
The Image of Humanity in the Age of Science

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Modern civilization created a very strong image of humanity, according to which we humans are the best in the world because we have language, intelligence, rationality, that have allowed us to develop science and technology in a marvelous way.

Among all the creatures on earth and in the oceans, which one do you think is capable of going to the Moon? Of course, only us. We are therefore the Lord of the world because we have highly developed science and technology.

However, the same science and technology we are boasting of have brought us a very bad image of ourselves as well. For we humans are the only animals capable of destroying natural environment, living species, eco-systems, even ourselves.

Look at the disasters caused by nuclear weapons only humans are capable of. We are inventing Artificial Intelligence whose technological singularity may be a menace to us in a near future (Y. N. Harari 2015). We are capable of enhancing our body and brain by a new chemistry. We are capable of making human clones. All these give us an inglorious image of ourselves.

Neuroscientists say the frontal lobe of human brain is such a developed part that no other animals have. It is sensitive, imaginative, and creative by excellence. However, they do not forget to add to this that it can also be violent and destructive, making us even commit crimes (Damasio 1994).

This means we are capable of everything good and bad. With highly developed science and technology, we can make the world extraordinarily happier, but also can we destroy it totally.

2

There was a time when mythologies and religions worked so well that we humans stayed modest vis-à-vis natural environment and the world. Our greed was restricted by religious authorities or mythological ideologies, and especially, our super-intelligence and high rationality were restrained from going too far (Bergson 1932). We were happy then even if imprisoned in cultural traditions or social conventions.

It is not difficult to imagine that we had rather a harmonious image of ourselves in those days.

Modern Age broke all those mythologies and religions down. Thence we began to feel free, to develop our intelligence and rationality as much as we wanted. However, this did not necessarily give us a glorious and victorious image of ourselves. On the contrary, since that moment of apparent victory and glory, we began to lose happiness and a stable and harmonious image of ourselves.

Scientific Revolution liberated us from religious or mythological stories of the world(Weinberg 2015), for sure, but we began thence to feel like orphans as well. Orphans are free, it is true, but they are helpless and hopeless.

We began to feel lonely. And in my view, it is this feeling of loneliness that has pushed us to make incessant progress in science and technology. Literature and arts have also been renewed by this particular feeling of loneliness. If Modern culture has a charm, it is because of its darkness and loneliness that humanity of other periods did not know.

What is more important to see though is the fact that the loneliness, the feeling of being cut off from the world, has led us to make incredible efforts to prove that we are divine, we are gods. We are obliged to worship ourselves today.

3

Perhaps some of you, seeing all this, may wonder if we have gone mad? If we were mad, we would have to accept it as our reality, and thus we would have a new image of ourselves: the one of malformed animals, crazy animals, who lost contact with the world, with Nature.

I do not think we are incurably ill, but I have the impression that we are neurotic, conflictive with ourselves, the proto-image of which is found in Hamlet. Shakespeare created a real modern character whose mind finds peace nowhere. Modern people are more or less Hamlet's sons and daughters, aren't we?

Perhaps you think all this happened only in the West, but nowhere else. I would say it happened and is happening all over the world. The Westernization of the world is everywhere, taking often the form of "modernization".

There have certainly been reactions against this globalizing movement of modernization. They are manifest in diverse forms. Socialistic or communist revolution is one. Ultra-nationalism is another. Terrorism can be viewed as another form. Deprived of traditional values, peoples all over the world feel the need to find a substitute. Unable to find a satisfactory one, becoming desperate, they cling to a fanatical ideology that may ruin everyone including themselves. Today we witness a lot of such people. The harmonious image of humanity is gone.

4

Generally speaking, modern science and technology are based on a mechanistic vision of the

world. Owing to the great discoveries of physics and chemistry in the 19th and the 20th century, we have come to conceive the universe as a machine and ourselves as its tiny parts(Koestler 1978).

The same mechanistic vision has also led us to conceive each of us as a complex of tiny particles such as oxygen or carbon. In the end, modern science and technology have made us lose the classical image of ourselves as integral entities. Just at the moment we could have felt free from transcendent authorities, we found ourselves disintegrated.

We have been alarmed of the danger of our disintegration since a century ago. Let us not forget the harsh criticism of modern civilization put forward by Adorno and Horkheimer. Their *Dialectics of Enlightenment* shows Enlightenment that must have liberated us from obscurantism has become a religion for modern age and is destined to end as totalitarianism (Adorno/Horkheimer 1944). We should not forget the lesson they gave us.

One of the most important points of their critical work is the focus they put on the intimate relation between the mechanistic vision of universe brought by modern science and the emergence of nihilism that induced the coming of totalitarianism. To be sure, it was nihilism that actively or passively accepted homicidal or suicidal violence. Dostoevsky's novel *Demons*(1872) shows it quite well.

You might say the most enlightened societies did not fall into totalitarianism, and that only the societies that wanted to modernize themselves too hastily fell into it. However, no society has found a way to stop the devastating power of the mechanistic worldview that modern science and technology advanced. Let us recall the seemingly most emancipated societies consented in the use of nuclear weapons to exterminate their 'unenlightened' enemies. Needless to say, nuclear weapons are fruit of the mechanistic vision in question.

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With all this I have said, however, I still have a hope. For I know there are more and more intellectual efforts to overcome the situation. I will mention two of the academics who tried to change the situation; one is Ilya Prigogine, a physicist, the other Claude Lévi-Strauss, an anthropologist. Both developed their innovative theories in 1950's. Each of them, from a different point of view, opened a new horizon on which science and humanities could walk hand in hand to prevent our destiny from a fatal tragedy.

To understand the theory of Prigogine, the Nobel Prize laureate in chemistry in 1977, we have to see the evolution of physical science before him. As you know, from Newton to Einstein, physics made enormous progress and the vision of the physical world changed considerably. However, there was one point in the vision that did not change: the timeless vision according to which what happened a million of years ago is happening now and will happen in the future as well. The universe is viewed as unchangeable. Physicists never took the passage of time seriously.

Now, Prigogine thought those timeless laws applied only to closed and balanced systems that were only a small part of the universe. As most of the existing systems were neither closed nor balanced, he concluded physicists chose only the closed and balanced systems they could explain with their theories. For example, the relation between the sun and the earth that the classical physics explains is stable and unchangeable, which means it is a timeless system. However, there are systems that change with the passage of time, an example of which is life. Life is instable and changeable as a system. The classical physics is unable to explain it because it does not take time in account(Prigogine/Stengers 1978).

Prigogine called the former type 'closed systems' while the latter 'open ones'. An open system is the one that exchanges matter and energy with another system; consequently, it is unable to keep stability or equilibrium.

Prigogine discovered the process of the self-organization of an open system the called 'dissipative'. 'Dissipative' because such a system has constant dissipation of energy. Prigogine found that despite the dissipation, the system that could lose order falling into chaos could recreate an order, a new structure.

The implication of this theory is enormous. It can apply not only to non-organic systems that he studied but especially to organic ones. In other words, biology, economy, sociology, even literature, could make use of it. No wonder if he organized a center for interdisciplinary studies in Brussels to develop various applications of his theory. There in the center, they are applying it to social studies and humanities as well as physics and chemistry.

As for the implication of the theory, himself said the following. "The incorporation of thermodynamic elements leads to new theoretical structures that take in account "time associated with irreversibility or even with history." There is no longer such a "geometrical parameter associated with motion" as was conceived in physics(Prigogine 1977).

The three terms he pronounced are very important: 'time' 'irreversibility' and 'history'. There we see the connecting point of science and humanities, for 'history' is surely a humanistic notion. Needless to say, history consists in telling a story, therefore making literature. Science and literature can thus be connected to each other.

Now, if time is irreversible, human history must be irreversible... Can we conclude from this that his view of the world is pessimistic? Not at all. His theory of self-organization of a system destined to disorder gives us a hope. For we humans who cannot help living in a system called society can be disintegrated with it, and yet the system could reorganize itself so that we could recover an order.

Of course, this does not mean we can recover the same order as we used to have; our identity is no longer the same. But just like life that continues, we continue, ending our individual life and giving birth to another one. Even if many cultures and civilizations together with social institutions disappear, human life will continue. Our image will then be not so disastrous.

Our second scholar, Claude Lévi-Strauss, is world-widely known as an anthropologist who focused on the fundamental structure of human organizations. As many have admitted, he was not a mere academic but a philosopher who had a vast knowledge of science as well as literature. As such, I believe he had an image of humans adapted to the Age of Science.

As an anthropologist, he saw humans as animals that have survived till now thanks to social systems they have made. Instead of “I think therefore I exist”, he proposed “We exist therefore I think”, obviously against the human-centered and individualistic vision of the traditional West(Lévi-Strauss, 1962).

He is often considered as an eloquent defender of the so-called primitives, but to be more exact, he saw all humans as ‘savages’ prompt to consider others as ‘savages’. Besides, he saw all humans are thinkers who think in metaphors rather than in concepts, and that he considered the excess of conceptual logic that enabled the victory of mathematics and sciences as a danger that could bring about our death as a species. “Humans have to know their limitations to be able to live together with other species.” That is his warning.

This vision of his surely came from his knowledge of science, literature and philosophy. But I have to add to this that he was one of the few who knew how to combine science, sociology and literature. He said some societies were ‘cold’ because of its low entropy; entropy is a thermodynamic measure for a system’s loss of energy(Lévi-Strauss 1955).

Now, his image of humans is quite different from the one shared by most of the Western scholars of his time including Prigogine’s we saw minutes before. Let us sum it up from the last chapter of *Tristes Tropiques*(1955).

First, he saw the existence of humans on earth would not last for good.

Second, he saw no social institution or civilization they have created could stop the world disintegration nor human extinction. On the contrary, those human efforts did nothing but joyful destruction of thousands of structures to pieces impossible to remount with.

Third, no creation of human spirit would go beyond the human world; it is destined to lose its order and disappear in the end. In short, all human products cannot avoid the influence of the classical thermodynamic law of ‘entropy’; they will fade away sooner or later.

You may be surprised at the view he presented. It looks so pessimistic. I would say however he was not pessimistic but just realistic and scientific because it mostly came from his knowledge of biology, geology and archeology.

For sure, his view is far from Prigogine’s that gives us hope by showing the possibility in a system of recreation of order after chaos. However, I would like to remind you that the French anthropologist witnessed not only Nazi genocide and Hiroshima Nagasaki A-bombs but also the general devastation of the southern hemisphere invaded and violated by modern civilizations(ibid.)

Some may say his view of the world is materialistic. In a Marxist sense of the word, yes. More

than once, he confessed Freud and Marx were two sources of his inspiration. However, I would like to add to this that his view was Buddhist. In *Tristes Tropiques*, he confessed all he had learned were just small parts of the results of Buddha's meditations. The image Lévi-Strauss held of humans and the universe we saw earlier just proves his Buddhist side.

You may wonder now what he recommends us to do to make the world better. To this, he answered saying the following:

We should halt and examine the impulse that urges us to plug up one hole after another open in the wall of necessity. Otherwise, we would imprison ourselves in a shattered room”(ibid.)

What did he mean by ‘halt’? To “bear to interrupt our hive-like labors” is his answer. In addition, he said the essence of our being might be glimpsed when we see “a mineral more beautiful than any human work”, when we smell “the scent of a lily more subtly evolved than our books”, or when we encounter the wink of an eye of a cat with whom we can exchange mutual forgiveness through an involuntary understanding.”

Lévi-Strauss' spirit attained a height that is hard for us to follow. Let me propose then something easier for us. My proposal is that humanists should learn as much as possible from scientists and vice versa. It is time for us to establish interdisciplinary communication between the Two Cultures separated from each other for such a long time.

Of course, it will not make much contribution for the improvement of the world, I know. But it is better than nothing. We humanists should begin a dialogue with scientists. And scientists should listen more carefully to us.

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