

Agency, incorporation and non-individuals: Time and precariousness in networked individuality.

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In this talk I critically evaluate the traditional organisational notion of basic autonomy and re-interpret it following recent work in enactive approaches to the mind. This leads to the proposal of a concept of individuality as the integration of precarious self-sustaining identity and agency. In order to defend this proposal I develop the implications of the idea of *precariousness* and the temporal dimension it introduces. I then elaborate on the operational integration of autonomy and agency discussing the different forms it can take such as incorporation and somatic re-inscription. Finally, I introduce the derived concepts of a non-individual and networked individuality.

Enactive cognitive science has a strong basis in systemic notions of autonomy such as those originating in the theory of autopoiesis. Biological autonomy is one of the elements that are necessary for a system to be capable of sense-making, i.e., interacting with its world in terms of value and significance for the continuation of its own identity, and also to be an agent, i.e., a sense-maker capable of normatively regulating its coupling with the environment. The other necessary requirement is that of adaptivity (regulatory interventions in internal and interactional dynamics that tend to avert tendencies to cross the system's boundary of viability).

These links between autonomy, agency and sense-making, require the early introduction in this story of the concept of *precariousness*, which furnishes self-maintained identity with an inherent temporality. I examine how precariousness radically alters the notion of autonomy and offers tools for a better organizational interpretation of biological phenomena.

1. Precariousness helps us eliminate trivial, static interpretations of biological autonomy (operational closure).
2. Precarious constituent processes bring into play factors such as duration, speed, rhythm and deadlines that are absent from classical approaches to biological organisation. Basic autonomous systems thus need not be operationally closed in a snapshot sense, but the notion itself makes sense only within appropriate time frames, even allowing for the possibility of full closure not to be verified at certain time intervals.
3. Cohesiveness and collaboration between constituent processes are not implied in this view. On the contrary, operationally closed organisations can be reinterpreted as networks of mutual regulation of negativity, as opposed to organisations where different parts collaborate to sustain an ordered whole. In fact, once parts are understood as precarious, their natural tendency is the dissolution of the autonomous unity if left unchecked, a fate that is temporarily prevented by the timely intervention of other parts, themselves negative in their own asymptotic tendencies. The larger whole exists *despite* the parts. This is largely achieved through unidirectional rate sensitivity or rein control, which is the typical form of regulation of essential variables in an organism. The default mode for this precarious organisation is not stability and harmony, but restlessness, spontaneity and constant risk of breakdown. This has implications for concerns about health and development that cannot be easily accounted for from the traditional static notion of autonomy.
4. The notion of operational closure allows for a veritable topology of precarious

autonomous systems comprising intersecting processes and their mutual relations of dependence and constraint: from non-interfering co-existence, through unidirectional dependency, to mutual enabling relations and co-constitution.

With these results, I propose that the idea of an individual, in order to cover the full connotations of the term, should not only be based on the notion of autonomous identity alone but must include the requirements of sense-making and agency. The latter, in particular, allows for networks of metabolic closure to be altered through interactions with the world. Basic autonomy can thus be expanded or re-built, leading to the somatic *incorporation* of habits, which may include non-organic processes and components and the behavioural patterns of other agents. This can happen as the relation between basic autonomy and agency shifts in time from co-existence to co-constitution. Agency has the potentiality of expanding the domain of viability of basic autonomy (this is illustrated in simple models of metabolic-based bacterial chemotaxis), liberating metabolism from some of its constraints but at the cost of a stronger dependence on viable behaviour. Expanded autonomy is achieved at the cost of increased precariousness. The norms of interactions with the world constrain the possibilities of change in metabolism, and eventually they may get re-inscribed somatically.

An individual is therefore an integrated life/mind system – a system not merely distinct from the environment, but one that sustains this distinction through regulated *sense-making* interactions with the world.

This view implies that other entities may have autonomy, i.e., identity beyond mere ascriptional convention, and not be individuals themselves because their agency is not re-inscribed in their basic autonomy. These are *non-individuals*, i.e., operationally closed media that share interesting properties with organisms: e.g., niche constructed soil processes, bio-films, extra-cellular matrices, social interaction dynamics, sensorimotor habits, etc.

The temporality introduced in basic autonomy carries over to the integration of agency and autonomy that results in individuality. Individuality thus implies a time frame and may be fleeting, varying between stages of mere aggregation, non-individuality, and full individuality: slime moulds, some stages of foetal development, crowds, insect colonies, social roles, social institutions, and so on. In addition, the integration of agency and metabolism is evidenced in a high correlation across a large range of timescales involving physiological, behavioural and developmental processes.

I will finally say a few words about social and networked individuality in the human self, where individuality is not merely sustained in part through the agency of others but the very criteria of what constitutes a self is subject to ongoing alterations by dynamic engagements with the socio-cultural world.