

Modernity and Sustainability

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Abstract

Since always sociology disclaimed about the role of science and technique. First, it used to analyse the firms, making some critics, during their period of the highest expansion and industrialisation, and later focussing on their unpredictability and uncontrollability. Science and technique follow the fate of modernity. The human activities through science and technique modify the society and, as it's happening any time more, they create risks even more uncontrollable. From the risk hypothesis we pass into the threat until arriving to a real crisis. From the different crisis of the post-modernity era, the most severe seems to be the environmental one. This work analysis how, through the risks linked to the unpredictability of human actions we arrive to the modernity and post-modernity crisis. Attention is put on the consequences of this crisis, driving men to solve the existing problems, creating from the beginning the base principles of the society itself, in a sustainable path.

Keywords: Sustainability, development, modernity, reflexive modernity, post-modernity, industrialisation, science, technique, crisis, risk, anthropocentrism, man, plastic.

1. Introduction

Is in not possible to dissert about sustainability without a clear comprehension of what is modernity, how it changed and how it's still changing. "Sustainable development", "globalisation", "democracy able to have a future", these concepts in contrast between each other represent the modernity phase of the modernization itself. According to Beck, Giddens and Lash the semantics of the industrialised society of the states get modernized. They are radically elaborated as new, and consequently the elementary conquests of the industrialised societies of the modernity are destroyed. Why is it happening? What's the role of the environmental crisis in this phase of deep transformation?

It's not a news that the classics of sociology, specifically Marx, Durkheim and Weber were generally "not so much focussed on the physical aspects of society, as mostly driven by the need to state the independence of the social sciences from the natural ones, starting from those against the environmental determinism and the biological determinism" [De Nardis, 1999: 131].

Durkheim, as Weber, starts from the critic of the environmental and psychologic determinism to state the freedom and human willingness, underlining the human superiority over nature. Also Marx, in "his critic of the political economy of Smith, Ricardo and Malthus, criticized a kind of agricultural determinism and the hypothesis of the *homo economicus* as conditioned only in a physicalist way". This behaviour of the classics of the sociology, even if justified from a series of consideration underlining with strength the gain of freedom of the humans thanks to the laws of nature seen in a antireductionist key – in a historic contest where the human progress characteristics have not so great importance since future, a priori, is considered something good [Norgaard, 2000]- influenced a lot the sociologists way of acting until the Seventies, when the taboo against the environmental reductionism was passed [Beretta, 2011: 18]. So if we can justify the attitude of the classics against to explain facts with psychological variables, it is still difficult to explain how the antireductionist taboo influenced for decades the missed use of biological and physical variables to explain the social phenomena of the end of the Seventies and Eighties. We arrived to a deep environmental crisis to drive sociology nearer the environmental problems. It's sure that to start a discussion about sustainability we have to start from environmental elements, as sustainability is not else that the construction of an harmonic society able to auto regulate itself through the comprehension of its social, economic, environmental limits and to understand the strategical importance of science and technique, giving them the right rule also with the laws of nature, reachable with the interpretation using all the instruments available, included the different scientific-technological disciplines and the humanistic and social ones. If we open the debate about the role sustainability will have in future (as a scientific-sociological prevision) we cannot speak of

ecocentrism, but of a new role to give to men inside the ecosystem and to his capacities. To do this, we need to understand their historical, social and cultural evolution, which habits men assumed and still assume.

2. Crisis and Modernity

The anthropocentric idea which was born during the IX century stated that humans had an exclusive, both biological and cultural, heredity. This happened as the relationship between man and environment changed through the *Dominant Social Paradigm* [Pirages, 1978]. It was based on the total trust in the technological progress, in the freedom of the firms, in the prosperity, in the individualistic values, in the omnipotence of the human will and in the virtual unbound quantity of resources.

Man is superior to any other species, so he's superior to nature itself, thanks to his capacity to accumulate scientific capabilities, to the belief in his proper means and in his destiny, in the understand the unbound quantity of resources. (DWW- *Dominant Western Wordview*).

The industrial and the French revolution produced a big break with the past and signed the arrival to the modernity. Three fundamental aspects, linked to our theme of analysis, were highlighted: *rationalization, differentiation and individualization*.

The first one, idealized as mechanical rationality, gave the precedence to the fulfilment of a scope using the available instruments. According to this objective the technical knowledge and a scientific vision of society were preferred to morals, values and ideals. The *differentiation*, instead gave value and importance to the division of labour, - artisan, workman, entrepreneur, capitalist- giving less importance to the person specific characteristics as gender, race, religion... This cataloguing permitted men were identified inside the society more for their productive roles then for their identities. Finally, the *individualization*. Product of *rationalization and differentiation*, it allowed the individual, once got a greater belief in his own means, to follow his interests eliminating all the traditional medieval boundaries. The definition of *individualization* has American origins, if we think about the history of United States but it's also linked to the political and personal isolation typical of the post-revolutionary France. Modernity brought both these phenomena as, if men look for their realization, they felt for sure, at the same time, a feeling of social loneliness although they were at the centre of the same social scene [Pellizzoni-Osti, 2011: 89-107]. These modernity elements perfectly explain how strong is the anthropocentric idea inside the society and they represent how men feel the change of the surrounding social contest and how to react to it.

The modern society, accepting the anthropocentric vision, automatically delineates the natural environment as a huge source of energy and substances, so productive factors to maintain an always increasing economic development.

Today, the environmental issue is considered as one of the most important factors of the transformation of the society crisis. Rationalization, differentiation and individualization perfectly delineate the idea of environmental crisis. "There is a crisis when someone, an autonomous, rational and competent entity, believe the environmental future conditions depends on the behaviours he decides to have" [Pellizzoni-Osti, 2011: 52]. The concept of crisis, as the risk one, is as deeply modern concept and together with the concepts of limit or threat, delineate all the useful elements to understand the birth of sustainability.

We are used to understand the environmental crisis only when they are intended as dramatic so as a diffused scary. "The environmental crisis is produced when the sum of ecosystem alterations become a threat" [Beato, 1998a: 41]. One of the most important and significant work, which was object of interest for the academic word not only for the technological and environmental problems linked to the concept of risk, is the "Society of risk" of Ulrich Beck [2000]. Beck, together with Giddens, gave a series of considerations about the risks created by the human activities and about of their incidence in the modern society [Beck, Giddens, Lash, 1999]. From one side these risks are not under the control of the human activity, while, from the other side, once the social awareness increases, the business linked to the risk reduction increases.

Lets' think about the success of the biologic agriculture or the bio architecture. In this contest the social problems of the initial modernity change to leave place to other crises. We move from the conflicts linked to the goods and resources distribution to the conflicts for the distribution of the "evils" [Pellizzoni, Osti, 2004]. According to Beck one characteristic of the crisis evolution is that it is not under the rational calculus, that's a relevant news. If, from one side, the capacity of action increases thanks to the technology even more present in the daily activities, from the other side, there is a lack of information to take the decisional action. So the significance of risk changes: it's not anymore a solvable decisional problem but an uncertain situation potentially harmful [Beck, 2000]. According to Beck this situation doesn't represent the end of the modernity, but a radicalisation of it. The institutions of the first modernity as the science, politics,

economics, are dead, passing from a "primary scientization" characterized by the infallible science to a "reflective scientization" [Beck,2000]. "We can understand the kind and importance of this transformation first of all considering that the new key concepts take the place of the old linguistic words and of the elementary 'certainties' of the industrialised societies of the countries-state, creating mess inside them and politically opening them" [Beck, Giddens, Lash, 1999: 23]. "Sustainable development", "globalization", "democracy able to have a future" these concepts in contrast between each other represent the modernity phase of the modernization itself, the "reflective modernity". According to Beck, Giddens and Lash

"Reflexive modernization means the possibility of a creative (self-)destruction for an entire epoch: that of industrial society. The 'subject' of this creative destruction is not the revolution, not the crisis, but the victory of the Western modernization. If simple (or orthodox) modernization means, at bottom, first the disembedding and second the re-embedding of traditional social forms by industrial social forms, then reflexive modernization means first the disembedding and second the re-embedding of industrial social forms by another modernity.

Thus, by virtue of its inherent dynamism, modern society is undercutting its formations of class, stratum, occupation, sex roles, nuclear family, plant, business sectors and of course also the prerequisites and continuing forms of natural techno-economic progress. This new stage, in which progress can turn into self-destruction, in which one kind of modernization undercuts and changes another, is what I call the stage of reflexive modernity."

According to Giddens all of this means unsureness, produced by the "reflective modernity" and it shows itself with the "politicization" of action, not only inside the political system, but also inside the economics, technique and science, family and associations, "as everywhere the basis of acting have to be created and founded again, both in a small and in a big scale. In this fact probably there is one of the most effective messages of the theory of the reflective modernity" [Ibid.]. So, it's not about "expressed secondary consequences, but intrinsic consequences of the secondary consequences, of the industrial society modernization" [Ibid.], that cause a mess inside the social institution, threaten all the certainties and "creating politics in the society from the inside". This means that the "steel cage of the segregation" is broken (Max Weber) created by the first modernity [Beck, Giddens, Lash, 1999: 24-25].

The consequence of all of this is represented by all the occasions to act during the modernisation process, usually unexpected occasions, that give place to directions and actors in conflict. "What someone of us denounces as a goodbye from the sociology may become a new birth of it, a new direction toward a not discovered "America", toward a secondary modernity" [Ibid.].

3. Science

Also science will be secondary to the anthropocentrism as it will be designed as "an oriented activity firstly and systematically oriented toward the knowledge, so toward the events description, both the singular and the recurrent ones, of the natural world and the human and social world [Bagnasco, Barbagli e Cavalli, 1997: 234]. Next to science there is technique, constructed as the capacity of practical problems solving through the scientific knowledge, so the matured experience. During history science and technique "proceeded for centuries on parallel binaries without ever meeting or rarely meeting" [Pellizzoni, Osti, 2011: 150]. For a science limited to the abstracted speculation area, there was a technique, found in itinere through the direct experience and the empirical knowledge. The relationship between the two started to change during the middle of the VIII century, after the technological innovation which followed the scientific discovers of that period, as the electromagnetic effects that will be the starting point of the introduction of the first electric locomotive. In the relationship between the two there'll be an evolution and a strong connection so that we speak about 'empiric science' or 'applied science' and the same science moved from the abstracted speculation to a speculation aimed to the introduction of practical applications [Mayntz, 1998: 531-538].

The modern science begins during the XVII century, during the spin of the new industrial bourgeois class, looking for an even bigger connection between the abstracted studies and the practical uses aimed to improve its own activities and during the diffusion of the new protestant values [Merton, 1938: 153-156]. We find famous intellectual men inside its protagonists, such as Galileo Galilei, Cartesio, Bacone, ecc.

During the XIX century a second phase begun, with the birth of the first laboratories, the creation of the first polytechnics, the formation of departments, where students of different disciplines used to meet, with the global increase of the number of scientists and publication about this field. During the XX century, the relationship will be even stricter thanks to the Manhattan project, that will connect also the governments. The executive of the United States, together with firms and scientists, organized a research project finalized with the construction of the first atomic bomb, that will be used the 6th of August 1945 on the Japanese cities of Hiroshima and Nagasaki, stating the end of the second world war.

The arrival of the economic world inside the scientific development field will create another phase, characterized by the relevant weight of the technology and by the great link with the political class. This was the preliminary step for that social process that will be called 'scientific revolution', funded on the private use of the research discovers, and, analysed under the market economy logic, will become common inside the universities and will be done by an increasing number of institutions, stimulated mostly by economic interests. Science consequently becomes a fundamental resource, necessary for the survival of the same firms which invest.

Subjects as information systems, biochemistry, electronics, etc. were born, as science based industries. Science became a productive resource, fundamental and necessary for the survival of the same firms which invest big capitals on it. This, while from one side gave value to the resource, from the other creates a lot of contradictions: the property rights exploitation, the use of patents bought with money, the secret of the studies to be the first to bring a news inside the research [Senatore, 2013]. These are the problems which modified the knowledge transmission way, that was even more connected to the economics and profits. Lets' think of the pharmaceutical sector, where the aim of making new researches is linked to the investments, that cover the majority of the costs to arrive to a new drug. The pharmaceutical industries, for sure, under a competition regime, will maintain secret the progresses obtained to avoid the other industries to arrive first on the drug. All of this, from one side slows down the scientific development and from the other side permits that, as in the drugs case, their use, fundamental for the individuals, has to be paid with a price that's higher, the more it was invested to realize it.

Nowadays, science, economics, industry, technology and politics are greatly connected between each other, so that between these disciplines there is a continuous exchange of information that creates an interdisciplinary knowledge. Once accepted the evolution of the concept of science, now it's necessary to move back and to analyse the relationship between society and modern science, underling the public response toward the scientific progress and its evolution during time.

This was made possible through the application of science and social phenomena. The aim was to build a rational knowledge which examined the issues dividing them into their simplest elements to solve the case. Following this, an atmosphere of euphoria was spread for progress and for science, which became a panacea for every problem of life. In the field of philosophy, Positivism¹ was born, insinuating itself into every part of society. The same thing happened in Italy with the artistic movement of Futurism. In the *Manifesto of Futurism*, Filippo Tommaso Marinetti, argues that if art is life, it can never be focused on such topics "Compagni! Noi vi dichiariamo che il trionfante progresso delle scienze ha determinato nell'umanità mutamenti tanto profondi, da scavare un abisso fra i docili schiavi del passato e noi liberi, noi sicuri della radiosa magnificenza del futuro"².

The atomic bombs dropped on Hiroshima and Nagasaki, however, gave rise to the questioning if science and technology had reached levels to be applied as forces of destruction, comparable to the great upheavals of nature. They could cause irreversible damage to the survival of its species and the world. So this event opened a fracture on faith in science and, generally, on the reference economic model supported by itself [Senatore, 2012: 41].

The modernist anthropocentrism had placed the man at the centre of the universe, creating the illusion of being able to take advantage of unlimited resources, to shape nature according to his purpose, to rely on scientific progress to resolve problems. The situation nowadays, however, is represented by countless states of ecological, biological, economic and social crisis and science has not helped us to overcome it. Indeed, in many cases, when it has been used in the field of economy and politics, responding to and indiscriminate profit to determine a superiority, psychological too, of one nation over another. This thing happened in the arms race during the Cold War, helping to create those problems to which today it is being asked a solution. Currently it is increasingly clear that the scientific research is "a concern deeply human, not detached from conflicts of interest and power struggles, especially not able to reflect nature in its objective essence" [Pellizzoni, Osti 2004: 163]. Step by step, in fact, technology, as fruit of science, oriented by political and economic reasons, increases its capacity, not only to direct and inspire choices with irreversible impacts on the future of human society, but also to influence a profound impact on the structure of the world, destabilizing the environment in an almost uncontrollable way. Regarding the problems related to the environment and the perception of a real environmental crisis, the science applied to the experience supported and influenced an economic model based on unlimited exploitation of resources and the pursuit of profit to ensure higher rates of growth. The environmental crisis is

¹ School of thought born in France in the early 1800, that was inspired to some basic guidelines referred to the exaltation of scientific progress.

² *Manifesto Futurista*, *Le Figaro*, 20 febbraio 1909.

also the result of this close relationship between scientific research and industry, where industry is pressing to address and condition cognitive survey lines, linked more to the profit and less to the collective interest.

Therefore, it is appropriate to ask a question: if science finds proceedings for the preservation of the planet, in which ways and terms it will succeed in its task when risks are difficult to predict and themselves are caused by science which will have to contain such problems in turn?

The level of crisis has had a decisive thrust in the evolution of science. We passed by a science which aimed to acquire complete mastery over nature to an universal science which transfers cosmic processes in nature with the obvious risk of destroying it, followed by the destruction of man's dominion over it. The key to the problem is not the scientific progress rather than the search for a new technological and scientific paradigm which is able to protect the balance of the ecosystem. Catton and Dunlap [1979, 243-273] propose a new paradigm as a tool for understanding the ecological crisis. It redefines the relationship between men and nature, moving away from the cultural anthropocentrism which has dominated up to that time. The NWP [Catton and Dunlap, 1978°: 41-49] (*New Ecological Paradigm*), as it has been defined, it is based on four underlying principles:

1. Humans are not the centre of the biotic community but they represent one of the many species, although they have peculiar characteristics;
2. Pose a principle the consequences of human action on the ecosystem, also considering unexpected effects which may result of human action;
3. Recognize the land as an organic environment physically limited, considering the problem of limit in any human activity;
4. Ecological laws cannot be abolished by scientific research. Men must respect the constraints imposed by the physical and biological environment and by the rules which support it if it does not want to run into irreversible and destructive changes for humanity [Catton e Dunlap, 1978b: 256-259].

Obviously speculations of Dunlap and Catton represent only a proposal not free from its critics. Frederick Buttel disputes the operating utility, judging it abstractive and devoid of practical implications [Buttel, 1978: 252-256]. A sort of involuntary Natural Law is perceived between the lines of NEP, which tends to see the world as a set of duties and absolute constraints to be respected because they are inherent in nature itself. Even the traditional ethics assumptions are questioned by modern science. However, beyond the validity of the model, it would be appropriate to rethink of the relationship between science, economy and ecosystem by invoking the concept of sustainability and investigating the validity. A paradigm shift is only possible to reconcile development and respect for the environment and orienting the scientific research in this direction.

4. The Technique

Among the recurring concepts that links authors such as Weber, Marx, Adorno, Habermas and others, from different periods too, the one that most connects their approach to the problematic risk is surely the central role that everyone rely to the technique. It is true that sociology was born with the technique and science and the science itself exalts the merits at the time of maximum expression in the early XIX, but in the German sociological tradition science and technology are observed through a deep analysis of social reflections on the transformation that science and technology require in the social world. The most interesting idea, certainly not the only one, on the technique for the purpose of our speculation seems to be the one of Gehlen expressed in "L'uomo nell'era della tecnica" (1984) ("Die Seele im technischen Zeitalter") and in other works. Here Gehlen develops the theory of plasticity of man as a being which is not provided, by nature, of dangerous appendages and still suitable to fully meet basic needs. Then the man takes steps to seek alternative solutions and does it through the technique that represents the cultural deputy of instincts and specialized organs (for example: the first weapons used by men, spears or swords which replace claws). Gehlen thinks that technique has always been a current attitude in human life and the culmination of excitement for it overlaps with the Industrial Revolution, an historical-cultural transition, comparable to that of 5000 years represented by the Neolithic revolution [Privitera, 2004]. According to Privitera, analysis and conclusions reported by Gehlen on the industrialism, including the theory of risk, are taken successively by Beck. The technique leads modern man to the loss of reality, sending us away from direct experience. We are too far away from what we do and the indirect experience surrounding our actions and information stolen to the personal verification are countless [Gehlen, 1984]. Ulrich Beck will work this concept again of the lack of information with the intent to show the ambivalent role of science and the scientific-technical expert knowledge compared to our abilities to judge the world in which we live [Privitera 2004]. The thesis of Horkheimer and Adorno in "Dialettica dell'illuminismo" ("Dialektik der Aufklärung. Philosophische Fragmente") [2010] indicate that the human being

has always fought the nature of fear, and this fear drove him to dominate it. The man, to achieve this goal, has developed a rationality that allows him to have the absolute control over the world through the calculating thought.

"The figure of man's thought which becomes a hostage of the world created by himself, has influenced not only the sociological climate of the second half of the XX century. It inspired the more radical anti-capitalistic intellectual way of thinking of 1960, some of the current environmental movement, to the postmodern way of thinking, which located in Adorno's a kind of *ante litteram* interpreter of some of its principles motives. Here too, similarly to the intuition of the Weber's iron cage, the awareness of the restrictive nature of the freedom that the domain of rationality brings, stays strong." [Priverato, 2004:20].

As the technique, as a fruit of science, develops itself oriented by political and economic reasons, it grows its capacity not only to direct and inspire choices with irreversible impacts on the future of the human society, but also to record a profound impact on the structure of the world, destabilizing the environment in an almost uncontrollable way. Attributes of modern technology were starting points to advance a critique to the concept of technique. Particularly Heidegger focuses on the relationship between technique and the individual. The twentieth century man is defined as "in fuga davanti al pensiero" [Heidegger, 2004: 27].

He considers the contemporary calculative thinking which differs from the meditator because it chases an opportunity from another one, never stopping itself to mediate with reality, to meditate on it, fleeing ahead of any attempt to stop this mad rush. Consequently, technique hides the messianic promise of prolonging life in the subconscious of man. Thanks to that, the man becomes master of his own evolution, without being restricted merely to a passive subject.

In this regard, Heidegger talks about a discussion took place in 1955 with the American chemist Stanley during a meeting of Nobel Laureates in Lindau. Stanley claimed that soon it would be the time "the hour is near when life will be placed in the hands of the chemist who will be able to synthesize, split and change living substance at will"³ [Heidegger, 1966: 52]. Such a way of thinking, for the philosopher, does not have anything constructive, but worse, it hides a frontal attack on humanity, unprepared for such a radical change. The example demonstrates how self-feeding needs and fantasies lead to new needs and fantasies to be fulfilled, triggering an ongoing and unstoppable vortex. So it made his way a technical-scientific ideology that does not encourage the purest knowledge, able to better serve the search for harmony with the whole, but only the human utility. Human activity is completely conquered by a calculating thought, generated following a strict utilitarian calculation. The essence of modern technology can be explained in the transition from the old ideal of the artisan "know-how" to "must do" of the industrial society. Consequently, the "natural world" is intended exclusively as "background to be used" and no longer as simple *fūsis*, or as nature in which man is an integral part. Heidegger's speculation helps us understand the critical position on the effects of technology on humanity and how the "natural world" may be adversely affected by human actions based on these assumptions.

An illustrative example is offered by the vulnerability of nature, that undergoes technological intervention of man. Natural balances that have kept unchanged for millennia their physiological characteristics are at risk. Nowadays the entire biosphere is threatened, a so vast and complex system that it would never be felt perishable for human action effects.

If the framework is the same, the value of knowledge and experience shall not have effects. Once good examples and a correct behaviour had the task of transmitting the moral idea to teach how to practice choices and virtuous actions. It was believed that at the initial conditions of any action would be repeated, so as to make those wise men who knew what was the right behaviour and choices morally irreproachable, depending on the repetition of such actions.

Nowadays we can say that man has tried to establish his dominion over nature, thanks to modern science. Indeed, perhaps it would be more correct to say that man is continuing to dominate nature through the instrumental use of the same, forgetting that the only human being represents one of many living creatures and, as such, he also risks of being overwhelmed [Catton and Dunlap, 1978b: 48]. Here we are faced with an acute form of the crisis of modernity or its radicalization [Beck, 2000]. To mention Pacelli's sense of limit, we can say that the real problem is found in having placed humanity facing the limitless that manages to contextualize all forms of responsibility in the action that performs. The madness of collective actions lies against every rule and tradition in the breaking of all shapes and in the overcoming of all limits [Pacelli, 2013]. The overcoming of limit goes from "a modern instance that is reflected in the era of paradoxes

³ During the last phase of his studies Heidegger substantially moves into two directions: the abandonment to things thus rejecting the calculative thinking that lies behind the technique and rethinking the deep sense of the relationship between man and environment. An attitude almost mystical gained from a thorough reading of Meister Eckhart, Johannes Tauler, and others, which will mark the culmination of speculation of Heidegger.

which promoted the shift of boundaries in the physical space and has weakened relational and valorial contains to redact them on the logic system." [Pacelli, 2013: 12]. Through the disruptive ability of capitalism states a revolutionary, liberating and commodified philosophy that does not recognize any authority and escapes any responsibility resulting in the uprooting of social relations [Pacelli, 2013: 53].

Decreed limitation of reason, that leads to science only what is verifiable, it is proved inadequate to control the scientific and technical progress, and the man, taking advantage of the greatness of his knowledge and power, is surrendering in front of the question of truth and, therefore, in front of the future.

And what is the truth?

"Human beings interpret and shape the natural environment through culture, which in turn is given direction by the responsible use of freedom, in accordance with the dictates of the moral law. Consequently, projects for integral human development cannot ignore coming generations, but need to be marked by solidarity and inter-generational justice, while taking into account a variety of contexts: ecological, juridical, economic, political and cultural." [Benedetto XVI, 2009: 82].

Gregory Bateson in the conference held in the Cathedral of Saint John the Divine, in New York City, on November 17, 1977

"Most of us have lost that sense of unity of biosphere and humanity which would bind and reassure us all with an affirmation of beauty [...]. We have lost totemism, the sense of parallelism between man's organization and that of the animals and plants. We are beginning to play with ideas of ecology" [G. Bateson, 1984: 13-14].

Bateson considered that the man and the world were disjointed. The paradigm born after the Industrial Revolution was upset. The man is now an element in its own right compared to the environment.

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