



# Reflection on Contemporary Fashion Culture in the Perspective of Entropy Increase Principle--Fashion Feeds on Negative Entropy

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**Abstract:** The entropy increase principle points out that the entropy of an isolated thermodynamic system does not decrease, and in order to resist the fate of the end of everything brought by entropy increase, Schrödinger proposed the classic assertion that life feeds on negative entropy. Fashion is a concentrated manifestation of human culture, yet current fashion has a strong entropic influence on human beings and the natural environment. Slow fashion was born to criticize current fashion, but it is still limited to the framework of current fashion, this paper tries to reflect on the essence of current fashion from the perspective of entropy increase principle, and tries to provide a new framework for thinking about slow fashion. This article mainly adopts interdisciplinary text research and case empirical methods, starting from the study of the entropy status of the two main protagonists in contemporary fashion, humans and the environment, triggering reflections, and eliciting reflections on the nature of slow fashion negative entropy and possible Future Directions of Slow Fashion in the Light of Negative Entropy. In the end, it is concluded that The negative entropy of life is not a linear one-off work, but a kind of gradual change, slow fashion is not a utopian ideal country, but a constantly progressing fashion "protopia".

**Keywords:** Entropy Increase, Negative Entropy, Contemporary Fashion, Slow Fashion

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## 1. Introduction

Entropy is a principle of physics that has the same status as the law of conservation of energy, also known as the "first law" by Albert Einstein, and such a fundamental principle has widely influenced various fields of research in science (including humanities) today. Entropy was first discovered in 1824 by physicist Sadi Carnot when he was trying to optimize a heat engine, and was then optimized and summarized by German and British scientists, and finally theorized by German physicist Thomson Clausius Boltzmann in 1865. Entropy is a quantity that indicates the degree of intrinsic disorder, and the entropy increase principle means that "the entropy of an isolated thermodynamic system does not decrease, but always increases or remains constant" [1]. In this principle, the probability of entropy remaining constant is nearly zero, so in short, an isolated system always evolves in a more chaotic direction. Although the entropy principle is only an objective description of a physical

phenomenon, the so-called "chaos and order" does not have a "good or bad" value judgment. However, we will unconsciously associate this principle with the fate of human beings, and ask whether human beings will not be able to escape from the tragic fate that everything will eventually return to "thermal silence" (a state of perfectly uniform thermodynamic equilibrium). Of course, this approach to the end of the universe is only a hypothesis, which does not take into account gravitational effects and other factors. Even so, it has succeeded in raising our awareness and reflecting on anti-entropy increase. The famous quantum physicist Erwin Schrödinger in 1944 in his book "What is Life?" in his book "What is Life?", he first clarified the concept of negative entropy, saying that "to live is to fight against the law of entropy, and life feeds on negative entropy." [2] He understood life as a local reality that delays entropy and is able to reverse the process of entropy because of its ability to generate organization. Lamarck takes this a step further by defining life as something organic or organized (organic) [3],

and these organizations are carried out by the evolution and reproduction of life, and as time evolves, this organization becomes more and more complex, so life evolves more and more complex while becoming more and more anti-entropic. In the author's opinion, the results of their research have given life its greatest meaning, that is, to resist entropy, chaos, disorder, and the doomed death that never returns with the "arrow of time".

## 2. The Entropy-increasing Point of Contemporary Fashion

Fashion, represented by fashion today, is considered one of the most far-reaching cultural phenomena in Western civilization since the Renaissance. With the advent of the industrial revolution in the 18th century, fashion broke away from the control of a small group of wealthy people and gradually democratized, and almost everyone is influenced by it today [4]. Fashion is a concentrated expression of human culture, and it is supposed to be a representation of the reverse entropy process of humanity. However, under the accelerated social landscape and digital capitalism, the speed of production and consumption is increasing day by day, and "acceleration" has become a synonym for fashion, but "acceleration" is not so much about speed as it is about the desire to sell more goods and capture more profits. The "acceleration" is not so much a gesture of speed as a desire to sell more goods and make more profits. In order to achieve "acceleration," fashion has to squeeze the factors of production, including labor, capital, time, and natural resources, but while capital and time are relatively fixed, labor (people) and natural resources are the main targets of the squeeze. In addition to the acceleration of production, fashion needs to manipulate the subconscious and motivation of individuals through marketing in order to accelerate the consumption of what they do not need, thus completing a profitable cycle of "acceleration". In this process, fashion no longer aims at the actual needs and self-fulfillment of human beings, nor is it a cultural embodiment of the diverse lifestyles of human beings, but has been alienated into a tool for capital to "accelerate" profits, so that the current fashion culture contains a strong entropic orientation, focusing on the impact on human beings and nature.

### 2.1. Human Entropy Increase Caused by Contemporary Fashion

The fashion industry, represented by fashion and based on production, is a standard combination of primary and secondary industries in the vast majority of developing countries. Fashion here unreservedly launches a brutal exploitation of vulnerable labor groups. Bangladesh is today the world's second largest garment production base, the textile industry accounts for more than 70% of total exports, first-line fashion brands such as H&M and Zara have set up factories here, yet until 2018, the minimum monthly wage for local garment workers was a meager \$72,

while at the same time, the minimum wage in the largest fashion country, the United States, was \$11.50 an hour. In addition to unfair treatment, the production environment for workers is even more worrisome; in 2012, a fire in a garment factory in the northwestern suburbs of Dhaka, the capital of Bangladesh, killed 121 people, followed by the collapse of the Rana Plaza garment factory in Savar in 2013, which killed more than 1,130 people and became one of the worst industrial disasters in the world [5], the fashion industry The relentless plundering of the labor force at the bottom is essentially a process of dramatic entropy increase. In addition, there is a more insidious and dangerous entropy increase happening around us, the production machines aiming at increasing productivity are evolving and accelerating, and human beings are being overtaken by technology everywhere in this process, it is no longer man who controls the machine, but the machine that controls man [6], man is only doing what the machine cannot do yet, the machine is gradually depriving us of the knowledge of fashion, thus creating a world where computation is the only means of calculation. For example, the creation of ready-to-wear fashion design is based on the "optimal solution" of profits obtained from the comprehensive analysis of market supply and demand, popular culture, consumers and other aspects of big data, and it is not the designer who designs the clothes, but the "optimal solution" in the design of the clothes. The designer is not designing the garment, but the "optimal solution" is designing the garment, and the designer is only an intermediary and temporary tool. Many scholars have recognized the seriousness of this problem and have started to actively learn, preserve and disseminate real and diverse fashion knowledge [7], trying to break such a closed system of entropy increase.

### 2.2. Environmental Entropy Increase Caused by Contemporary Fashion

The entropic increase in fashion today is more reflected in the damage to the natural environment, with data from the 2019 Ellen MacArthur Foundation (EMF) claiming that the apparel and footwear industries together account for more than 8% of the global climate impact in terms of carbon emissions, with total greenhouse gas emissions associated with textile production equating to 1.2 billion tons per year, even The total greenhouse gas emissions associated with textile production are equivalent to 1.2 billion tons per year, more than even the combined total of all international airlines and ocean flights, and have a huge impact on global warming. For example, cotton is one of the most basic but extremely water-consuming natural fibers, with only 2.4% of the world's arable land planted with cotton, but it consumes 3% of the world's fresh water, 10% of pesticides and 25% of insecticides. Irreparable chemical pollution of water and soil. However, synthetic fibers such as spandex and nylon are petroleum products, which on the one hand cause over-exploitation of non-renewable resources, and on the other hand, these petroleum products are extremely difficult

to degrade, and with continuous use will produce microplastics that will eventually enter the organisms with water, air and food, posing a threat to This microplastic will eventually enter the living organism with water, air and food, which will pose a threat to the health of life. What is more frightening is that the profit-seeking selection of fiber by human beings has led to the imbalance of the ecosystem, the species with low market value are gradually eliminated and give way to the "most cost-effective" creatures, and the living environment of predators is squeezed again and again. This has resulted in the loss of biodiversity and the gradual transformation of the ecosystem into a closed monoculture [8]. As a result, fashion has become the most polluting and socially negative industry in the world after oil and gas, branded as unethical and unsustainable, and these entropic fires of the natural environment will eventually spread to humans.

### ***2.3. Reflection on Contemporary Fashion Under the Point of Entropy Increase***

As Zimmer's so-called "cultural tragedy" expresses it: "Objects created by the subject for the use of the subject, but detached from their origins and began to follow their own logic. Modern culture is the inevitable consequence of the development of culture, where commodities, knowledge and technology begin to rule humanity." [9] Fashionable culture, which is supposed to be a process of reverse entropy for mankind, has become detached from human control and has increased sharply in entropy with its own logic. Scholars have also become alert to this, and a negative entropy turn called slow fashion is quietly unfolding.

## **3. The Entropy Reduction of Slow Fashion**

Slow fashion was introduced in 2007 by the British scholar Kate The concept of slow fashion was introduced by the British scholar Kate Fletcher in 2007, drawing on the Slow Food movement, which initially included an argument against standardization, a defense of diversity, and an attempt to improve the quality of life of citizens, balancing production and consumption, the present and the future, and individuality and commonality [10]. This idea contrasts with the traditional sense of fashion, which is synonymous with "fast". So what is "slow" about slow fashion? As we all know, the so-called negative entropy requires at least two conditions, one is an open system, and the other is the introduction of external forces, the two complement each other to constitute the basic conditions of negative entropy, as if life on Earth (negative entropy) is dependent on the external sun (open system) to provide a constant supply of energy (the introduction of external forces) in order to emerge and evolve. When looking back at Kate Fletcher's definition of slow fashion, it is clear that all of the claims of slow fashion are dedicated to the introduction of diverse external forces to break the increasingly standardized but

also increasingly closed contemporary fashion system, which is completely consistent with the direction of negative entropy. Therefore, the opposition between the current fashion represented by "fast" and "slow" fashion is not an opposition in speed, but an opposition between the increasing and negative entropy postures of fashion. Slow fashion is a new fashion culture that is different from the current mainstream fashion.

### ***3.1. Reflection on Slow Fashion in the Context of Entropy Increase Principle***

The research on slow fashion has been established to a certain extent, and a large amount of theoretical and practical work has opened up a new vision for fashion research. During the research process, I found that the current research on slow fashion is mainly based on the criticism of the unsustainable phenomenon of the fashion industry, trying to find out the means to solve the unsustainability of the fashion industry from the methodological research of fiber production, processing, distribution and recycling of clothing products, and slow fashion has become a kind of supplementary research to repair the unsustainability of the current fashion. This approach to slow fashion research has yielded rich theoretical and practical results, but it also reflects a key problem: slow fashion research is in most cases a form of resistance to current fashion, but resistance means "accepting domination and trying to limit it" [11], which means that it is still part of current fashion. This means that it is still a part of the current fashion system, not free from the control of the current fashion system, let alone forming a revolutionary, new and open "future" fashion system, which is why a lot of the current slow fashion research results have become a slogan and cannot be practiced. The root cause of this problem is that the research of slow fashion originated in the field of fashion design, and scholars created slow fashion with the aim of reflecting on and resisting the current fashion system. However, the development of slow fashion today is far from enough to support the establishment of a new "slow" fashion system for the future by only thinking in terms of resistance from the design perspective of creation. There is an urgent need to combine interdisciplinary research in philosophy, sociology, cultural theory, and even other natural sciences.

### ***3.2. Possible Future Directions of Slow Fashion in the Light of Negative Entropy***

Marx has stated that capitalism assumes that everything can be calculated and that calculation can replace absolutely all human activities. On this basis, contemporary fashion has established a system of self-computation with effect as the ultimate goal. The German biologist and philosopher Ludwig von Bertalanffy pointed out in his General Systems Theory that from the point of view of the so-called dynamical systems theory, a completely self-computing system, because of its closed nature, will inevitably lead to self-destruction with accelerated entropy increase [12].

Because a dynamical system is an open and dynamic system, human society is such a system, and there are all kinds of other organisms besides humans, without which the society cannot exist. Openness means that you can accept the accidents that brings by "The Arrow of Time" [13], these accidents will produce new knowledge and new things to make up for the effect of entropy increase. Therefore, slow fashion must first be a dynamic open system. The current macroeconomy is based on the valuation of entropy increase, always thinking that "the more the better", and it is difficult to affirm a system of immaterial growth. Therefore, in order to establish a slow fashion system, we need to first establish a fashion economic framework based on the valuation of negative entropy, a new framework based on the value of human health, physical and mental well-being, and environmental affinity and other multi-dimensional dynamics, so as to break the Herman Darly (Herman Darly) said "we accumulate poverty rather than wealth." [14], a spell of entropy increase. Secondly, the current fashion discourse is still in the hands of only a few capitals, and at the same time, the proletarianization of mass fashion knowledge leads to passive acceptance and imitation in the face of fashion, which makes the current fashion seem flat and democratic, but centralized and repetitive, Slow fashion needs to give more respect and opportunities to various fashion cultures, especially various local fashion cultures, on the one hand, and to The excavation of local fashion culture and the protection of traditional textile skills in recent years are all in the fight against this entropy increase, and it is only by maintaining the diversity within the fashion system that the power of negative entropy can be generated. Finally, we should be alert to the fact that if we consider the earth as an isolated system, entropy will continue to increase, and slow fashion brings negative entropy to human beings at the cost of increasing the total entropy of the environment. It is as if we are cleaning the house and always consuming energy and emitting waste to the outside world. Fashion should be the negative entropy of the earth, the negative entropy of life, not just the negative entropy of human beings, if you want to maintain the state in the accelerated entropy environment, you need to have a stronger negative entropy ability, this ability is intelligence, in informatics, intelligence points to the four capabilities of learning, storage, application and energy acquisition, continuous progress of intelligence is a necessary condition for us to maintain the negative entropy is greater than the increase in entropy and thus produce entropy difference. If open systems and external forces are the basic conditions of negative entropy, the level of intelligence is the coefficient of negative entropy. We must embrace science and technology and improve intelligence to ensure that the entropy difference of the entire global community is maintained in this era of accelerating entropy increase.

#### 4. Conclusion

Slow fashion is not a trouble-free and absolutely fair utopia, absolute balance will make fashion fall into "hot

silence" and eventually collapse on itself. Nor is slow fashion an anti-utopia, whose unsustainability will make it disastrously entropic the more violent it becomes, the more quickly it will disappear. In his book "the inevitable" [15], Kevin Kelly proposed the concept of "protopia", and the destination of slow fashion should be "protopia". The negative entropy of life is not a linear one-off work, but a kind of gradual change, and the inevitable will produce almost the same entropy increase in the process of inverse entropy. As long as our negative entropy at each step increases a little bit more than entropy, the slow accumulation of years will eventually change our civilization.

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