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The Third Story of the Universe: self-organizing evolution as a source of meaning

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Abstract: We introduce and elaborate a new, evolutionary worldview, as a "Third Story", intended to replace and complement the earlier religious (First) and mechanistic (Second) worldviews. The confusions created by a world that is ever more volatile, uncertain, complex and ambiguous have eroded people's "sense of coherence", i.e. the degree to which they experience the world as comprehensible, manageable and meaningful. The First Story provides meaning and values, but its descriptions no longer provide an accurate understanding of the universe. The Second Story, which sees the universe as a clockwork mechanism governed by the laws of nature, provides more accurate predictions that allow us to build powerful technologies. However, it does not provide meaning or values. The Third Story sees the universe as self-organizing towards increasing complexity and consciousness, subsequently producing matter, life, mind and society. It understands the fundamental mechanism of evolution as mutual adaptation between interacting systems, thus generating synergetic wholes that in turn interact, so as integrate into even more complex wholes. Its implicit value is the search for fitness and synergy, thus inviting individuals to work towards a further evolutionary integration into the noosphere, i.e. the planetary superorganism formed by humanity, its technological extensions, and the ecosystem.

Keywords: worldviews, sense of coherence, religion, clockwork universe, self-organizing universe, values, meaning, narratives, noosphere.

Introduction

Throughout history, people have been fascinated by stories that can explain the universe in which they live, as well as their own role in that universe. All cultures have origin myths, which describe how the world was created. Such myths not only explain some of the important features of the world, such as the succession of night and day, but they also provide a meaning to human life. That is because the story typically explains why humans were created and what they are supposed to do. Thus, origin stories help people

to make sense of their life and the wider universe in which they live, providing them with insights and values that can guide their actions.

The presently most widely spread of these stories is the one narrated in the book Genesis of the Christian Bible and its counterparts of the Jewish Torah and the Islamic Qur'an. Genesis explains how the world was created by God in seven days, and how God, after creating the Earth, the plants and the animals, finally created the first humans, Adam and Eve. These humans were put there with a mission or purpose, which included working hard, worshiping God and obeying His commands as formulated in the Scriptures.

We will denote origin stories such as these, which are rooted in tradition, myth and religion, collectively as the "First Story". For centuries, each First Story has been taken as a literal truth by its adherents. However, as scientific knowledge developed, most of the facts related in these stories became increasingly hard to believe. For example, we now know that the Earth is just one among billions of planets in the universe, that it took billions of years for the first plants and animals to appear on Earth, and hundreds of millions of years more for humans to evolve out of these animals. Modern theologians, in their attempts to avoid contradicting well-established scientific results, have shifted from literal to allegorical interpretations of the First Story. Still, the core mythical-religious worldview of the First Story was gradually eroded by the standard scientific worldview, which we may call the "Second Story".

The power of the Second Story was demonstrated by its ability to make very accurate predictions in domains such as astronomy, mechanics and chemistry and to provide detailed explanations of previously mysterious phenomena such as the weather, the causes of infections, or the movements of the planets. The scientific narrative received further confirmation from the ever more powerful technologies that were based on its theories, from life-saving drugs to space-faring engines and increasingly intelligent computers. As a result, the scientific worldview has become a dominant influence in our present society, with just some small segments of fundamentalists holding on to a literal acceptance of their First Story worldview.

However, there is an important feature of the First Story that is lacking in the Second one: the question of value, meaning or purpose. Science intends to merely describe how the world functions, not to prescribe how people in that world should behave. Moreover, as philosophers have pointed out under the moniker of the "naturalistic fallacy": prescriptions (values) cannot be derived solely from descriptions (facts, observations, theories). A description of some part of the world (such as a map), however accurate, does not in itself give you directions (such as which destination on that map you should travel to) (Turchin, 1990).

This lack of directions has become an acute problem in our contemporary society, which has been characterized as a VUCA world—where the VUCA acronym stands for *Volatile*, *Uncertain*, *Complex* and *Ambiguous* (Bennett and Lemoine 2014; Beigi 2015; Mack and Khare 2016). Many people seem to have lost their *sense of coherence*, i.e. their experience of the world as comprehensible, manageable and meaningful (Antonovsky 1998). The resulting feeling of confusion, anxiety and

despair, which we have analyzed in a previous paper (Heylighen and Beigi 2023), has been called the *Techno-Social Dilemma*. In the present paper, we will argue that this predicament requires the development of a new *integrated worldview* (Aerts et al. 1994), which we call the "Third Story". Such a narrative combines the most up-to-date scientific understanding of the universe as interconnected and evolving with a sense of meaning, value and purpose that sees humans as actively involved in this evolution towards greater complexity, intelligence and consciousness (see also (Vidal 2025)). But before we describe the Third Story, we will investigate some of the background questions and assumptions that lead to the First and Second stories.

The confusions of a VUCA world

In an age marked by unprecedented technological strides and incessant connectivity, the commodity of attention is becoming increasingly scarce (Heylighen and Vidal 2008). The relentless demands on our cognitive resources, from smartphone notifications to the stream of information on social media, subject us to an overload of stimuli to process. The confrontation with chaotic, inconsistent and ever-changing information tends to produce stress, confusion and the fragmentation of mental models (Heylighen and Beigi 2023). Yet, we do need to cope with the challenges of the present VUCA world (Mack and Khare 2016). *Volatility* necessitates long-term thinking. *Uncertainty* demands resourcefulness, adaptivity and flexibility. *Complexity* requires systemic thinking and an awareness of global interconnectedness. *Ambiguity* calls for sense-making, curiosity and experimentation (Beigi 2015).

As cognitive beings, we are naturally driven to seek explanations that feel true and meaningful—but this same drive makes us vulnerable to bias and illusion. In times of crisis, people often regress into tribal loyalties and simplistic thinking patterns shaped by our evolutionary past (Pinker 2018). We revert to familiar narratives or idealize lost certainties. Cognitive biases such as the availability heuristic, bad-news bias, and optimism gap distort our collective perception of reality (Jackson et al. 2016). Overly simplified, emotional and false information propagates more easily (Jagiello and Hills 2018; Vosoughi et al. 2018; Zimmer et al. 2019), skewing people's view of the world. This onslaught of dramatic and disconnected information, amplified by the war on attention, produces a climate of anxiety, pessimism and despair (Haidt 2024; Heylighen and Beigi 2023; Udupa et al. 2023).

This predicament calls for a new system of values that can bring back a sense of coherence and balance. These values should not be limited to specific religious or scientific beliefs but should be inclusive and speak to all people without creating division or tribalism. In a previous work, we discussed the need for such a new sense of coherence (Heylighen and Beigi 2023). Yet, this task is complicated by the plasticity of belief and our susceptibility to narratives that are fragmentary and polarizing, propagated by media outlets that tend to ignore our more abstract, scientific

understanding of the world, instead focusing on stories that evoke powerful emotions, such as fear, outrage, or grief (Rose-Stockwell 2023).

The most effective antidote to this information warfare is the pursuit of knowledge, critical reflection, and deep reasoning. The solution is not to reject storytelling but to reclaim its constructive potential. Stories can inspire cooperation, resilience, and progress when they are grounded in true understanding. The challenge is to become aware of how narratives shape our perception of the world—and to choose, consciously, the stories that lead toward coherence rather than fragmentation and division. Therefore, the present paper intends to present our most advanced scientific understanding of the world in the form of a story.

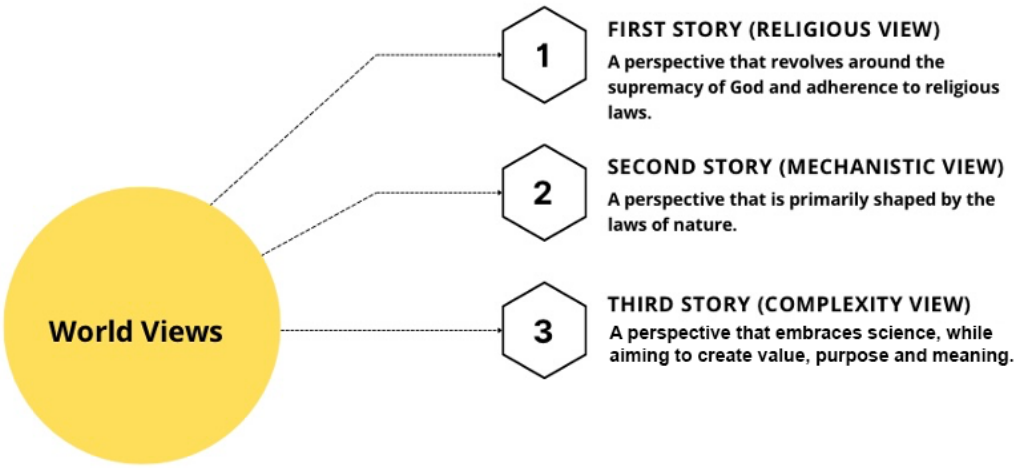

Figure 1: summary of the three worldviews we distinguish

Sense of Coherence and Worldviews

The opposite of the confusion rampant in a VUCA world may be called a *Sense of Coherence* (SOC). Coined by the sociologist Aaron Antonovsky, the SOC concept denotes a broad, constructive attitude about life and the world in which one lives. It is composed of three aspects (Antonovsky 1998; Eriksson and Lindström 2006):

(1) *comprehensibility*: people have a general understanding of how the world functions and which things may or may not happen to them.
(2) *manageability*: people feel they have the necessary (individual or social) resources and skills that would allow them to cope with conceivable challenges.
(3) *meaningfulness*: people have goals and values that they consider worth striving for.

A wide variety of studies have established that individuals with a higher sense of coherence can deal better with life's challenges, traumas and stressors (Antonovsky 1998; Eriksson and Lindström 2006). SOC provides a comprehensive and enduring way of making sense of the world. The stronger a person's SOC, the more likely the

person will be able to cope successfully with stress, anxiety, and despair (Carlén et al. 2020; Eriksson 2017). The SOC model assumes that individuals actively participate in shaping their understanding and formulating an empowering life narrative. In other words, individuals with a strong SOC are able to identify relevant coping resources, to effectively utilize these resources, and to derive emotionally significant lessons when faced with unfortunate life events. Such proactive engagement connects individuals' concrete actions with the way they make sense of the world in which they live.

To understand the implications better, it is worth analyzing more deeply what precisely "making sense of the world" consists of. A useful framework is provided by the concept of an *integrated worldview*. This is a broad conceptual scheme that helps people orient themselves in the world and find *meaning* in what happens to them (Park 2010; Steger 2009). In the tradition initiated by the philosopher Leo Apostel, an integrated worldview can be seen as consisting of six components that form a coherent framework (Aerts et al. 1994; Vidal 2012; 2008). These components can be understood as fundamental aspects or dimensions of meaning. Whenever we are confronted with a situation or phenomenon that we need to make sense of, we will tend to ask the following questions:

(1) *Present* (Identification): what is it? What precisely is going on?
(2) *Past* (Explanation): where does it come from? Why is it there? What caused it to be?
(3) *Future* (Prediction): where is it going to? What are the likely consequences?
(4) *Knowledge*: do I have the necessary facts? How can I find out more?
(5) *Action*: how can I deal with the situation? What courses of action do I have?
(6) *Value*: what are the good and the bad aspects? Which goals should I try to achieve?

The first three aspects are "objective": they focus on understanding the external situation. The last three are subjective: they try to clarify the relation between the subject ("I") and the situation, so that the subject knows how to react. This worldview scheme can be understood as an extension of Antonovsky's three-component SOC scheme (see Fig. 2). SOC's comprehensibility component is here subdivided in the meaning components (1)-(4). Fully comprehending a complex situation, such as the present state of the world, requires understanding: its main components or features (1), its origin or causes (2), its likely consequences (3), but also your own level of knowledge or ignorance (4), so that you do not jump too quickly to conclusions based on unreliable information. SOC's manageability maps to component (5), i.e. knowing which actions you can take that are appropriate to the situation. SOC's meaningfulness finally corresponds to component (6): being able to formulate worthwhile goals for your actions in the present situation.

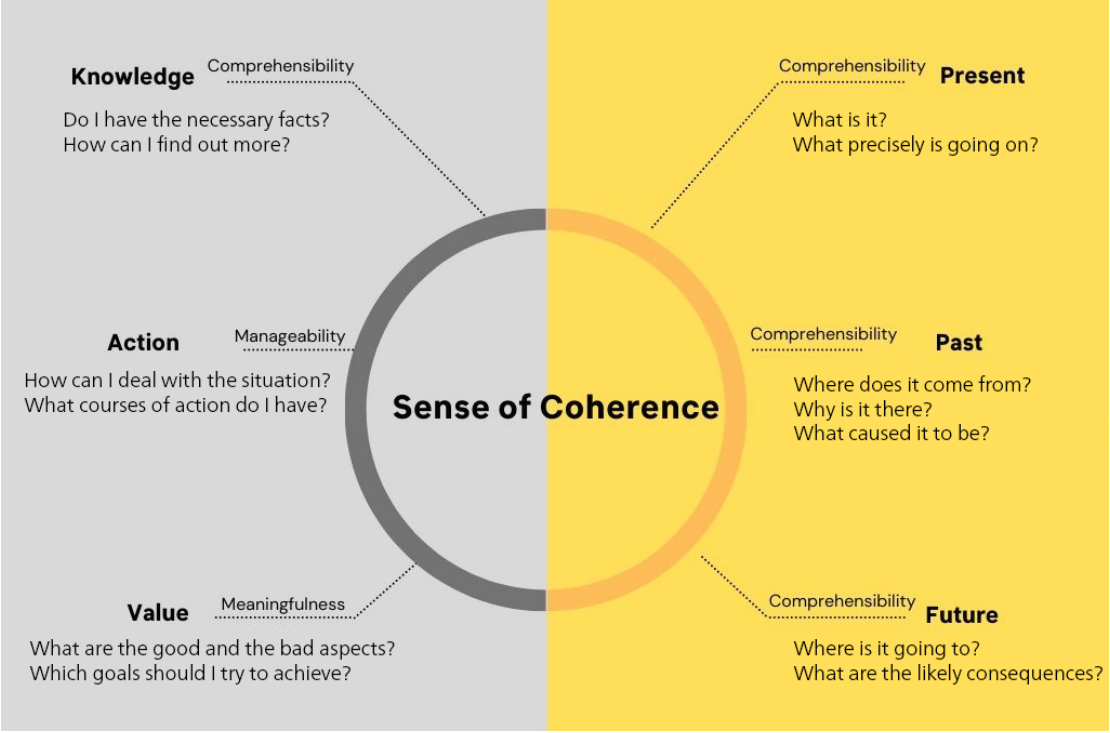

Figure 2: the sense of coherence analyzed into its components. Left (grey background) are the subjective components, right (yellow) are the objective ones

Many studies have shown positive associations between religiosity—i.e. faith, prayer, and ritual participation—and measures of happiness, health, and resilience (Anyfantakis et al. 2015; Powell et al. 2003). That is probably because a religious worldview helps people to make sense of what happens to them—in other words, to develop a sense that their life and the world in which they live are coherent.

However, a study that simultaneously investigated the effects of *being religious* and of *having a sense of coherence* did not find any positive effects of religiosity on its own (Tagay et al. 2006). The study revealed no meaningful correlation between religiosity and anxiety, depression, or post-traumatic stress disorder. On the other hand, it found that a sense of coherence did offer a clear protection against such traumatic conditions. This suggests that the benefits of religion derive from the sense of coherence it provides rather than from religious belief itself. That opens the way for non-religious worldviews that would be equally or more effective than the First Story in providing a sense of coherence.

Indeed, studies in more secular societies, such as Sweden and Canada, confirm that atheists and humanists can experience equal or greater well-being, as long as their worldview provides them with purpose, comprehension, and connectedness (Speed 2022; Zuckerman et al. 2016). This applies in particular to individuals who have to face events that radically challenge their worldview. In confronting the loss of a loved one, for example, one person may interpret the event as God's will, another as misfortune or natural causation. In both cases, sense-making can restore the balance. Thus, for

health and flourishing, clarity of purpose, understanding and coherence matter more than belief in God or church attendance (Haugan and Dezutter 2021).

In times of change and uncertainty, our ability to adapt and bounce back depends on our sense of control and willingness to embrace new realities. Coping with life's challenges requires a flexible mindset and an openness to new possibilities, allowing us to shape our future actively (Beigi 2015). While religion can provide a source of hope, Snyder's (2002) Hope Theory proposes a broader understanding of what is needed for hope. Hope is a motivational state that arises from three components: clear goals, flexible pathways to reach them, and a sense of agency—the perceived capability of acting effectively (see table 1). Individuals high in hope, like those with a strong sense of coherence, exhibit a *growth mindset,* which is characterized by flexible thinking, goal-setting skill, and sustained motivation. To be effective, a worldview should foster such an attitude.

Component	**Characteristics**
Goals	Targets that provide direction and purpose, by (A) achieving or maintaining positive outcomes, (B) preventing or delaying negative outcomes.
Pathways Thinking	The capacity to generate plausible alternate routes to a goal, especially when encountering roadblocks. High-hope individuals are flexible thinkers; low-hope individuals are less likely to produce alternatives.
Agency Thinking	The perceived capacity and confidence to sustain effort in using the generated pathways toward goals, even when met with obstacles.

Table 1: Components of Hope Theory- Adapted from (Snyder 2002; Beigi 2015)

Towards a Third Story

Next to traditional religious systems of meaning (the First Story), the 18th century witnessed the development of a new narrative, the *Second Story*, in which scientists and philosophers sought to understand the world through reason and observation rather than revelation. The scientific revolution and the Age of Enlightenment marked a shift toward empirical inquiry, reasoning, and the pursuit of knowledge independent of religious dogma (O'Hara 2012; Pinker 2018). This intellectual movement ushered in a new era where individuals sought explanations for natural phenomena through observation, experimentation, and critical thinking.

Philosophers have explored existential questions and ethical considerations without relying on religious doctrines. The diversity of thought within philosophy highlights humanity's knowledge-seeking nature, the power of its intellectual capacity

and our continuous quest for meaning, not restricted to religious paradigms. Nevertheless, as societies grapple with the complexities of the modern world, individuals find themselves torn between these two narratives, i.e. the spiritual guidance offered by religious traditions and the intellectual inquiry championed by scientific and philosophical discourse. These two sides are often portrayed as being in rigid opposition. However, they also offer a dynamic dialogue where individuals can draw upon a spectrum of perspectives to derive meaning, find purpose, and address the profound questions that have captivated human curiosity throughout the ages (Liogier 2009). It is in part from that dialogue that a new story is emerging.

Throughout history, the First Story was the primary source of meaning. In times of difficulty, turning to scripture and the divine offers a sense of comfort and assurance, especially in traditionally religious societies. Moreover, religions have been fostering communal bonds, thus helping to curtail selfishness and exploitation. However, a sense of coherence that is not just there to reduce fear and insecurity, but also actively helping us to cope with the contemporary VUCA world, requires a novel kind of story.

Next to its inconsistency with science, another reason we need to go beyond the First Story is that this worldview tends to assign the root cause of all events to a single agent, God, which is all-powerful and by definition beyond comprehension (Heylighen 2025). That limits individuals in their ability to understand and thus to take control of their lives. In this paper, while acknowledging people's inclination to interpret the present situation through the lens of old stories, we propose a much broader narrative that embraces both the complexity of humanity's predicament and its astonishing capacity not only to survive but to thrive in the face of a perpetually changing world. We believe that this narrative of the Third Story can help us to deal with the challenges of the information-saturated VUCA world, while reminding us of key values championed throughout history by visionaries, thinkers and philosophers in different cultures (Lent 2022; Liogier 2009; 2023).

But before we can elaborate the Third Story, we need to analyze the strengths and weaknesses of its predecessor, the Second Story.

The Second Story

The traditional scientific worldview (Heylighen et al. 2007) can be summarized as the *clockwork universe* (Dolnick 2011). It was inspired largely by Newtonian mechanics, which provided a very accurate description of the trajectories of the planets and other material bodies under the influence of the force of gravity. The movement of the planets is perfectly predictable. Therefore, the Solar System can be modeled as a giant clockwork mechanism with its different interlocking gears and wheels moving together so as to simulate how each planet rotates around the Sun in its elliptic orbit, while its moons rotate around the planet itself (see Figure 3). According to Newtonian mechanics, every movement of every material object can similarly be described by a

mathematically specified trajectory through space and time. This brings us to the fundamental assumptions of the Second Story (Heylighen et al. 2007).



Figure 3: a clockwork mechanism (known as an "orrery") simulating the movement of the planets and their moons. Note the crank in front that can be turned to move the mechanism forward (future) or backward (past). Photo source: Wiki Commons

The first assumption is *materialism*: all phenomena we can observe are produced by material objects, which are ultimately constituted of particles. These particles can be conceived as similar to billiard balls: rigid components composed of some inert substance that we call "matter". The second assumption is *reductionism*: all the properties of objects can be explained by the way their components, i.e. ultimately their particles, are arranged in space. There are no emergent properties: the whole is merely an aggregate or sum of its parts. The third assumption is *determinism*: the movements of these objects and particles are fully determined by the forces that act on them. The forces are exerted by other material objects as specified by the Laws of Nature. These laws leave no choice or freedom in how objects move: their future trajectory is unambiguously fixed. The final assumption is *reversibility* (Prigogine and Stengers 1984): the trajectory is determined not just for the future, but also for the past. The laws of nature do not distinguish between future and past. There is no "arrow of time", neither progress nor deterioration. In sum, the universe is similar to a mechanical

clockwork: by turning its "crank", the mechanism can be moved forward or backward, but it does not allow any choice in the way it moves (Fig. 3).

These different assumptions can be summarized by the notion of *distinction conservation* (Heylighen 1989; Heylighen et al. 2007): the world consists of well-defined, distinct objects and particles, having well-defined, distinct properties. These distinctions are objective, unambiguous and invariant. As these objects move through space, distinctions are conserved: distinct past states entail distinct future states, and vice versa. Objects and their properties remain distinct. They do not merge, split in two, appear, or disappear. In such a clockwork universe, there is no room for novelty, emergence, or evolution.

Conservation of distinctions entails *conservation of information*. As made famous by Laplace's (1814) thought experiment, if some hypothetical demon would have complete information about the state of the universe at a given moment, then that demon would be able to calculate all the universe's further states at any moment in either the future or the past (Heylighen et al. 2007). In such a worldview, there cannot be any creativity, surprise, or emergence. There is also no freedom to change the course of events, since everything is determined beforehand.

In practice, however, we do not know the precise state of the universe. Therefore, we can make precise predictions only for certain cases, such as the movements of the planets, of billiard balls, or of rockets. Nevertheless, the Newtonian worldview assumes that we can in principle acquire ever more complete information by accurate, scientific observation. Thus, our powers of prediction can continue to grow without limit. Eventually, we should be able to eliminate all uncertainty, ignorance and confusion. Moreover, the better we can predict how a particular system or mechanism will behave, the better we can control that mechanism, so as to make it do precisely what we want. For example, we can build a rocket and program its trajectory in such a way that it will land in a particular spot on the planet Mars on a particular day and hour years from now.

This is the great strength of the Second Story: it suggests that we can explain, predict and control the behavior of virtually any system. It provides us with methods to design and build mechanisms that will achieve practically any material objective. This is the basis of industrial society and its ever more powerful and efficient technologies. These technologies allow us to produce about any good we desire. The resulting machines, vehicles, and factories have in essence resolved the age-old problem of scarcity: nowadays, we have the means to supply every person on Earth with not just the basic food and accommodation needed to live comfortably, but with a dizzying array of consumer goods. This is a great advance compared to previous centuries. It allowed us to largely eliminate ancient scourges, such as famines, plagues, poverty, child mortality, illiteracy and ignorance (Pinker 2018).

Shortcomings of the Second Story

Nevertheless, such progress reveals a fundamental contradiction within the Second Story. Improving the human condition by applying scientific knowledge assumes that: 1) you have the *freedom* to choose between different actions to perform; 2) you have a system of *values* that tells you which outcomes are better, and which worse. The Newtonian worldview has no place for either freedom or value: since everything is determined since the beginning of time, it is in principle impossible to choose one course of action over another one (Vidal and Heylighen 2022).

The contradiction is to some degree resolved by two further assumptions: *mind-matter dualism* and *rationality*. To explain our apparently free will, the 17th century scientist-philosopher Descartes assumed that the human mind is independent from the matter that constitutes its body and that is subjected to the laws of mechanics (Descartes 1999; Heylighen and Beigi 2018). Therefore, human individuals are not just inert objects: they have agency and can thus freely decide how their body should behave. That allows them to manipulate matter as they please.

However, this assumption introduces an element of arbitrariness in the mechanistic worldview, threatening to undo its powers of prediction and its elimination of uncertainty. Therefore, economists have conceptualized humans as *rational agents* (Heap 2013; Zafirovski 2003): their behavior is not arbitrary, but aimed at maximizing their "utility". Utility is a measure of the value that some option has for an individual who is choosing between different options—such as which good to buy in a shop. Utility can be seen as the degree of benefit, satisfaction or happiness that the individual expects to get by choosing that option. Rationality refers to the assumption that people always choose the option with the highest utility. If we moreover assume that utility is a function that can be calculated for any option by acquiring the necessary information, then human behavior becomes predictable again. This assumption allows economists to build mathematical models of human decision-making that are just as deterministic as the models used by physicists to predict the movement of the planets.

In practice, utility tends to be equated with monetary value or with the quantity of matter contained in some good. Thus, while the Second Story does not propose any explicit goals or values, its implicit values are quantitative and materialistic: acquiring more and bigger material objects is better. These are the values that have been driving industrialism, communism, capitalism and neo-liberalism (Liogier 2023). This attitude of economic rationality is reinforced by the philosophy of mind-matter dualism (Lent 2022). If humans beings are the only entities endowed with mind and agency, while all other entities, such as animals, plants and natural resources, are merely passive pieces of matter, then humans can use, consume, or exploit these objects in any way they desire (Abram 2010).

This attitude of unlimited exploitation is reinforced by reductionism: if the world is merely an amalgam of independent, inert objects, then it does not matter if you remove some of these objects in order to consume or otherwise manipulate them as you please. This attitude stands in contrast with the more holistic or systemic worldview

that we find e.g. in the animism of many indigenous cultures, in Daoism, and in contemporary ecology (Lent 2022). Here, the world is conceived as a network of interdependent systems or agents (Heylighen 2023a). Removing some of these agents can affect many others, including the humans themselves. We will elaborate this systemic perspective when introducing the Third Story.

It is worth noting that the Second Story's assumption of determinism has been put into question from within the mechanistic worldview itself. Quantum mechanics is a theory of matter that assumes a fundamental uncertainty about the behavior of particles. It implies that the outcome of certain physical processes is intrinsically random. However, randomness does not negate the other assumptions of the Second Story. In practice, random processes are statistically predictable. Random processes, just as much as deterministic processes, lack any form of freedom, agency, intrinsic value or progress. Thus, the addition of randomness does not fundamentally address the limitations of the Second Story.

In conclusion, the Second Story does provide a sense of coherence, by making the world appear more comprehensible, predictable and manageable. Analyzing phenomena in their material components and discovering the natural laws that govern the behavior of these components helps us to understand the present state of the world, and to some degree its past and future. It also helps us to acquire knowledge and to act more effectively, in particular by developing technological systems that apply these laws to process material resources into economic goods.

However, the Second Story does not provide any sense of meaning, value or purpose. Its only implicit values are materialistic and quantitative, suggesting that we can freely exploit natural resources in any which way. Moreover, it does not offer any inspiring vision of the future, since it assumes that the future is only quantitatively different from the past. It also fails to explain the origin of important phenomena, such as matter, life, mind and society, since it assumes that nothing truly new can emerge.

The problem with the Second Story can be summarized by a famous quote by the Nobel-prize winning physicist Steven Weinberg: "The more the universe seems comprehensible, the more it seems pointless" (Weinberg 1988). That also explains why the mechanistic worldview has been criticized for *disenchanting* the world (Prigogine and Stengers 1984)—stripping away its beauty, wonder and mystery by reducing everything to cold mechanisms. Nevertheless, the more recent scientific insights into complexity and evolution are ready to *re-enchant* the world, opening our mind to the endless possibilities for discovery, creativity, and emergence (Kauffman 2019; Heylighen 2025; Vidal 2025).

The Third Story: the self-organization of complexity

The new scientific worldview that forms the basis of the Third Story can be summarized as the *self-organizing universe* (Jantsch, 1980; Swimme & Tucker, 2011; Turchin, 1977). It sees the universe as evolving step by step from simple elements to complex,

intelligent organization. The steps include the subsequent emergence of space and time (the Big Bang), particles, atoms, molecules, cells, organisms, minds, and societies. That means that cosmological evolution is directional: there is a sense of "progress" in that the future is *qualitatively different* from the past.

The direction of progress can be summarized by the *law of complexity-consciousness*, formulated by the evolutionary philosopher-scientist Teilhard de Chardin (Steinhart 2008; Teilhard de Chardin 1966; 1959b). This is not an actual "law", because the new worldview is not deterministic, but rather an observation of a long-term trend: as systems evolve, they tend to become both more complex and more conscious of their surroundings. This trend can be explained by the fact that some outcomes are much more likely than others. This follows from our understanding of evolution as a combination of *variation*, which is typically random or at least non-directional, and *natural selection*, which eliminates the unfit variations but keeps the fitter ones. Thus, selection's preference for certain outcomes over others produces an implicit direction for evolution, an "arrow" pointing towards greater fitness (Heylighen 1999; Stewart 2000; Vidal 2023b).

This follows from the well-known principle of *the survival of the fittest.* However, the "fittest" here should not be interpreted—as it often is—as the "strongest", the most "dominant", or the most "selfish". A system is fit when it is *adapted to its environment*. That environment consists of other systems with which the first system interacts, typically by exchanging resources. Fitting in therefore means having *good relationships* with these others. Good relationships are characterized by minimal conflict or friction, and maximal *synergy*. Synergy means that the different systems survive better together than on their own (Corning, 1998, 2003). Their interaction is of the "win-win" type, which is also known as "positive sum" (Wright 2001): the total fitness achieved when acting together is larger than the one they would achieve when acting each on their own.

A conflictual relationship, on the other hand, can be characterized as "lose-lose" or "negative sum": the conflict saps resources from both sides, making them less likely to survive in interaction. Therefore, natural selection will tend to eliminate conflictual relationships, either by eliminating one or both systems or by replacing their interaction by a more synergetic one. For example, the simplest way to remove conflict is to avoid interacting with the other party—e.g. by moving to a different environment or niche.

A more neutral interaction is of the "win-lose" or "zero-sum" type, where the gains made by one system (e.g. by consuming common resources) imply equivalent losses by the other systems. Such relationships will not be immediately eliminated but incite either a differentiation in the resources consumed or a competition for more efficient exploitation of these resources, thus typically speeding up evolution. However, if ever variation would discover a win-win variant, the latter is likely to take over from the win-lose variant. An application of this principle is the observation that parasites, which extract resources from their host without providing anything in return (win-lose), in the longer term tend to evolve to mutualists, which do help their host (win-win) (Maynard Smith and Szathmáry 1997; Sachs et al. 2011).

Some examples from different domains may illustrate the emergence of such synergetic relationships. An example in physics is an atom, which has a nucleus that contains both protons and neutrons. Neutrons on their own are unstable: they eventually disintegrate into a proton, electron and neutrino. However, the bonding with a proton via the strong nuclear force in the nucleus stabilizes the neutron, allowing it to survive indefinitely. Thus, neutrons can only survive thanks to their synergetic relationship with protons in the atoms that make up most of matter. For an example in chemistry, a sodium atom (Na) on its own will react violently with common substances, such as water, and is as such unstable. However, when bonded with a similarly reactive chlorine atom (Cl) it forms the stable molecule of table salt (NaCl), which is a common ingredient of sea water and of food.

In biology, corals are formed through the mutualist symbiosis between coral polyps and unicellular algae that live within the polyp. Both partners benefit from this synergetic relationship: the polyp provides a safe haven for the algae to grow, while the algae through photosynthesis produce nutrients and oxygen for the polyp. Ecosystems are giant networks of mutually supportive relationships between various plants, animals, bacteria, soils, ponds and rivers. They have self-organized over decades or centuries through the mutual adaptation of these diverse organic and geological agencies (Heylighen 2023a). Human societies are composed of cooperating individuals, who support each other by taking on different specializations and responsibilities, while making their products and services available to others.

Self-organization is the process through which the different components of a collective—such as an assembly of particles, atoms or molecules, the different species in an ecosystem, or an assembly of individuals—mutually adapt, so as to form a synergetic whole where each of the components fits in with the others (Ashby 1962; Heylighen 2023c). Such reciprocal alignment happens through *co-evolution*: each of the components explores a range of variations, until it settles in one that fits in with the environment formed by all the other components. Such mutually "fit" interactions between components are stabilized into enduring bonds. The network of relationships formed in this way *integrates* the different components into a coherent whole or "system". This system is characterized by *emergent properties*: the whole is more than the sum of its parts (Corning, 2002; Heylighen, 2023b). Thanks to the synergetic relationships, the components together can do things that they cannot do on their own. That means that co-evolution has produced a qualitatively novel organization.

This emergent whole will now also undergo variation and selection. That means that natural selection now functions simultaneously at the level of the whole and at the level of the parts. This is known as *multilevel selection* (Wilson 1997). The need to maintain cooperation within the whole generally leads to the evolution of intrinsic control mechanisms that prevent "free riders", such as parasites or cancer cells, to exploit the effort of others without contributing themselves to the maintenance of the whole (Stewart 2020).

Mutually adapting components not only integrate; they typically also differentiate. That means that they diversify by specializing in performing different

functions that complement the functions of the others. For example, in society there is a division of labor; in a multicellular organism cells differentiate in different tissues and organs; and in ecosystems species specialize in exploiting different niches. The combination of *differentiation* and *integration* means that the system becomes more complex (Heylighen 1999): it incorporates a wider variety of components that are linked through a greater number of connections. Integration also produces a *hierarchy* of complexity: wholes at one level become components of an encompassing system at the next higher level, which itself may become a component of an even more encompassing whole. For example, particles get integrated into atoms, atoms into molecules, molecules into macromolecules, which may themselves become integrated into crystals, organelles, or cells, and so on...

The growth of consciousness

This progressive complexification explains one half of Teilhard's law of complexity-consciousness. The other half, the growth of consciousness, can also be explained by evolutionary reasoning based on adaptation. Once complexity has reached the level of simple living organisms, such as bacteria, adaptation becomes an active process. An organism will not just passively undergo variation until it hits on a variant that is fit enough to survive: it will actively *seek* conditions in which it is more likely to survive. For example, bacteria can distinguish between beneficial molecules, such as food, and harmful ones, such as poisons. They will move in such a way that food concentration increases while poison concentration decreases. Thus, they are *goal-directed*: moving towards food and away from poison, a directed movement known as *chemotaxis*.

A similar goal-directedness can be found in all living systems (Heylighen 2023b; Heylighen et al. 2022). For example, plants will grow towards the light with their branches and leaves, while their roots will seek out the patches of earth with the highest concentration of water and nutrients. Such goal-directed agency requires a minimal awareness of the state of the system and its environment. Organisms need to be able to sense what they need (e.g. food, water, light …) as well as what is available in their surroundings that may satisfy that need. The better they are able to do that, the better they are able to adapt to a variety of different conditions, and therefore the fitter they will be. That is why the growth of fitness during evolution is accompanied by a growth in the range and quality of awareness, and why Teilhard spoke about the growth of consciousness.

One way to visualize the range of awareness is what Michael Levin has called the "cognitive boundary" of an organism (Levin 2019). These are the limits in space and time of what the organism can sense or understand. These define a kind of "cognitive light cone" around the organism as it is situated here and now (see Figure 4). That means that the organism does not have any information about what may exist outside of its cone. For example, a small creature such as a tick may be aware only of what exists within a radius of one centimeter around its present position, and one second in the past or future of its present moment. A dog may be aware of the places within a

ten-kilometer radius, while remembering something that happened a week ago. A human will have a much wider cognitive cone, potentially knowing about the existence of galaxies billions of light years away and of the Big Bang, which happened 14 billion years ago.

When simple organisms become integrated with other organisms, for example when cells form a multicellular organism or ants form a colony, their range of awareness expands. That is because the synergetic relationships that couple them together allow the propagation of information. For examples, cells in an organism communicate via electrical signals and the release of specialized molecules, such as hormones and neurotransmitters. Ants in a colony communicate with pheromones. Thus, individual organisms can be informed about relevant conditions sensed by other individuals situated elsewhere in the collective. That allows them to respond more adaptively to challenges and opportunities.

Consciousness grows not only in range, but in depth or quality. Evolutionarily more advanced organisms have a deeper understanding of their situation, which allows them to tackle more complex challenges. Thus, the growing ability to adapt is accompanied by growing intelligence and insight (Heylighen 1999; Heylighen et al. 2022). The integration and differentiation that characterize the growth of complexity

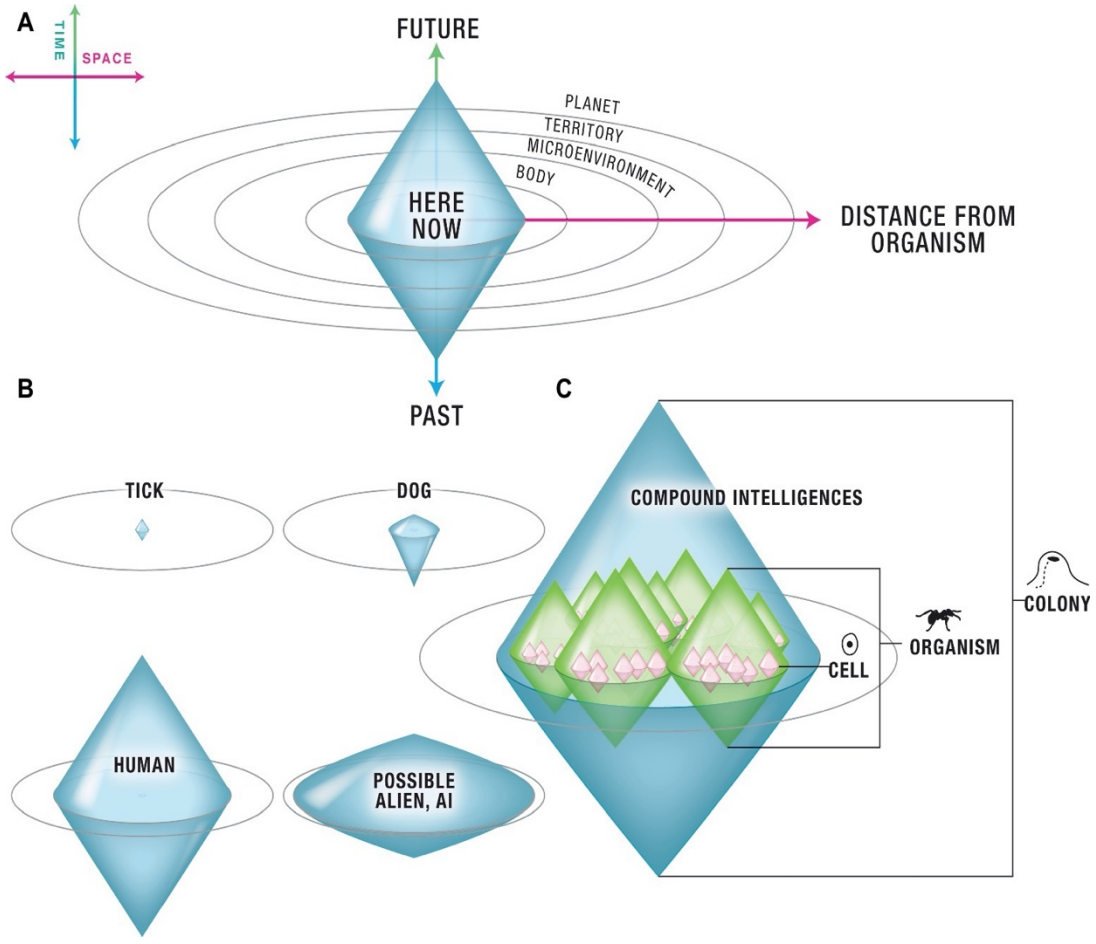

Figure 4: the cognitive light cones, extending in space and time, of different types of agents, from (Levin, 2019).

facilitate this growth of intelligence. The different cells in a multicellular organism or ants in a colony form a compound intelligence (Fig. 4). As such, they will not just blindly transmit information to their neighbors, they will selectively filter, reinforce or aggregate pieces of information so as to create a more meaningful picture of the conditions.

In animals, certain cells, the neurons, specialize in this information processing function. Interconnected neurons form a nervous system, eventually evolving into a *brain*, that can make sense of complex combinations of signals coming from the different sensory organs. Similarly, in societies the information gathered by individuals is distributed via a complex network of communication media, stored in books and computer memories, aggregated, and interpreted by experts, scientists and specialized data processing software, so as to extract its deeper meaning.

A brief history of the universe

Now that we have reviewed the mechanisms of self-organization and evolution, we can use them to understand how subsequent forms of organization, such as matter, life, mind and society, have originated. Many books have attempted to narrate the emergence and evolution of such increasingly complex systems (Chaisson 2001; Maynard Smith and Szathmáry 1997; Swimme and Tucker 2011; Turchin 1977). Their subject matter is known as *Big History*—that is, the history of not just human civilization, but of the entire universe (Christian 2011; Spier 2015). Given the extensive literature and the fact that our scientific understanding of this development is still far from complete, we will here just outline the major steps, i.e. the known transitions to a higher level of complexity and consciousness (Heylighen 1995; Okasha 2005).

The universe originated in a "Big Bang". This was the origin of not just matter and energy, but of space and time. Therefore, it does not really make sense to ask what came before the Big Bang (Heylighen 2010). One way to understand this emergence of something out of nothing is as a *quantum fluctuation of the vacuum*. From the perspective of quantum field theory, the vacuum (emptiness or nothingness) is not a homogeneous void but a turbulent chaos of virtual particle-antiparticle pairs appearing and almost immediately disappearing again. Some of these fluctuations may have been large enough to stabilize (Hawking 2009; Tryon 1973), thus generating a differentiation between different regions of space, containing different amounts of matter and energy. This emergence of stable matter from the void does not contradict the law of conservation of energy, because the positive energy of matter can be counterbalanced by the negative energy of gravitation pulling this matter together (Hawking 2009; Hertog 2023).

Such explanations of the ultimate origin are still quite speculative, though, because our present physical theories cannot be extrapolated to a "time before time" (Heylighen 2010). However, once elementary particles and space-time emerged, we

can combine standard physics with astronomical observations of an expanding universe to infer the subsequent series of events (Chaisson 2001; Swimme and Tucker 2011). As space expanded during the Big Bang, the chaotic cloud of highly energetic particles diffused and cooled down, allowing the quarks to coalesce into more stable protons and neutrons, held together by the strong nuclear force. In the next stage, these nucleons integrated with electrons to form simple atoms—hydrogen and helium—held together by the weaker electromagnetic force.

Clouds of hydrogen and helium more slowly coalesced by means of the even weaker force of gravity into galaxies and stars. The enormous pressure and heat building up in the center of stars made these simple atoms react and coalesce into more complex atoms, such as oxygen, carbon, iron and silicon, constituting heavier elements. Because of the enormous energy generated by these nuclear reactions in their core, the most massive of these stars exploded in what is known as a supernova. These explosions spewed these heavier elements out into space, where gravity could now again make them coalesce into rocks, asteroids and planets. These elements would undergo chemical reactions in order to form more complex molecules, such as water or silica.

Cosmic evolution up to now produced increasingly complex systems, from particles, via atoms to stars, molecules, and planets. While atoms and rocks are static, the energy generated by stars produced systems that are intrinsically dynamic, characterized by self-maintaining flows of matter and energy. Such self-organized flows are known as *dissipative structures* (Prigogine and Stengers 1984). Examples of dissipative structures are flames, rivers, vortices, and hurricanes.

Self-maintaining flows of chemical reactions are known as *autocatalytic sets* or as *chemical organizations* (Hordijk et al. 2018). These can be seen as a precursor of life: they have the equivalent of a primitive metabolism that consumes "food" molecules in order to extract energy and produce the building blocks necessary to keep the system running, while excreting "waste" molecules that are no longer useful. Some of these building block molecules, such as bilipids, may stick together to form flexible membranes that surround the autocatalytic cycle, thus protecting it from perturbations (Bitbol and Luisi 2004). This created the equivalent of the first living *cells*.

Another innovation was the formation of the more complex RNA molecules (Pressman et al. 2015). These not only helped catalyze the reactions that make up the primitive metabolism but were able to pass on this ability to offspring, that is, to cells splitting off when the main cell body grows too large. Since different RNAs catalyze different reactions, some of these were more effective in maintaining and growing primitive cells than others. Thus, we see the beginning of biological evolution by natural selection, where cells containing more effective RNAs would eventually replace cells with less effective RNA. Through continuing variation and selection, these RNA molecules eventually evolved into the more complex and stable DNA molecules that constitute our genes.

This origin of single-celled life is also the origin of goal-directedness, sensation and action (Heylighen et al. 2022), and thus of a rudimentary awareness. Indeed, even

simple bacteria are able to sense and discriminate between positive and negative conditions, while acting so as to exploit the positive ones and evade the negative ones. As we saw, bacteria will navigate to approach food and avoid poisons.

Some of these simple "prokaryotic" (bacteria-like) cells eventually merged with other cells that performed complementary functions. This merger (known as symbiogenesis) is the origin of the more complex "eukaryotic" cells that make up our body (Maynard Smith and Szathmáry 1997; Agafonov et al. 2021). The original engulfed cells are still recognizable within the larger cell as organelles, i.e. subsystems performing specialized functions, such as mitochondria producing energy.

Another "major transition" in the evolution of complexity is the origin of *multicellular organisms* (Maynard Smith and Szathmáry 1997; Stewart 2020). Here, cells of the same type not only integrate by forming an aggregate, colony, or collective; they also differentiate into different types, tissues and organs. That allows them to specialize in performing different functions for the overall organism. In the case of animals, certain cell types, neurons, specialize in transmitting electrical signals between different parts of the organism. That allows these parts to act in a coordinated manner. Eventually, this network of interconnected neurons develops a complex hub, the central nervous system or brain.

This brain not only allows the organism to process complex information coming from different sensory organs, it also *learns* to adapt to novel situations by changing the strength of the connections between neurons. This happens by reinforcing connections that contributed to a successful reaction, while weakening connections whose effect was unsuccessful. Thus, the organism can acquire knowledge that was not yet present in the genes it inherited. This greatly expands the range of situations an organism can deal with, expanding its awareness and intelligence.

A next transition in cognitive capabilities is the emergence of *symbolic* thinking (Deacon 1998; Gontier et al. 2024). This is characteristic of humans. By combining words or other symbols according to the rules of grammar, humans are able to generate an infinite sequence of propositions, describing an infinite number of conceivable situations. This ability allows them to reason and reflect about actual or hypothetical situations and thus to design and invent new concepts, plans and theories. It also allows them to communicate these ideas to others and to register that knowledge in enduring documents, so that others can build on it. Thus, the emergence of symbolic thought has led to an explosion in knowledge. Its application to the development of increasingly powerful technological systems made humans into the dominant species on this planet.

However, to understand the implications of this sharing and co-creation of symbolic knowledge, we need to move to a yet higher level of complexity and consciousness: the *noosphere*.

The noosphere

The presently most advanced level of evolution is our planetary human civilization. Humanity, supported by its technological extensions and the ecosystems that it controls, can be conceived as a *global superorganism* (Heylighen 2007; Stock 1993; Vidal 2024). A superorganism is a collective organism consisting of individual organisms. Ant colonies or beehives are commonly viewed as superorganisms. However, humanity is as yet less well-integrated than such older superorganisms: there is still a lot of conflict and friction between the different parts of global society. Such conflicts and other forms of harmful interaction, such as unsustainable practices, tend to attract most attention in the news. However, this focus on as yet unsolved societal problems obscures the fact that most components of society are coupled in a remarkably synergetic manner.

Every day, massive amounts of food, resources, goods, energy, services and information circulate around the globe, efficiently reaching consumers from producers, while supporting the people that need it—e.g. in relief aid after natural disasters or vaccination campaigns to protect against infectious diseases. These activities are not directed by any central controller, world government, or Earth ruler. Like in all organisms and superorganisms, these activities happen in a decentralized, self-organizing manner, where local demand elicits a flow of supply that satisfies the demand. These flows use efficient channels, such as shipping routes, highways, pipelines, and electrical cables, to reach the place where they are needed. This network of channels along which matter and energy are distributed can be visualized as the circulatory system of the global superorganism (Jacob 2023; Stock 1993). It plays a role similar to the network of blood and lymph vessels in our body that bring nutrients and energy to every cell and organ. Similarly, information is nowadays distributed nearly instantaneously via the global Internet, which plays a role similar to our nervous system.

The paleontologist Pierre Teilhard de Chardin and the geochemist Vladimir Vernadsky have conceptualized this network of interconnections between humans and their technological extension as the *noosphere* (Teilhard de Chardin 1959a; Vernadsky 1945; Vidal 2024). The noosphere (sphere of thought or mind) extends the biosphere (all living organisms) and the geosphere (rocks, seas, and air) that surround the planet. In Teilhard's writings, depending on the context, the noosphere can refer either to the nervous system of the planetary superorganism (the "Global Brain"), or to the superorganism as a whole.

Nowadays, many people fear that, because of climate change, pollution and resource exhaustion, human civilization is on the verge of collapse (Ehrlich and Ehrlich 2013; Heylighen and Beigi 2023). However, when considering the noosphere as a (Beigi and Heylighen 2021)complex adaptive system, it becomes clear that this superorganism is remarkably *resilient* (Beigi 2019), and able to adapt to the most complex challenges. An illustration of this resilience is the impact of the Covid pandemic, which not only killed millions of people, but for months interrupted normal work regimes in most parts of the world, while disrupting global supply chains.

Moreover, it incited a flurry of conspiracy theories which made people worldwide doubt the reality of the disease and the need for the proposed remedies. Yet, the pandemic passed without major disasters: it did not cause any famine, economic collapse, or even long-lasting recession. This illustrates how the global system is flexible enough to absorb big shocks without much damage to its social, economic and technological infrastructure.

The pandemic also illustrated the remarkable intelligence of the noosphere. The virus that caused it had never been observed and its appearance and spread could not have been predicted. Yet, thanks to global scientific collaboration supported by the Internet, within months of its appearance the virus was isolated, its genome was sequenced, and protective vaccines were developed in a record time. This shows how humanity's collective intelligence supported by its information and communication technologies is able to increasingly rapidly solve the problems that threaten it (Beigi and Heylighen 2021).

The problem of climate change caused by the release of greenhouse gases is a more enduring, complex and deep-rooted challenge that cannot be tackled as quickly, unfortunately. However, we have by now acquired the necessary technologies, such as solar panels, windmills, and batteries, to produce energy without releasing such gases, while research and development are on-going to make these technologies less expensive, more efficient, and more ubiquitous. We have recently reached the inflection point where energy produced sustainably has become cheaper than energy produced from fossil fuels (Ritchie 2024). Economic logic therefore dictates that sooner or later all fossil fuel installations will be replaced by sustainable alternatives. Despite a slow start, the transition is likely to accelerate ever more quickly, given that, thanks to ongoing research and development, the price of crucial components, such as batteries and solar panels, is decreasing exponentially (Way et al. 2022).

This development further illustrates the growth of noospheric consciousness. First, the noosphere has become conscious of certain negative effects of its activities on the planet, such as climate change, pollution, and loss of biodiversity. It has then developed an understanding of causes and potential remedies. It has now started to implement a strategy to deal with these problems. This implementation will still have to deal with myriad difficulties, misunderstandings and disagreements in order to reach its objectives, and will arguably benefit from some kind of global governance (Vidal 2023a). Yet, by now the amount of knowledge accumulated, the number of smart and motivated people working on such problems, and the efficiency of the communication channels that allow these people and knowledge bases to collaborate is so great that we can expect these problems to be resolved increasingly quickly and efficiently.

Values in the Third Story

Unlike the Second Story portrayal of a clockwork universe, where humans essentially have no role to play, the Third Story of an evolving geosphere, biosphere and noosphere

suggests a number of clear directions, guidelines and values. The directionality of evolution is towards increasing complexity and consciousness through the development of more synergetic relations. However, evolution is not deterministic: it does not follow a prearranged trajectory and does not converge towards a fixed end point. It rather explores a space of possibilities, driven by the trial-and-error process of variation and natural selection. The number of potential variations is infinite. The number of those variations that would be fit enough to survive is much smaller, but still unlimited. Therefore, we cannot predict what the outcome of evolution will be.

However, we can predict that unfit variations will not last. That provides us with a general guideline for our actions: *try to avoid unfit situations*. Note that this is not a postulated moral prescription, and therefore not subject to the naturalistic fallacy, but a commonsense implication of evolutionary dynamics. In a sense, the essence of evolution is that it produces systems that *want* to survive, i.e. that have long-term fitness as their intrinsic drive or value. That includes all organisms, humans, their societies and the ecosystems they rely on. Of course, survival is not an absolute imperative: some individuals or cultures may prefer peaceful disappearance, suicide, or extinction to continued existence. Nevertheless, if we accept survival as a fundamental value, then it follows that we should work *with* the dynamics of evolution rather than *against* it. In other words, we should adopt fitness as a general value worth striving for.

This simple preference for survival over extinction provides a solid foundation for an evolutionary system of values. Using our scientific understanding of complex systems, self-organization, and evolution, we can formulate more specific conditions that contribute to the long-term viability of systems, i.e. fitness. Achieving these conditions for the global superorganism and its social and ecological subsystems then becomes a general goal for humanity. In essence, this is the goal of *sustainable development*, which we here understand in the broadest possible sense. *Development* means growth, not in material consumption, but in capabilities, complexity, and consciousness. *Sustainable* means that this process can continue indefinitely.

More concretely, this means avoiding unsustainable situations such as wars, unstable or fragile configurations, and processes that exhaust resources or accumulate toxic waste. On the positive side, evolutionary dynamics suggests that we should actively seek *synergy*, using our technologies, knowledge, and imagination to explore promising but as yet unrealized forms of positive-sum interaction. This means establishing mutually supportive relations between different agents, including people, animals, plants, ecosystems, and technological systems.

Evolution also highlights the importance of diversity, variety, or variation: the greater the range of trials, the higher the probability that one will produce a better solution. Uniformity is like putting all one's eggs in one basket: if an unforeseen problem arises, such as a pandemic, a single design may fail everywhere at once. Diversity, on the other hand, makes it likely that some alternatives remain viable and able to adapt. More generally, evolution implies the value of *adaptivity*: the capacity to change course when circumstances shift and to remain open to new approaches.

By applying such evolutionary reasoning to the design of our social and technological systems, humanity would be in a way accelerating or helping the process of evolution by means of our intelligence, an approach that has been called "conscious evolution" (Marx Hubbard 2003; Phipps 2012; Stewart 2007). This would be merely an extension of the natural process of evolving "vicarious selectors" (Campbell 1987), which are cognitive mechanisms that evolution has developed for reducing the number of errors in its trial-and-error search, thus shortcutting its otherwise slow meanderings through the space of potential configurations. Vicarious selectors include vision, knowledge, language and science: all mechanisms that help us to foresee the effects of our actions. Thus, humanity should continue to systematically deepen its knowledge, understanding and consciousness, because that will allow it to avoid blind alleys, to make wiser decisions, and to develop better solutions.

These general values of fitness, sustainable development, synergy, diversity, adaptivity and expanded consciousness should be applied at all the relevant levels: individual people, social systems, and the global ecosystem. This implies that individuals should seek to maximally develop their own capabilities, a process that the humanist psychologist Abraham Maslow has called *self-actualization* (Maslow 1970; Kaufman 2020). They should also be ready to go beyond the individual self (Koltko-Rivera 2006), conventional limitations, or conceptual boundaries, what philosopher Raphaël Liogier has called *raw transcendence* (Liogier 2023). They should respect the freedom of others to develop in their own way (diversity), while helping them when they need support (synergy). They should try to prevent destructive conflicts where possible, and actively seek positive-sum interactions.

Society in general should provide its members with the resources, security and freedom to develop their unique abilities, while supporting the emergence of coordinated, synergetic networks of collaboration. It should in particular support the emancipation of as yet underprivileged communities, while as much as possible preserving or restoring natural ecosystems and biodiversity. A more concrete list of objectives for global society can be found in the United Nations' *sustainable development goals* (J. D. Sachs et al. 2019).

Thanks to its highly advanced science, technology and economy, humankind has the material and intellectual means to achieve these evolutionary values (Vidal, 2014, Chap. 10). What is still lacking is the broad understanding, confidence and enthusiasm needed to tackle these challenges. That is because of the erosion of people's sense of coherence, as discussed earlier, which produces conflict, confusion, anxiety, and despair (Heylighen and Beigi 2025a). We hope that a concrete formulation of the Third Story will help restore people's sense of coherence, and thus provide them with the clarity of purpose, positive outlook, and passionate engagement needed to live a meaningful and constructive life.

The Third Story worldview

We defined a worldview as a scheme for sense-making that answers the "big questions" about the universe and humanity's place in it (Fig. 2). Let us then summarize the Third Story by the way it answers these six questions.

Present (Ontology): The universe is a complex process, not a rigid mechanism, nor a fixed creation. Every phenomenon, structure or system is constituted as a self-maintaining network of relationships within this evolving whole. Matter, life, mind, and society are increasingly complex levels of such emergent organization. Reality is therefore relational and emergent: each entity is defined not by its components, but by its internal and external connections.

Past (Explanation): The cosmos began in a state of maximum simplicity, the Big Bang, out of which increasingly complex structures arose through the interplay of variation and selection: atoms, molecules, cells, organisms, and human societies. These transitions were driven by self-organization, mutual adaptation and the discovery of synergetic interactions between simpler systems.

Future (Prediction): Evolution is open-ended. There is no pre-ordained conclusion. Still, the direction of evolution points towards increasing synergy, consciousness, and complexity. Humanity participates consciously in this process through its science, technology, and ethical reflection. The presently most likely trajectory is a continuing integration of the biosphere and technosphere into a noosphere, a planetary superorganism.

Knowledge (Epistemology): Knowledge is neither given by God nor rationally deduced from axiomatic foundations. It arises through interaction: systems learn by sensing and acting, finding patterns in these experiences, and using these patterns to construct models of their environment. Acquiring knowledge is an evolutionary process that deepens our consciousness and capacity for effective action. Knowledge will never be complete or perfect, but it can grow without limit.

Action (Praxeology): effective action tries to achieve alignment with the environment by adapting, exploring and experimenting. Rather than imposing, controlling or exploiting, we can co-create with evolution, thereby fostering cooperation, diversity, and resilience.

Values (Axiology / Meaning): The intrinsic value driving evolution is fitness resulting from synergy: relationships that enhance the viability and adaptivity of systems at multiple scales. Good actions are those that increase coherence, consciousness, and the potential for further innovation. Participating in this ongoing self-organization of the universe makes life meaningful. The ultimate "sacred" is not some transcendent deity but the immanent creativity of evolution itself.

We can further summarize the contributions of the Third Story by comparing its answers to those of the First and Second Stories, as elaborated in Table 2.

Worldview Components	**First Story** (Religious)	**Second Story** (Mechanistic)	**Third Story** (Self-Organizing)
1. Present – What is?	Creation governed by divine will; reality fixed and hierarchical.	Material objects ruled by deterministic laws.	Dynamic network of relationships out of which systems emerge.
2. Past – Where from?	Origin through divine creation or mythical beginnings.	Origin through physical causes; no inherent direction.	Origin through evolutionary transitions; matter → life → mind
3. Future – Where to?	Toward salvation, heaven or hell; destiny pre-ordained.	Future determined by causal necessity; only quantitative change	Evolution toward higher synergy and conscious-ness in the noosphere
4. Knowledge – How do we know?	Revelation, faith, and authoritative sources, such as Scripture.	Empirical observation and logical analysis produce objective truth.	Pragmatic models rooted in sensing and acting enhance prediction and understanding
5. Action – How do we act effectively?	Strictly follow ritual and traditional procedures	Manipulate and control nature to maximize efficiency.	Adapt, explore, test, and cooperate
6. Value – What is good or meaningful?	Obedience to divine commandments, faith, and spiritual salvation.	Utility, material growth; ultimate meaning absent.	Synergy and conscious–ness; meaning through participation in the self-organizing universe.

Table 2: comparison of the three worldviews according to their answers to six basic questions.

Conclusion

We have argued that the confusions produced by the present Volatile, Uncertain, Complex and Ambiguous (VUCA) world have eroded our sense of coherence. As a result, most people no longer see the world in which they live as comprehensible, manageable and meaningful. Historically, a sense of coherence has been provided by overarching narratives or worldviews, which situate human life within the larger universe and its evolution.

We have distinguished three common classes of worldviews, which we called respectively the First, Second, and Third Story, and discussed their strengths and weaknesses. The First Story is the traditional religious worldview, which sees the world as created and governed by one or more deities. It provides values and meaning but has limited use in helping us to understand and manage the complexities of the present world.

The Second Story is the traditional scientific worldview, which can be summarized as the clockwork universe. It sees the universe as a collection of material objects, moving through space and time as determined by the laws of nature. It provides a more detailed and reliable understanding of the workings of the world, which allows us to accurately predict many phenomena and to design technologies that help us to solve our problems. However, it does not provide any meaning or values, because it assumes that all decisions are either predetermined or random.

The Third Story is the newly emerging scientific worldview, which sees the universe as self-organizing and evolving towards greater complexity and consciousness. It retains the understanding, predictive abilities and technological applications of the Second Story, but adds that we are free in making decisions, while observing that decisions that lead to unfit configurations are not sustainable. Therefore, it admonishes us to explore many different variations in order to find the ones that are most viable in the long term.

This means that we should try to avoid conflict and friction, minimize consumption of scarce resources and production of waste, and maximize synergy. By doing that, we will increase the well-being, coherence and consciousness of individuals, society, and the global superorganism. Thus, the Third Story is intrinsically optimistic, future-oriented and emancipatory, highlighting the unlimited creative potential of both humans and the world in which they live.

It further provides us with a sense of wholeness and coherence, by situating individuals within the noosphere—the self-organizing system that encompasses humans, their technological extensions and the planetary ecosystem. This connects us to a larger whole, whose mental and physical capabilities greatly transcend our limited, individual intelligences. That to some degree provides an alternative for the spiritual connection to the divine offered by the First Story. Thus, the Third Story combines the benefits of First and Second Stories without their limitations, while offering a comprehensive, science-based worldview that offers a sense of purpose, ethics and values.

In collaboration with different partners, we plan to further elaborate and narrate the Third Story in various media, such as websites, videos, courses, and books, addressed to different audiences, including children, students, professionals, and academics. We hope that this broad dissemination will help to combat the prevailing atmosphere of meaninglessness, anxiety and despair, while fostering hope and a deeper understanding of the complex and confusing dynamics of our present world.

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