

The introduction evokes the Anthropocene and the initiatives that reframe how we reflect on our greatest current crisis. From what we have seen, it is safe to affirm that the crisis is transindividual. In its political, economic, and social aspects; its geophysical, ecological, and cosmological dimensions, the Anthropocene implicates a collective with multiple bodies of physical, biological, psychical nature, entangled and possessing each other in a distinctly Tardian way. The crisis consists in an overstretched polarity introduced by a historically determined, economically and politically oriented, transductive amplification, modulated and organized in a way that

may soon dissolve a significant part of the planetary collective[8]. While it would be excessive and somewhat anthropocentric to decree that it is a crisis *of the planet*, it is undoubtedly a collective crisis irreducible to its historical human perpetrator.

Again, one may resort to FIP as a source to ask how Simondonian concepts like the transindividual can be helpful at such a time. At the end of this text, one finds the suggestion that a "*pre-revolutionary state*" may be "the exact type of psychosocial state to study with the hypothesis presented" (ILFI, p.696) in his arguments. This means "a state of supersaturation, in which an event is right on the verge of taking place, in which a structure is about to emerge". Our current crisis seems to fit into such a description: the categories we are the most used to in investigating problems of a political, social, economic, even cosmological nature, are increasingly impotent before the urge to invent.

Thus, if this broad use of the transindividual can help to find solutions, the discovery itself, as process, must be grasped from the transindividual angle: to think in terms of the collective crisis consists in introducing a flow of information that might modulate differently, reorganizing the subsystems (economic, political, etc.) that first became sources of imbalance and disruption. A Simondonian contribution would be allagmatic, interrogating dynamic processes to understand the domains of transductivity at play and the emergence of new compatibilities. It would be inventive, in the sense that renewing the domains of transductivity requires incorporating both the knowledge of the crisis and the discovery of more stable organizations, so as to reorganize reciprocal possession and engender a new set of relations in the collective.

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[8] This can be understood in Haraway's (2016) terms: as a danger for *Terrapolis*.

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