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1 Ecological Transformation and the Implications of Spatial Scale

Matthias Schmidt

Introduction

In view of the consequences of climate change and the global decline in biodiversity, socio-ecological transformation is needed and shared as a normative goal by large sections of society, politics, business, and academia. However, the transformation toward a climate-neutral and environmentally friendly way of life and economy is proceeding very slowly and in small steps, and despite articulated agreement, it often encounters open or hidden resistance or fails due to conscious or unconscious ignorance or lethargy. As such, the necessary radical corrections and measures fail to materialize. This raises questions relating to the reasons for this conscious or, in many cases, unconscious resistance and failure to act. In this chapter, I discuss the ambivalences that go along with ecological transformation and argue for considering the spatial distance and dimensions of the problem in overcoming the current environmental crisis.

Regional differences and spatial distances between the causation of environmentally and climate-damaging activities and their consequences make causalities appear either less obvious or blurred. At the same time, individual contributions to greenhouse gas emissions, resource consumption, and waste production are supposedly insignificant in relation to planetary systems. As a result, individuals experience environmental crises in vastly different ways, thereby relieving polluters of their responsibility.

It is a proven fact that the regions, or better societies, that have contributed significantly to global environmental degradation, climate change, and species extinction differ from those regions or societies that have suffered particularly from the negative consequences of these processes. To hold individuals, groups, or states responsible is rendered difficult by this spatial distance, although causalities can certainly be proven. Added to this is temporal immediacy since climate impacts and environmental damage occur with a considerable time lag from causation. Who is responsible for the damage occurring today if human-induced carbon dioxide content in the atmosphere has accumulated over the past two centuries, the burning of fossil fuels has taken place over several generations, or large-scale deforestation and the draining of peatlands took place decades ago?

At the same time, individual behavioral changes, or restrictions to act in the most environmentally and climate-friendly way possible, seem insignificant or even irrelevant in the face of the inertia of climate processes and unstoppable climate change—positive feedback is not immediately noticeable. Questions on balancing different interests, gains, and costs also contribute to inaction or transformative lethargy: ecological concerns are pitted against economic interests, questions of societal burden and cost-sharing remain unresolved, and numerous dilemmas, such as intra-ecological conflicts between climate protection and nature conservation, make clear answers difficult.

Among many other economic, political, cultural, societal, or psychological reasons for the apparent ambivalence toward the ecological transformation considered necessary by large segments of society, spatial distance and dimensions are often too little considered. I argue, then, that distance and dimension play a not insignificant role in the reluctance to engage in ecological transformation; they invite people to fade out, overlook, and ignore.

The (Neo)Colonialism of Climate Change

While among stratigraphers and geologists the debate about the beginning of the Anthropocene oscillates between the Neolithic Revolution and the peak of the radioactive fallout in the mid-1960s,[1] the causation of global climate change can be narrowed down much more temporally. The conversion of the energy system from solar-driven energy sources such as hydropower, wind, and wood to the use of fossil fuels in the course of the Industrial Revolution was the relevant starting point for the disproportionate and ongoing increase in global carbon dioxide emissions.

Starting in England as the mother country of industrialization at the end of the 18th century, it was especially European countries and later North America, as well as Japan and Australia, that were responsible for the bulk of emitted carbon dioxide. The increased proportion of the gas in the atmosphere caused by humans thus essentially represents an accumulation of combustion processes that have occurred over the course of the last two centuries. Similarly, the emission rates of more recent years also demonstrate very clearly the disproportionately large role of the Western world. Although, in a comparison of countries, China is now the largest emitter of greenhouse gases, the share of the so-called "Global North" (Europe, North America, Japan, Australia) is still 34.8%,[2] which is clearly disproportionate in view of its share of the world population of 18.7%.

This inequality in the causation of climate change corresponds almost cynically with the unequal impact of its effects. Although droughts, heatwaves, water shortages, rising sea levels, and extreme weather events are now increasingly affecting the Global North, as recently demonstrated by the searing heat and devastating fires in North America and the Mediterranean region, as well as various flood and storm events in Europe, exposure to and, above all, the destructive consequences of the extreme conditions are significantly greater in the Global South. Exceptional heatwaves in India, monsoon floods in Pakistan, extreme droughts in the Horn of

Africa, threats from rising sea levels to island states in the Pacific, increases in the number and intensity of typhoons in Southeast Asia, or hurricanes in the Caribbean affect hundreds of millions of people in highly vulnerable societies.[3]

The functional link between the Global North and the Global South, which has existed at least since colonialism and is based on unequal power relations, is perpetuated in the current environmental and climate crisis. Countries and the people of Africa, Asia, and Latin America were seen by colonial powers as resource depots and labor pools, and for centuries, they have served the wealthy states as cheap production sites or as disposal areas for pollutants[4] and, most recently, as compensation for their own climate and ecological sins as carbon sinks and the last remaining biodiversity hotspots.

Due to the increasingly alarming reports published by the Intergovernmental Panel on Climate Change (IPCC),[5] as well as a multitude of natural disasters caused by climate change, numerous governments and large parts of societies worldwide are stirred up and recognize the necessity for a socio-ecological turnaround—a conversion of the energy system, the economy, and consumption patterns—and the ultimate objective of climate neutrality. This desire is expressed primarily in prominently presented—but almost unrealistic—goals, such as making one's own economy climate-neutral by a certain year (Germany by 2045, EU and USA by 2050, and China by 2060), as well as in new laws and measures, bans, and subsidies. Significantly, however, global inequality also repeats itself in these measures: in achieving its goals on the level of nation states, the Global North involves the Global South as a helper on its way to climate neutrality, ascribing a role to these countries just to make sure it maintains its own prosperity. The following examples exemplify this notion in more detail.

Trading in CO_2 certificates explicitly involves the less wealthy countries. In the sense of indulgence trading, companies in the Global North can initiate carbon reduction projects in the Global South so that they do not have to reduce their own greenhouse gas emissions. This can take the form of promoting energy- and emission-saving technologies, preserving forests and peatlands, or initiating projects for renaturation or reforestation.[6] Such measures turn the Global South into the carbon sink of the Global North, and while these activities help construe a "greener" image for carbon-intensive companies and societies, the success or dubiousness of this trade is controversially debated in science and politics.[7]

Over the course of the past two millennia, the forest areas of Europe and other regions of the Global North have been massively reduced. Areas untouched by humans exist only sporadically, and biodiversity has declined sharply. This explains why efforts to protect and preserve wilderness and biodiversity are directed at the remaining hotspots in tropical and subtropical regions. This is often done through the intervention of international organizations and NGOs, or by corporations or committed individuals from wealthy northern nations. Often, they do so without considering the concerns of local populations, which is why the practice is also referred to as "green grabbing,"[8] i.e., global concerns for species protection and climate policy being placed above the local or national concerns of societies in the Global South.

For decades, numerous pollutants and waste generated by industrial processes or consumption have been dumped by wealthy economies in the Global South. Discarded smartphones, computers and consumer electronics, batteries, and wrecked tankers end up in landfills in West Africa or South Asia, where they are eviscerated, burnt, or dumped at considerable environmental and health risk.[9] Thanks to this international trade in waste, the Global North not only gets rid of its pollutants, but it also achieves largely clean rivers and tolerable air quality in its rural and even urban regions.

The above examples support the thesis proffered by sociologist Stephan Lessenich,[10] who describes the advanced political economies of the Global North as "externalization societies," whose wealthy majority benefit from the resources, labor, and limited life opportunities of others: "The Global North can live, produce, and consume as it does because others do not—and cannot—do so."[11] Brand and Wissen[12] denounce the "imperial way of life" of the Global North, according to which consumerism and the maintenance of prosperity in Europe and North America, but also by global elites in general, take place massively at the expense of underprivileged social groups, especially in the Global South. In this respect, ecological transformation, the rules and direction of which, moreover, are largely prescribed by the Global North, can thus also be seen as a neocolonial project.

There is no doubt that climate change, species extinction, and the negative consequences for the vulnerable half of the world are being taken seriously by many politicians and societies in the Global North. Many governments of advanced political economies in the North also acknowledge their responsibility, and their economies are making a supposedly greater contribution to overcoming the environmental and climate crisis, albeit essentially in the form of technological restructuring and financial expenditure, rather than in the form of relinquishing power and influence, or restricting cherished lifestyles, or genuinely sharing the burden, for example, by taking in environmental refugees. Indeed, the interests of the country they represent are always at the forefront of the political actions of state governments, and the fear of imposing too much on their populations is considerable. As recent events and developments demonstrate, almost all concrete policy measures to reduce greenhouse gases, if they involve higher costs or restrictions, provoke resistance. In the German context, for example, this can be seen in public protests against increasing taxes on fuels, the expansion of wind-power farms[13] or the current dispute on the banning of gas and oil heating systems. The public's widespread resistance or unwillingness to change prevents political parties in the Global North from intervening in the status quo, which leads to a deceleration of the necessary socio-ecological transformation. As a result, the global environmental and climate crisis perpetuates existing inequalities, and those who have contributed the least pay the bill.

It's the Geography—Regional Differences and Spatial Distances

The cumulative problems of environmental degradation, species extinction, and climate change have reached a global dimension and invite taking a planetary

perspective, which is also reflected in the growing importance of respective academic disciplines such as Earth System Sciences,[14] Planetary Health,[15] or Planetary Histories.[16] Nevertheless, it should not be forgotten that the Earth is first and foremost a planet that, due to its heterogeneous surface consisting of an irregular mosaic of oceanic and terrestrial areas, has an almost infinite number of different site conditions and is thus characterized by the greatest heterogeneity. Without this diversity, there would perhaps be no need for scientific geography, which as a discipline deals with the processes and structures of the geosphere in a wide variety of places, sites, or regions. Topographical position (location, altitude), solar radiation, geology, hydrology, and consequently climatic and ecological conditions, as well as millions of years of natural history and thousands of years of human history, result in the most diverse living conditions worldwide.

But the world has shrunk dramatically in the last two centuries due to modern technology,[17] and it is now often referred to as a "global village."[18] Furthermore, spatial distances can be covered faster and more easily, the possibilities for mobility and exploration have grown significantly, and worldwide communication is possible in real time. In view of technological developments and expanded communication services, as well as in relation to leveling and homogenizing processes of the present—often termed "McDonaldization,"[19] the "end of geography"[20] has occasionally already been anticipated. Nevertheless, even in times of globalization, spatial distances or the lack of larger spatial distances that allow for direct inspection or face-to-face communication, questions of locality, and a sense of place and of identity in a place continue to play a very important role for social processes and individual actions. This also manifests in the so-called "Spatial Turn" in the social sciences and other academic fields,[21] according to which the importance of space for understanding social processes is emphasized.

Geography, and especially economic geography, has dealt with questions of spatial location, optimal site conditions, and site relations for many decades, for example, to reduce transport times and costs (e.g., Walter Christaller, August Loesch, and Peter Haggett),[22] with a focus on spatial distances between production sites, raw material deposits, and consumers. Automobile industries in the Stuttgart area in Southern Germany, for example, where numerous supplier and logistics companies have settled alongside actual car companies, can serve as an illustration in this regard. While in today's information technology or innovation clusters, transport costs are of little importance, short spatial distances contribute to the success of knowledge-based innovation regions. Silicon Valley is a prime example of this point, in that the spatial proximity between major enterprises, startups, and universities is an important success factor that attracts highly qualified specialists.

The extent to which one's own microcosm dominates everyday life, even in highly developed and technically highly networked societies in the 21st century, is also revealed when we look at rural areas and media landscapes in the USA, whereby local and regional news dominate and ignorance about other regions is frighteningly high ("What I don't know won't hurt me"). The increasing importance of social media, which technically makes it possible to find out about events in the most diverse and distant places around the world, does not necessarily lead

to a spatial-mental broadening of horizons—a notion supported by the fact that the algorithms that react to our smartphone use direct our attention to objects within our own bubble.

Remote spaces and their characteristics, structures, and problems are still perceived by most people as being far away and largely irrelevant,[23] especially if they do not seem to affect their own lives. The famous sack of rice falling over in China is of no interest. In addition, of course, there is the extent to which one is affected; if the problems do not affect me, then they are of no interest to me ("What do I care about the concerns of others? Everyone is closest to himself."). But even when spatially distant problems or crisis events are consciously perceived, such as a drought or crop failures in the U.S. Midwest, which have actual consequences for rising corn prices worldwide, people usually find it difficult to accept the causalities and to draw appropriate conclusions. These are all too human and well known characteristics,[24] but to consider seriously the consequences of ecological crises that occur at a seemingly safe distance away from home, and to move forward in implementing and speeding up necessary ecological transformation, remains one of the most pressing yet challenging issues and tasks of our era, so that people can be moved or motivate themselves to act against the abstract, often only indirectly perceptible phenomenon of climate change.

The Spatial Dimension of Reluctance

Many factors contribute to the resistance or unwillingness to act in relation to the ecological transformation of society on a scale that meets the enormity of the challenge. In this chapter, I limit myself to discussing those that relate to spatial distance and spatial dimension.

Back to the National and Regional

After a heyday of globalization, including a positively connotated discourse on globalization, whose economic advantages and mobility gains stood in the foreground for a long time, the pendulum has started to swing in the other direction for the last few decades, namely that the narrative of a globalization that benefits everyone is losing its persuasive power.[25] Instead, fear of globalization and a return to national or regional spaces now dominate the discourse. Fueled by global economic crises, nationalist policies (e.g., "America First," "Hindutva"), warlike conflicts, and policies that focus on the national or even the regional and provincial are gaining adherents and labeling anything beyond one's geographical borders as "foreign" or even "hostile and damaging." Additionally, egocentrism and navel-gazing are on the rise, as are isolation and ignorance. In view of proven global problems such as climate change and biodiversity loss, which urgently require joint global action, such attitudes and national go-it-alone approaches are problematic or counterproductive, to say the least.

It appears that the concept of globalization and its practical implementation have been approved by the dominant states of the North as long as they can profit

from it. This includes, for example, the importation of goods and services from regions where they can be produced more cheaply, or the disposal of waste or the discharge of pollutants into the global system; in these cases, the global division of labor and tasks is highly welcome. If, however, one's own profits are diminished, for example, by having to bear the costs of the problems and damage caused by one's own prosperity, nation states (of the Global North) try to withdraw from their global responsibility and align their policies nationally. In addition, undoubtedly, disruptions to supply chains, triggered by armed conflicts, pandemics or political confrontations, or concerns about one-sided dependencies, have led to an increasingly critical view of the concept of globalization. This reduced focus on national, regional, and local concerns clearly has a spatial component and contributes to the ambivalence toward ecological transformation.

Dimension of Climate Change and Its Consequences

Human-made climate change is characterized by steadiness and relative slowness, by a time lag between causation and consequences, and by a planetary dimension. Global emissions of greenhouse gases causing climate change have been increasing more or less continuously since the Industrial Revolution, but there are significant regional differences worldwide with respect to sources of origin. Although the connections between the anthropogenically increased emissions of greenhouse gases and changes in the climate have long been scientifically proven, causalities of concrete (emission) events and their climate consequences cannot be directly derived or proven. This issue has been used by climate change deniers to build an argument against even the most undisputed indirect causality between anthropogenic greenhouse gases released into the atmosphere and climate change.

The consequences of climate change are also temporally delayed and spatially dispersed; furthermore, they often occur randomly and abruptly and thus cannot be precisely predicted, either temporally or spatially. On the one hand, this vagueness has an unsettling effect, but on the other hand it is also reassuring and relieving, since weather- or climate-related destructive events do not necessarily have to affect oneself and the own environment at a close point in time.

In addition, there is the imperceptible (self-)effectiveness of one's own actions or changes in actions toward climate- and environmentally friendly consumption ("Can I change anything at all?"), for example, by traveling less by air, consuming less meat, or heating in an energy-saving manner. One's own behavioral changes show no tangible results, no rewards; thus, the immediate causality that people otherwise experience in many of their actions is missing. In addition, one's own contribution to causing climate change, which can thus be classified as insignificant, may lead people not to reduce it further or to cease their efforts altogether. In many cases, the dimension of climate change that goes beyond one's own comprehension and imagination also leads to intimidation and uncertainty, to a feeling of helplessness—and thus often to the rigidity of shock, just like the famous rabbit caught in the headlights.

Dimension of the Commons

The difficulty in implementing a socio-ecological transformation is also rooted in the dimension of the group involved—the global community. Work on common pool regimes[26] demonstrates the ability of groups to manage and use common goods together successfully and quite sustainably; the atmosphere can also be considered a global common good. However, success requires functioning, flexible institutions recognized by all, as well as a degree of mutual trust,[27] but neither of these is present when it comes to anthropogenic climate change. For one thing, there is a lack of appropriate institutions, for even if international commitment agreements are concluded with the signatures of state leaders, effective sanction mechanisms are lacking. Moreover, there is no common political authority recognized by all states whose requirements will be followed. Second, trust among the various states is rather limited, since they either belong to different political blocs or give priority to the interests and goals of their own states.

The global climate and environmental crisis in particular can only be dealt with effectively through cooperation and coordination, but it is often responded to with individual rather than collective approaches and solutions.[28] This can be explained by the fear of making individual losses when investing in cooperative solution attempts, by distrust of other group members, or by a lack of belief that cooperative strategies are promising. Particularly in recent decades, innovations, technological developments, and changes in economic structures have transformed collective problem-solving approaches from a necessity to a possibility. This in turn has reinforced the tendency to favor individualistic strategies.[29]

Significance of Climate and Environmental Issues

The consequences of climate change, species extinction, and other environmental problems are now recognized in politics, science, and society as global—even existential—problems. Nevertheless, for a wide variety of reasons, they are not equally regarded as priorities by all people. Underprivileged societies or individuals who have to fight for their daily survival, for example, to ensure their own nutrition, who suffer from disease or violence, or who are affected by other deficiencies or processes affecting their own well-being are not able to care about avoiding the climate or environmental consequences of their actions. Not to mention the fact that the less affluent population groups contribute least to the negative climate impacts. Warlike conflicts and fear of persecution or oppression are also existential threats and push environmental and climate issues into the background. However, aspects that are less existential but do affect people's own prosperity, well-being, or social status, such as concerns about economic and social decline, often lead people to attach less importance to the environmental and climate crisis.

The Global Risk Report 2023,[30] based on assessments by 1,200 experts and political and business leaders, identifies the most important short-term risks as the cost-of-living crisis, natural disasters, extreme weather events, geoeconomic confrontation, failure to mitigate climate change, the erosion of social cohesion, and

societal polarization. Two of these are environmental issues. Among long-term risks, environmental issues rank in the first four places: failure to mitigate climate change, failure to ensure climate-change adaptation, natural disasters and extreme weather events, and biodiversity loss and ecosystem collapse. This assessment of global risks clearly shows the urgency and existential nature of today's environmental problems.

However, a look at the problems and concerns of people in an industrialized country like Germany reveals a different picture. In a 2023 survey asking about the biggest problems currently facing the nation, 47% named rising prices/inflation/cost of living, 24% environment and climate change, 24% immigration, 19% energy supply, and 15% housing construction/procurement.[31] Although respondents in this and similar surveys have given high priority to climate and environmental issues for several years, they sit far behind immediate financial concerns. Moreover, it remains unclear as to what extent these concerns also relate to negative climate change impacts on people outside their own country. Rather, by naming immigration as one of the biggest problems, it is more likely to assume that respondents tend to emphasize concerns about their own life, security, and prosperity. The spatial distance to climate and environmental problems is also clearly expressed here. The consequences of climate change in the Global South play no role, or at most a subordinate role, as perceived concerns in the Global North. Rather, attempts are made to secure one's own prosperity despite the obvious—sometimes catastrophic—consequences of the environmental and climate crisis on other, foreign people, or even at their own expense, by erecting fences and walls to protect themselves from potential consequential problems. This, too, has a spatial dimension, for an inside and an outside are created, i.e., a safe space versus an unsafe space.

Attention to and empathy for problems in the Global South appear to be subject to considerable fluctuations in affluent societies. This was made clear in an almost cynical manner by two boat-related accidents occurring in quick succession in June 2023: The accident involving the submarine "Titan" off the coast of Canada with five dead—exclusively very wealthy people who had voluntarily joined this exploration tour to the wreck of the Titanic—attracted considerably more attention in the media worldwide than the capsizing of a refugee boat in the Mediterranean Sea with presumably more than five hundred casualties, each of whom had squeezed into an unseaworthy boat to escape existential threats in their home countries.

Inaction and Psychological Distance

Ecological transformation requires multifaceted efforts at all levels, in all sectors, and by all groups; a mix of prohibition and renunciation appears necessary. Whereas in the articulation of regulations, politics is called upon to pass appropriate laws that hold industry, municipalities, and individual citizens accountable, whereby bans explicitly named as such are hardly communicable in democratic societies, in the aspect of renunciation, responsibility is passed on to individuals, who often find themselves in a dilemma, as renunciation or changes in behavior to achieve greater goals are often difficult. The German writer Kurt Tucholsky noted

in this regard that "we ought to, but we don't do." This is where Richard Gifford's seven "dragons of inaction"[32] come in, which contribute to why we fail to act appropriately in an environmentally or a climate-friendly way despite knowing better.[33] Specifically, the reasons for our inaction are our limited thinking capacity, ideology, comparisons with others, irreversible costs, disapproval, perceived risks, and limited action. With regard to the argumentation of this chapter (spatial dimension), limited thinking capacity or psychological distance are especially relevant, according to which our brain is strongly oriented toward living in the here and now.

Psychological distance leads to perceiving climate change and its impacts as abstract and distant in space and time.[34] Even defining climate as a 30-year average of weather patterns requires a certain degree of abstraction.[35] More significantly, most of the consequences of anthropogenic climate change will only be visible in the future, so they are thus distant in time,[36] which results in a public perception that climate change is more relevant to distant regions and times than to the here and now.[37] The Construal Level Theory[38] shows how distances influence perceptions, decisions, and behavior. It argues that the subjective psychological distance at which people perceive events or objects determines how concretely or abstractly these entities are mentally represented and might entail corresponding consequences for action.[39] In addition, there is the importance of place attachment: if I have a strong attachment to the place where I live, I am more likely to care about it. The ecological catastrophes in the Global South, on the other hand, tend to leave me cold.

This spatial and temporal distance from the consequences of the environmental and climate crisis plays into the hands of another dragon of inaction,[40] namely disapproval and denial, and because the mostly distant consequences are usually conveyed through the media, they are easier to deny or minimize ("This can't be happening at all").

Another dragon of inaction related to spatial distance is the comparison with other people that influences one's own actions.[41] This is because people compare themselves with others in their environment and not with people from remote world regions. If their neighbors fly twice a year on vacation, then the reduction down to only one flight per year in relation to this already represents a perceived restriction that can be easily explained. The fact that the majority of people worldwide never take a plane trip in their lives is irrelevant for such a decision and justification, or it is ignored.

Conclusion

The socio-ecological transformation desired and demanded by many people worldwide is taking place, but much too slowly for some, too quickly for others. Despite its necessity, justified by science, it is questioned, evaded, ignored, or fought against. There are numerous reasons and studies that explain this seeming contradiction that leads to a discrepancy between knowledge and action. In this chapter, I have tried to demonstrate that the inertia of ecological transformation, discomfort, or fading out is also closely related to spatial and temporal distances and

dimensions. I have argued that spatial distances to the media-mediated hotspots of climate change, as well as the dimension of the environmental and climate crisis, contribute to the failure to change actions, or to changing them only slightly.

In view of the widespread knowledge of the environmental crisis, the attitudes and behaviors of consumers in the Global North, as well as decision-makers in politics, business, and society, may well be described as "willful blindness."[42] This willful blindness can result in several phenomena and behaviors, such as "turning a blind eye" to justify particularly climate-damaging behavior, "burying one's head in the sand" in order not to perceive unpleasant facts such as increasing droughts or extreme weather events, "denying reality" with regard to one's own threat from, for example, rising sea levels, "selective awareness" by ignoring the environmental and climate impacts of one's own lifestyle, and "consciously avoiding" knowledge about poor working conditions in the production of one's own consumer goods, for example, in the extraction of cobalt in Congo. Willful blindness can thus also be seen as a more calculated and strategic form of ignorance.

Even though the probability of being affected by climate change-related catastrophes or unfavorable developments is increasing, most events will continue to take place at great spatial distance. Climate change will continue to progress in the coming decades, and even radical behavioral changes will not alter the situation. Nor can the scale of the problem be changed. What can change, however, is knowledge, attitudes, and perceptions. To do this, it is necessary to increase understanding of the interrelationships with and empathy for those most affected. This is where the Environmental Humanities can make an important contribution, because in addition to scientific facts and forecasts, which can certainly lead to fatigue and jadedness, dealing with this global problem is also very much related to social and cultural factors.

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