

Gatherings in Biosemiotics 2023

University of Copenhagen's Social Sciences Faculty
Copenhagen, 31st July- 4th August 2023

The Concept of Umwelt in a Changing World

Maria Isabel Aldinhas Ferreira

Centre of Philosophy of the University of Lisbon
and
Institute for Robots and Systems /IST
University of Lisbon
Lisbon, Portugal
isabelferreira@letras.ulisboa.pt

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Introduction:

This presentation will discuss the importance of a corner stone of Biosemiotics theoretical framework- the concept of Umwelt highlighting its role in the identification and analysis of the phenomena that the present technological revolution brings about. With this we want to pay a modest tribute to the intelligence and groundbreaking work of Jesper Hoffmeyer who we met for the first time more than a decade ago.

We had the honor and privilege of hosting Professor Hoffmeyer, in Lisbon, and listen to his Distinguished Lecture, nearly 10 years ago.

I recall here the words Jesper wrote at that time: "I am happy to include you in our little biosemiotic circle"

This small circle has been growing up following his insightful vision and the multidisciplinary works of all those that believe that semiosis is the dynamo of Life.

Topics

- Assumptions
- Life Forms: The Three Key Universal Existential Factors
- The Soap Bubble Metaphor
- The Human Umwelt
- The Specificity of Human Cognition
- Technological Revolutions
- Where are we now?
- Stepping into the Future



Assumptions

01

Cognition is the process whereby life-forms, bound to their respective environments, strive to live and replicate within the existential lifespan that is determined by their own corporeal dynamics.

02

Semiosis is the dialectic relationship that binds the life form and its environment.

03

Intelligence is viewed not as a human specific endowment, but as an attribute of all autonomous entities, in this case, of all living beings.

Key Universal Existential Factors

Life Forms

Embodied

Embedded

Situated



EMBODIED

All life forms are endowed with a particular physical architecture that grants them the capacity of intelligently interacting with the specific world they are immersed in.

This physical architecture is the joint product of its genes and the environmental variations the organism had to face during its evolutionary and developmental history



Embedded: The Soap Bubble Metaphor

Jakob von Uexkull coined the term Umwelt to refer to the entity's particular world. In "Umwelt und Innenwelt der Tiere", the author invites the reader to an imaginary stroll:[...] a stroll into unfamiliar worlds; worlds strange to us but known to other creatures, manifold and varied as the animals themselves.

Here we may glimpse the worlds of the lowly dwellers of the meadow. To do so, we must first blow, in fancy, a soap bubble around each creature to represent its own world, filled with the perceptions which it alone knows (1934: 5)



A Situated Narrative



The essential existential bond that links different life forms to their respective environments shows how the coupling of both entities defines a microcosm – a closed purposive organization

The dynamo of this microcosm is a semiotic process of pattern recognition and meaning assignment- that assumes the form of a dialectic relationship, in which the embedded agent and its environment, coupled, influence each other and evolve defining a situated existential narrative (2007, 2011)

The Human Umwelt

Cassirer (1996) writes that whatever is alive has its own circle of action for which it is there, and which is there “for” it - both as a wall that closes it off and as a viewpoint that it holds “open” for the world. However, according to him, only with humankind this life complex becomes a knowledge complex.



Human Specificity

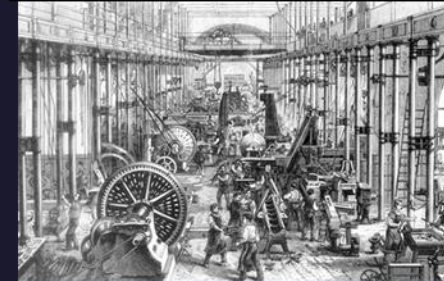
Conceptualizing
and Symbolic
Capacity



Work Capacity
(tangible and non-
tangible forms)



Tool Making
Capacity



- Scientific and technological endeavour continually advances and accumulates over time.





In an Iterative Process that involves:

formulating hypotheses,

conducting experiments

analysing and assessing data

refining theories

redefining practices.

In a dynamics that fuels:

Technological advancement

Is responsible for its evolution,

Leading to the development of new
systems,

New machinery,

New processes

NEW UMWELTEN



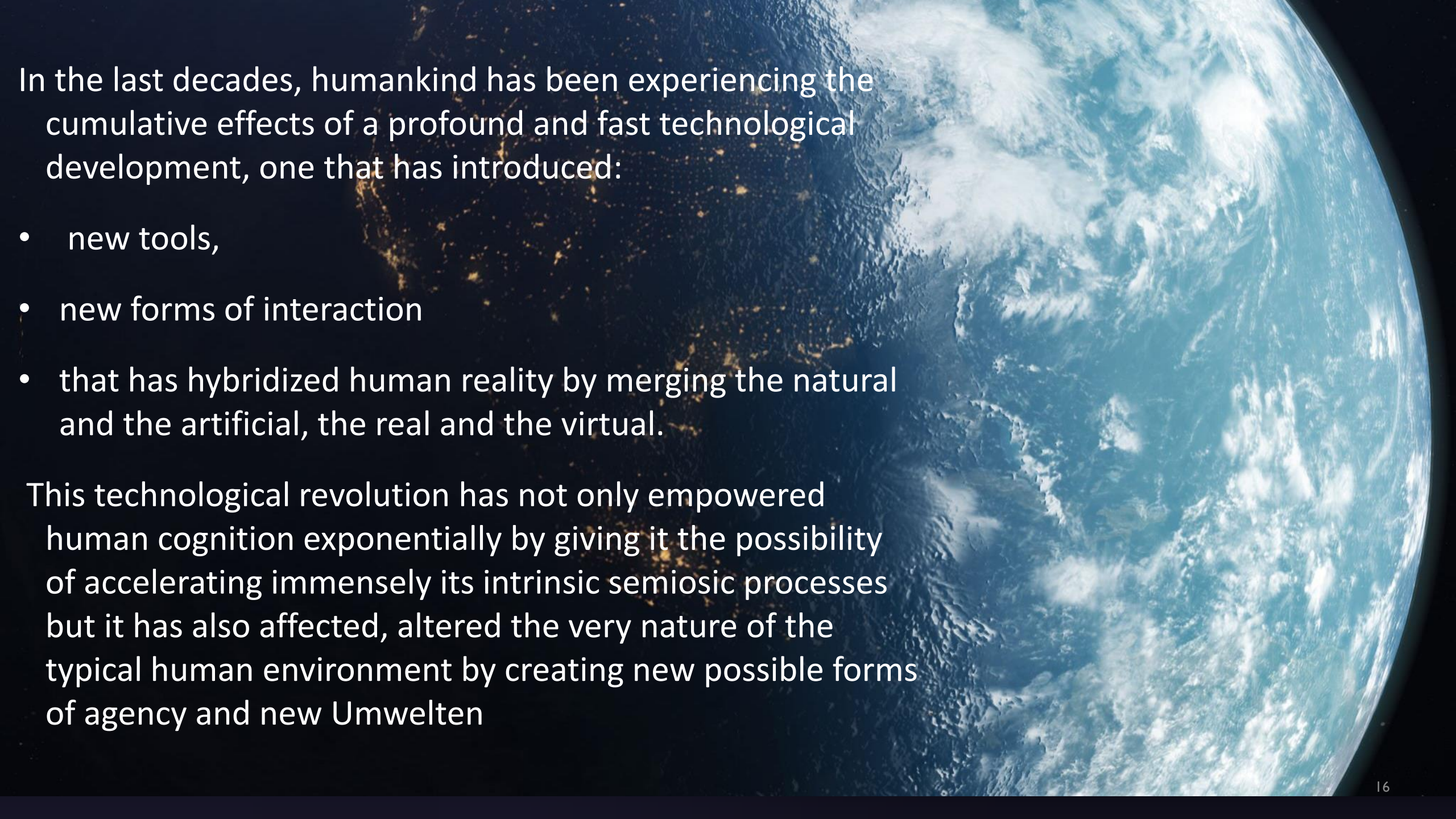


The Human Umwelt

The Technological Component



- **Arendt (1958) points out tools and implements have become an inalienable part of human existence and human beings have adapted to them from the moment they were conceived, designed and produced .**
- **The ontological dimension of tools, i.e., their nature and instrumentality can be understood exclusively in an anthropocentric sense that is historically determined**



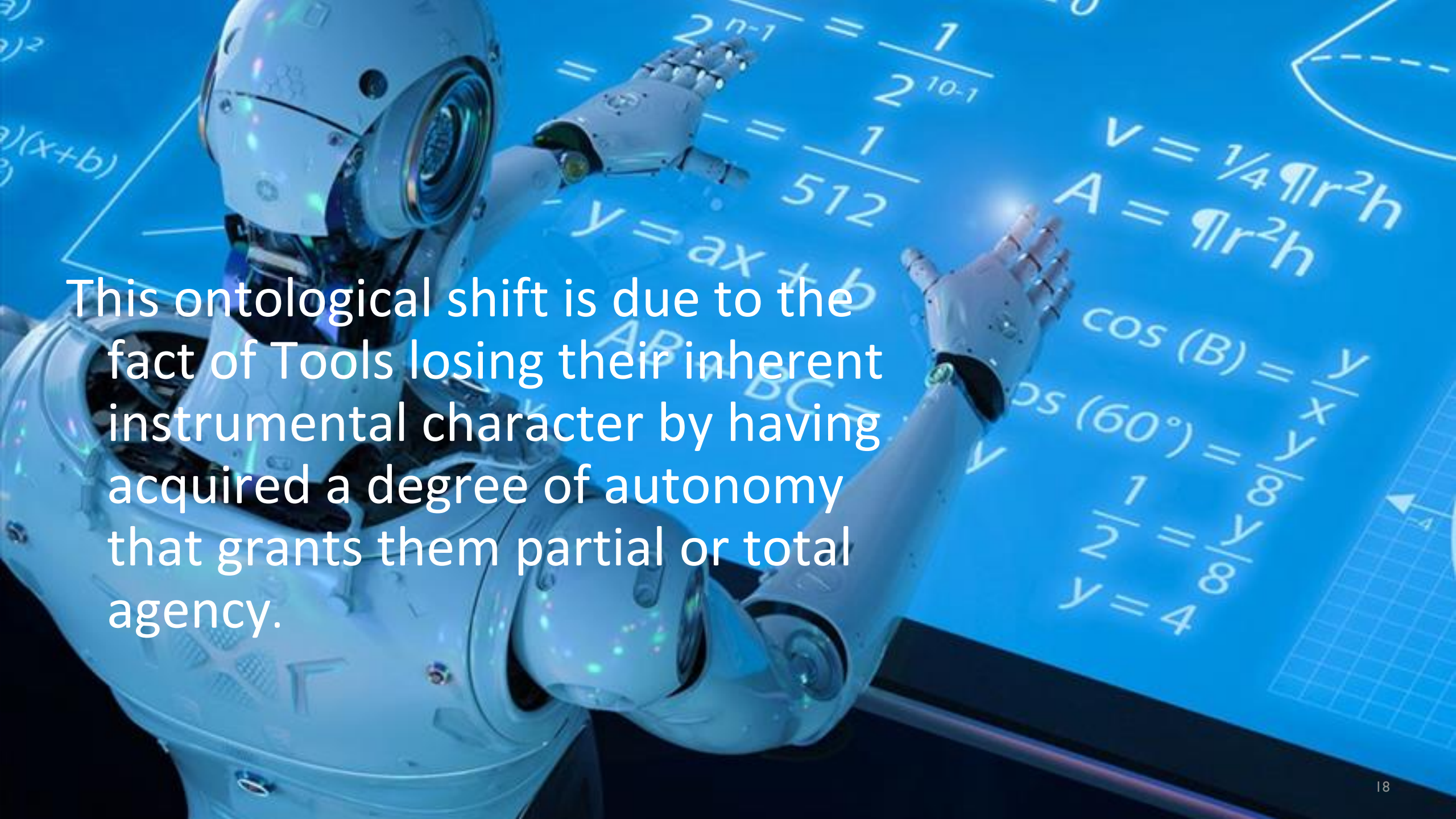
In the last decades, humankind has been experiencing the cumulative effects of a profound and fast technological development, one that has introduced:

- new tools,
- new forms of interaction
- that has hybridized human reality by merging the natural and the artificial, the real and the virtual.

This technological revolution has not only empowered human cognition exponentially by giving it the possibility of accelerating immensely its intrinsic semiotic processes but it has also affected, altered the very nature of the typical human environment by creating new possible forms of agency and new Umwelten

An Ontological Shift

Laying aside the evident differences inherent to the distinct stages of development that characterize the momentum of the present and those of the past technological revolutions, the most important feature brought about by the present one is the ontological shift of the concept of [tool].



This ontological shift is due to the fact of Tools losing their inherent instrumental character by having acquired a degree of autonomy that grants them partial or total agency.

The Natural, The Artificial and Their Hybrid Forms



- Addressing the impact of the incorporation of sociotechnical systems in the human environment, Ferreira (2019) identifies the three main types of semiotic interactions involving a cognitive entity and its environment, presently:
 - The Natural Forms (Agent and Environment have not been subjected to any form of digitization)–The typical dyadic forms involving a natural system and its physical environment that characterize the life dynamics at micro or macro level of entities as cells, bacteria, viruses, animals, plants...
 - –The more sophisticated form of natural cognition that characterizes the being in the world of the humankind and that being symbolically encoded, has a triadic nature.

b) The Hybrid Forms:

– Those involving natural systems—human beings—and digital interfaces existing in the analogue world, in typical human life contexts

– Those instances involving human beings interacting with virtual environments augmented reality scenarios ... where displacement from the subject's actual spatio/temporal framework occurs, as those induced by electronic devices operating on the external perception organs or through induction in the neural system.

– The forms involving human beings with enhanced capacities as in the case of bionic components.

– The forms involving an embodied artificial intelligent system evolving and acting in the human physical and social world as in the case of robotic systems that co-act with human beings at the workspace or perform social routines in public spaces or at home



.c) The Exclusive Artificial Forms: Those forms in which both agent and its environment are digital entities:

- Algorithms that evolve in the context of data related to specific domains: economy, health, business..., identifying recurrent patterns, identifying trends, diagnosing, predicting behaviours and sometimes even making decisions.
- Those that take place when objects that are part of human daily life are capable of digitally interacting among themselves as in the case of the Internet of Things(IoT).
- Those forms of interaction meant to replicate life patterns through the constitution of artificial environments and artificial agents as it is the case of Artificial Life



The concept of Umwelt is fundamental to understand the essential semiotic process that is inherent to all forms of cognition, that is inherent to life itself, as Sebeok and Hoffmeyer have pointed out.

It is also essential from an analytical perspective as it allows for the clear identification of the impacts and changes that the incorporation of sociotechnical systems brings about either in the environment itself or in the type of agency involved

The increasing integration of Artificial Intelligent Systems into multiple aspects of human life can bring substantial benefits but it can also cause very negative impacts, to name just a few:

- (1) alter how humans construct their environment and their own identities
- (2) Alter human socializing processes
- (3) Cause heavy dependence on Ais for decision-making and information retrieval leading to a reduced engagement with reality,
- (4) Deskilling human beings, causing the loss know-how and ultimately leading to the loss of neurological pathways

Education and raising Awareness to the benefits and the possible negative impacts are prior, so that human values can be safeguarded and AIs can really contribute to human flourishing and well-being, fostering equity and assisting preserving the life of our fellow species and saving the planet.





Thank you for your Attention!

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