

# From symmetry to harmony



**A proposal for universal ethics**

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### **Why universal ethics?**

For centuries mankind has been perfecting systems of individual ethics because “Man is the measure of all things” said Protagoras. However in recent years the individual has lost many of his prerogatives to national and international institutions in which individual responsibility has been diluted.

Most existing ethical systems have been developed to help humans survive, reproduce, fulfill themselves and live together. International institutions are not designed to reproduce. They are designed to produce one form or another of “common good” for our societies. Their survival should therefore depend on their ability to produce the common good for which they were established. When it comes to survival, reproduction and the fulfillment of one’s self, a subjective, self-referring ethics is adequate: this explains the appearance of concepts such as “freedom of conscience”. But when the issue is living together and promoting one form or another of “common good”, then ethics must be truly objective, *i.e.* based on impartial foundations which can be verified anytime, anywhere.

A new ethics will not protect us from scammers; they will always be around. It is our role and that of the authorities to implement protective legislation and systems. But the problem lies elsewhere. A good con artist like Bernard Madoff caused damages amounting to several billion dollars, while recent stock market losses – to say nothing of the job losses, the looting of resources and the tremendous rise in inequalities and other imbalances – caused by institutional misconceptions have proven a thousand fold more significant. It is therefore at the level of national and international institutions that problems are most acute. While medicine has a long and well established ethical tradition at the heart of its thinking, neither the economy nor the finance, or politics have made ethics a cornerstone of their programs; their references are mostly ideological and ideologies are fragile. We have seen the collapse of communism and now we are observing neoliberalism bending under the weight of its own excesses.

When new technological challenges appeared doctors, biologists, geneticists and philosophers have established bioethics to guide their actions. With the advent of financial mathematics neither Governments, nor bankers or the quantitative analysts have elevated their thinking to the level of ethics. Most were trapped in a deterministic vision of the world where the individual and its self-centeredness is King and where natural selection favors the strong over the weak. With this vision the strong did not need ethics. Ethics was good for the weak. However, privileges are sometimes overthrown and the strong are brought low when

they encounter stronger than they. Then they spontaneously demand more fairness, better justice!

We should be able to offer these institutions a simple and flexible framework to guide their activities towards the common good.

An objective, universal ethics would allow legislators and other regulators to look at certain fundamental principles before enacting laws and regulations. It would also allow citizens to keep an eye on these institutions by providing simple but reliable benchmarks.

Let us consider, for example, the World Trade Organization, which has no ethical charter and whose decisions have affected the lives of billions of people. How could the 154 negotiators agree on a common referential system if each one had proposed its own ethical vision? Which one could have been chosen? Faced with such an abundance of proposals, it was impossible to settle on one choice, and negotiators were content with bargaining, *i.e.* negotiating the resolution of the many problems of the time: market access, subsidies, competition, conflict resolution, etc. Each negotiator referred to its own ethics and we can see that, in this specific case, “Too many ethics kill Ethics!”

After over a decade of globalization, the WTO still has no consistent, reliable code of ethics to govern its negotiations. Admittedly, it claims certain principles as its own, such as embracing transparency and non-discrimination between domestic production and imports, prohibiting dumping, and restrictive measures on trade and regulatory subsidies. Unfortunately these principles are not enough to constitute a dependable ethical system.

In the financial world, where the need for new regulations has become imperative, promoting the values which were violated is not sufficient; we must also discover core values, and fight against those myths which persist even today, such as “let it be: the market is fair, it will fix all of this for you”, or “Companies have no other social responsibility than maximizing their profits.”

The consequences of this moral void are obvious: commercial and financial imbalances, rising inequalities, the loss of solidarity, unfair trade and irresponsibility, all reflect the errors of commercial, financial and economic theories. Given the magnitude of the problems our societies face now, both critics and proposals arise from all sides, and confusion reigns. Some offer technical solutions, others turn philosophy or religion for answers, while others still seek whom to blame and are paralyzed.

So what can we do if we wish to do some good? From my point of view, the first step is establishing a reliable referential system.

### **The referential system**

The failures and blunders of our economies lead me to propose another referential system, a compass, so to speak. We need a more reliable referential system, one which shows greater respect for human beings and the environment. It is my belief that only an objective, reliable referential system, suitable as a guide for our choices and actions, will allow us to develop a reliable and ethically responsible economic, social and environmental policy. It seems to me that this is the very foundation, and that no technical solution will make any sense so long as we lack such reliable and objective benchmarks. These must also be universal in nature, as we live in a globalised world where everyone is interconnected.

When we buy vegetables at the market, who cares whether the kilogram is calibrated using a platinum standard equivalent to one cubic decimetre of water? When an architect shows us his proposed plans for a house, do we think of the Meter Convention, which set the meter’s

length at the “ten-millionth part of a quarter of the terrestrial meridian” but which, over time, has been modified to become “the distance travelled by light in free space during a specific fraction of a second”? And when bills come in, we pay them in a currency backed by gold or by special drawing rights. Thus, the value of any merchandise, its weight, its dimensions (length, width, height), are never set subjectively: they are always defined in relation to an objective and measurable outside reference. Without such an objective reference, a system, whether physical or spiritual – like an ethical system – would become corrupt and eventually self-destruct.

### **A solution for each problem:**

Let us see which ethical values are likely to correct our current problems, assuming they will be put into practice:

#### **Imbalances, inequalities, inequities, discrimination**

Trade flows are unbalanced. Unemployment affects too many people. Trade balances become dangerously one-sided. Such disparities lead to financial imbalances, which in turn lead to serious social inequalities. There are also imbalances in the use of natural resources, overfishing, overconsumption of oil, pollution, etc. Unfair trade weakens the poor. Repeated violations of the principle of equality (*i.e.* the equal right to be) result in sundry forms of discrimination. The list goes on, and you can imagine the other kinds of imbalances and inequalities.

To avoid these, our ethical reference system must promote the principle of **EQUALITY**. This value is the very foundation of the principles of fairness, balance, equivalence, and so on. It seems to me that this value should be at the forefront of an ethical charter.

#### **Relationships**

There are many who discover how individuals cut themselves off from each other and retreat inwards. Greed and Individualism are ravaging society. Professor Paul Dembinski<sup>1</sup> pointed out that while transactions are on the rise, there are ever fewer relationships. By removing the borders and other boundaries, (physical or moral) identities get lost and relationships fade for the benefit of automated transactions. The relationship with The Other has become negligible: what matters is profit and shareholder value.

Correcting this relationship deficit therefore requires that our ethical system include some bond-creating value. There are many, but most are religious in nature, and I would prefer to avoid them because they are often local and lack universality. Love might be a value, but I doubt that good feelings make for good ethics in large institutions. In its place, I would propose **RECIPROCITY**, a “give and take” value on which human relations are based, be they commercial, diplomatic, or just friendly. Its impact is considerable. According to theologian Hans Kung, it is one of the few values shared by all religions. It has proven itself useful over the centuries, from the days of Confucius. Of course, certain philosophers have expressed some reservations, which I intend to comment upon in a later chapter.

#### **DISPROPORTION**

The excesses of certain policies and choices have affected many people around the world. The disproportion of investments in certain sectors, the disproportion between

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<sup>1</sup> Finance servant or deceiver ?

desires, needs and available resources have undermined the planet and our societies. We must rediscover a sense of **PROPORTION**, *i.e.* a sense of **MODERATION** and **HARMONY**. I propose including the concept of **PROPORTIONALITY** in our ethics: it will give us the common measure we so desperately need, because we cannot manage properly what we cannot measure properly.

### **Irresponsibility**

When a bank loses billions of dollars in highly speculative investments and a sad-faced chairman acknowledges his responsibility, we need to look into the meaning of his words. This banker is not responsible, he is irresponsible! The shareholders who deal with the consequences of the banker's mismanagement by paying out of their pocket are the ones who are really responsible. Answering for our actions and our words over time is crucial in the development of business and in creating the trust that underlies human relationships. The only value a promise or contract may have comes from its eventual fulfillment. Unfortunately, too many commitments are taken lightly and never honoured. It is therefore essential that our ethics include the notion of **RESPONSIBILITY**, in the very specific sense of "answering for actions and words over time."

### **A preliminary draft of a new ethics**

These four values afford us a preliminary and rather rudimentary draft set of ethical references:

- Equality
- Reciprocity
- Proportionality
- Responsibility

A closer look at these values will allow the discerning eye to notice a sort of thread, a common denominator if you will, which runs through them (I almost said that it "transcends" them, but let us not abuse language): they are all symmetrical in nature, and these symmetries already provide our outline with a certain unity, even though each value has a different type of symmetry.

Most surprising is the fact that these values are based on the very same symmetries that describe the forces born of the Big Bang, the interaction of which shaped our universe 13.7 billion years ago, to wit: gravity, strong nuclear force, weak nuclear force, and electromagnetism. Who would have thought that these symmetries could also describe ethical values ?

- Left/right symmetry = equality
- Mirror symmetry = reciprocity
- Scale symmetry = proportionality
- Time symmetry = responsibility

At first sight, our outline for a set of ethical references would thus seem to be legitimate, since these values are based on the symmetries that describe some of the fundamental laws of nature.

Have we therefore found the Philosopher's Stone or the Holy Grail? Not really because the very symmetry of our values goes against a fundamental rule of modern physics, according

to which the original symmetries were broken at the time of the Big Bang. A perfectly symmetrical world would be an unreal, deterministic one.

To progress in the construction of our ethics, we must first digress to examine the forces and their symmetries, the breaking of symmetries, and determinism.

### Forces and symmetries

When the Big Bang occurred, the fundamental symmetries broke down, nearly simultaneously giving birth to four forces and to four-dimensional space-time. The interaction of these four forces yielded the first particles, which were both force and matter. It is in this space-time that the particles first joined, forming atoms, stars, planets, galaxies, and other cosmic objects. The four forces are:

1. **Gravity**, which allows us to keep our feet on the ground;
2. **Strong interaction**, which holds the particles of the atomic nucleus together and, among other effects, allows stars to produce the carbon which is essential for life;
3. **Electromagnetic force** (or chemical force), without which we would have no precise shape; and
4. **Weak interaction** (or radioactivity), thanks to which the sun shines on us.

These four forces are described by symmetries, *i.e.* wave functions, mathematical objects which describe the behaviour of matter and forces in space-time. They are geometric in nature, and intervene at all levels of organization within the universe, from the infinitely small particles to the infinitely large galaxies and other cosmic objects; they have done so for some 13.7 billion years.

Einstein introduced us to the theory of general relativity, which describes the infinitely large, with the idea that space and time are one and that space-time is curved. Quantum mechanics describe the infinitely small, and the “standard model” is its reference.

But first, let us listen to Carlo Rubbia, Nobel Prize Laureate in Physics, and former Director of the CERN, the Geneva-based particles laboratory:

*“In my opinion, symmetry is truly the most fundamental thing that exists today in nature. I believe that if we could explain the laws of fundamental symmetries, we would know almost all there is to know about the world. And on that basis, we could build the world’s equations. However, these symmetries, which were perfect in an initial world that was both extremely simple and uniform, are breaking down, altering themselves through evolution.”*

*“First, this is a spontaneous rupture. It is a choice. It is a choice between one possible solution and other solutions which are just as possible. And nature must choose one of these solutions. This rupture can be observed and, in a certain fashion, is related to the evolution of this universe of ours, which transits from a uniform, extremely simple and elementary system, to one in which there are differences, modifications, various aspects, richness.”*

The four<sup>2</sup> fundamental forces are reflected in the four types of symmetries mentioned previously. If each type serves as the basis for the ethical values mentioned above, it is for a very specific reason:

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<sup>2</sup> According to Mr David Gross, Nobel Prize Laureate in Physics, these 4 forces are one and the same, but with different charges. Wright Colloquium, Geneva, 17 November 2010.

## **The unity of spirit and matter**

The interaction of these four forces has shaped the universe and all life therein. Matter and spirit arise from these interactions and share the same wave character. Matter and spirit shape all our human reality, be it environmental, evolutionary, physical or spiritual. The four forces, which are well known to physicists, are inextricably linked. They work in harmony and are governed by rational laws: the unwavering, verifiable rules of symmetry.

It is essential that we recognize the profound unity of matter and spirit, in the sense that they form a “unique nature,” with different properties. An apple, for example, is a unique object, but it can be simultaneously red, firm and sweet. By recognizing this unity, we open new prospects for our ethics, because the laws that govern matter are the same as those that govern the spirit! Thus, all our spiritual activities, including ethics, are governed by rules of symmetry.

This is great because “symmetry” means “having a common measure” or “proportionate” or “harmonic arrangement of parts”, and this, among others, is one value our international institutions have an urgent need of, for – as I’ve said before – we cannot manage properly that which we cannot measure properly!

## **The break in symmetry**

Having barely discovered that the principles of symmetry are fundamental to our understanding of the universe, we stumble over a grain of sand, which seems to introduce a complication in our search for a referential system with reliable benchmark references for our ethical system. This little thorn in our foot is the break in symmetry, that spontaneous rupture which triggered the Big Bang.

The rupture entails the division of one field into two distinct ones. Contrary to what one might believe, this rupture is not a defect of the system; quite the contrary, it is the drive behind evolution, because it is through such infinitesimal breaches in symmetry that life rushed in!

Louis Pasteur was probably the first to discover the effects of these breaks while manipulating molecules of tartaric acid, those found in the yellow wine of his village of Arbois. When he arranged them symmetrically, they died. When he broke their symmetry, they lived!

Ruptures of symmetries have also been observed quite often in particle accelerators, where the energies of the Big Bang are briefly recreated. At the moment of a break, energy “condenses” or “crystallizes” into matter. It is a transformation of force into matter, which in turn becomes a new form of energy.

This very subtle difference between symmetry and symmetry breaches is a fundamental discovery which both illuminates us and upsets our ontological knowledge.

Nobel Laureate Sheldon Glashow discovered that when one goes backward in time to the Big Bang, arriving at that split second where everything seems to have begun – which physicists call the breaking of symmetry, all the theories of physics break down! In vain have physicists attempted to learn what happened just before this rupture of symmetry in the Big Bang, but their mathematical tools are useless. It would seem that beyond this break, nothing can be known.

This break corresponds to the end of physics (or to its beginning, depending on the direction we travel on the time flow). It implies a first questioning. Prior to the Big Bang rupture of symmetry lies the original or fundamental symmetry. I call this “metaphysics”, because it lies

beyond physics. In this sense, therefore, metaphysics deals with nothingness, perhaps with potentialities, but under no circumstance does it deal with realities.

The break in symmetry is a long-ignored borderline between the potential of symmetry and the reality which appears after its rupture. It is a borderline between what is knowable and what is not. This discovery renders parts of ancient philosophy, which was resolutely deterministic, completely obsolete.

On which referential system should we then build an ethical system that meets the new requirements? Like chaos which is highly sensitive to the original conditions, the choice of a legitimate system of reference is of paramount importance.

Having demonstrated the importance of symmetry in our existence, we might be tempted to use it as a reference should we fail to grasp the subtle difference between the perfect symmetry that symbolizes “non-being” and the broken symmetry which symbolises the birth of what “IS”, *i.e.* the evolving world of our material and spiritual reality. As Shakespeare would put it “To be or not to be ?” This is a good question.

Let us look at the consequences of choosing either reference: were we to use perfect symmetry, we would have an ideal and absolute frame of reference, but one which would be totally unreal. By choosing this ideal of perfection, we would, at best, have an erroneous link with reality and, at worst, plunge into our own fantasies in a form of totalitarianism. We would then run the risk of having our desires turn us into intolerant fanatics.

Consider, for example, the St Augustine’s reference system, which was probably based on symmetry. In his time, Greek philosophy ruled the minds, the arts, mathematics, architecture, astronomy. Symmetry was a key benchmark, because it symbolized perfection, purity, eternity (not to mention the eternal Lord Himself). I suspect that this founding father of the Church was the first to perceive the break in symmetry. Unfortunately, he called it the “original sin”.

His interpretation was erroneous because his reference system, that of his time, was inadequate. Yet his approach was logical, the break in symmetry meant the rupture of purity, perfection, eternity. This break symbolized the beginning of evil, decay, death, whereas for scientists today, the break in symmetry represents just the opposite: the beginning of life. For “It is in tiny symmetry breaks that life occurred”!

Thus, taking the break in symmetry for reference, *i.e.* that which IS, that which is born of the break, to wit, space time and the four forces previously mentioned, with their interacting particles, we are building our new ethics on a very strong foundation.

## **Determinism**

Determinism has affected our thinking since ancient times. It is a doctrine which holds that all human actions are determined by their previous states, *i.e.* by causality. The will cannot change anything in this determination. Determinism rests on perfect symmetries. It is the very negation of free will and freedom. Neither religion, nor economic or social theories, nor science have escaped this fatalistic view. Having assumed the existence of perfectly informed market participants, of perfectly cyclical markets, economic theories were elaborated on the basis of this overly perfect referential system – theories which seemed reasonable on the relatively small scales of nations, but proved to be aberrant on the larger scales of globalization.

Determinism is incompatible with free will and moral responsibility. Historically it was a kind of uncompromising belief that the quantum revolution has finally defeated. Werner

Heisenberg and his uncertainty principle (or *principle of indetermination*) drove the first nail in the coffin of determinism. Whilst Albert Einstein still maintained a highly deterministic vision of the universe, his interpretation of quantum mechanics was finally caught out when the physicist John Bell wrote the famous equations called “Bell inequalities”. Arguably, J. Bell rang the death knell of determinism and Alain Aspect became its gravedigger when, in 1982, he experimentally demonstrated the validity of Bell’s inequalities.

Now we know that the world is changing in an indeterminate way, even though many local systems evolve following an apparent determinism. According to the mathematician David Ruelle<sup>3</sup> one should not be confused with the laws of physics which are deterministic i.e. invariant or symmetric with initial conditions which are not. A small uncertainty in the initial condition will result in greater uncertainty in time or space, and the result will not be predictable. Both nature and individuals make rational or random choices that contribute to determine our uncertain future without any possibility of turning back.

With this knowledge accumulated up to the late 20<sup>th</sup> Century, we can now consider building a new ethical system.

### Undetermined ethics

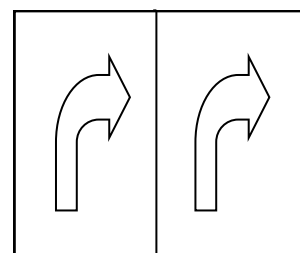
When symmetries break down, Mr Determinism yields part of his seat to Mrs Freedom! All at once, we discover a fifth value: **FREEDOM!** How could we ignore this value, which is so important, so fundamental, and for which so many have sacrificed their lives?

It is tempting to further the construction of our ethical system on the basis of the four normative values previously mentioned – equality, proportionality, reciprocity and responsibility – while pursuing them in a non-absolute manner, *i.e.* with room for some freedom and choices.

However, I am convinced we can enrich our project by going beyond our five values and searching freely for all forms of symmetries. This approach will afford us a wider range of ethical values, well-structured and context-specific, while maintaining the same unity of approach.

### Right/left symmetry

Imagine a geometric shape that is repeated and is superimposable. The shape on the left is identical to that on the right. The right one is equal to the left. This kind of symmetry is the basis of the principle of “EQUALITY”. More specifically, this is an equal right “to be”, which is the foundation of our justice system. Here is another principle that has been known for two centuries. It has suffered much confusion because symmetries are broken and diversity and differences crop up. The “equality to be” should not be confused with the “equality to have” or the equality of status, which are utopian: beings are born different, evolve differently, and lay claim to their differences, because these grant them their identity. Beings have a right to be, live and become that is equal to that of other beings, but they also have the right to be different. This distinction between the right to BE and the right to HAVE is fundamental.



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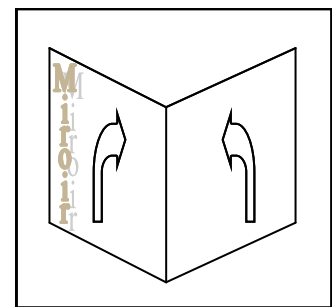
<sup>3</sup> Hasard et chaos

When the principle of equality between beings is broken, discrimination inevitably appears. For example, is the principle of “Non-discrimination between local production and imports”, which the World Trade Organization claims as its own, compatible with the principle of equality to **BE**? Alas, that is a false ethical principle<sup>4</sup>, because all too often, it allows the strong to compete against the weak, thus violating the principle of equality. It has contributed to the growing inequalities in the world even though it has had positive effects in some cases, when it broke local monopolies.

One of the by-products of equality is equity, or fairness. Not getting rich at the expense of others is a way of respecting human beings, their rights and their differences. In other contexts, the principle of equality produces derivative values such as equilibrium (or balance), fair trade, and so on, all of which are important values in any exchange. Searching for left/right symmetries through values such as equality, equity, equilibrium... is the first step towards an ethical path. The International Standard Organization is striving towards symmetry with its famous ISO norms such as ISO 9001 (quality), ISO 14'001 (environment) and ISO 26'000 (social responsibility). ISO means “equal” (from the ancient Greek Isos).

### Mirror symmetry

Take the example of two hands, clasped thumb against thumb. They are symmetric, as in a mirror. However, these two hands are not stackable, as would be a right/left symmetry. Louis Pasteur was the first to discover this form of symmetry, which he called “chirality”.



If we were looking for self-referring ethics, this kind of symmetry would bring narcissism and self-love to our mind. Yet the mirror does not reflect its own image. It is not selfish! It always reflects an image other than its own. This mirror symmetry is the basis of **RECIPROCITY**, a value which is objective and which opens unto the Other.

Reciprocity is a well-known, very old value, known also as “Golden Rule”: it was first suggested by Confucius: “Do not do unto others as you would not want others to do unto you.” It is a value that has proven its worth. Virtually all religions have adopted this principle. It is the negation of self-reference: “Do not do... .. what you do not want. When GB Shaw suggested “Do unto others as you would others do unto you”, the formula ceases to work, because others may not have the same taste as you! The formula is a self-referring statement.

The deterring effect of the *lex talionis* – “an eye for an eye, a tooth for a tooth...” – is well known for its dissuasive effect; however, its perfect symmetry traps it in a vicious circle, hindering any evolution. It requires forgetting the great wisdom of the Ancients, who invented forgiveness, a form of tolerance which breaks the symmetry of this law and allow situations to evolve.

I have also observed that reciprocity in mutual insurances and mutual funds leads to **SOLIDARITY**, a sort of by-product of reciprocity. In another context, this symmetry suggests **TRUTH** as a mirror of reality. It may also suggest hierarchy in society organization.

Reciprocity, solidarity, truth, all are important values in any forms of relationship, whether personal, commercial or diplomatic.

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<sup>4</sup> Indeed, the WTO confuses the “equality to be” with the “equality to have” or the equality of status.

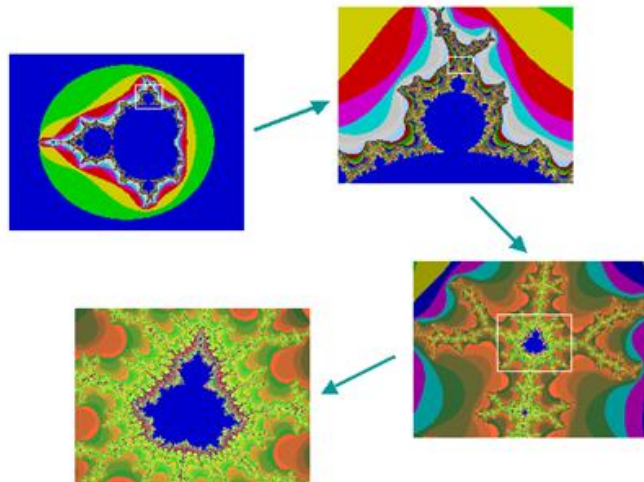
## Scale symmetry

This kind of symmetry – which describes B. Mandelbrot's fractals, or the *matryoshka* (Russian nested dolls) which fit into each other, because they are similar but not identical – is the basis of the principle of “**PROPORTIONALITY**”.

The law of gravity is said to be invariant or symmetrical, *i.e.* the same law applies here on earth, on the moon, on a star, or on any other cosmic object, regardless of how different weight is on each object. In fact, weight is proportional to mass.

This proportionality is an important value in relations between humans, societies and countries. For example, each service provided is entitled to a consideration, under the principle of reciprocity. However, the consideration must be proportional and equivalent to the service provided.

I buy 2 kg of apples and the cost is proportional to quantity and quality (at least, it is in a more or less balanced market). Work is remunerated in proportion to the amount produced.



On the other hand, when a service is offered without consideration, *e.g.* when aid or subsidies are provided to a subset of a population, this one-way service should be subject to the principle of equality between recipients whose rights are equal.

Proportion is an inescapable component in the development of tastes, æsthetics, risk management and modern justice. More generally, it reminds us that our reality consists of sets and subsets, as with fractals, with their own organization and referential system, and might therefore include a new value: **MODULARITY**. In the political arena, the concept of **SUBSIDIARITY** might also be included. And since only that which can be measured can be managed properly, this symmetry also suggests another new value: **EFFICIENCY**.

## Time symmetry

Science-fiction fans like to travel back in time by “running the film backwards”. Let us be clear on this: in perfect symmetry, time *is not*, it *does not exist*. It is born of the rupture of original symmetry and flows out in the direction we are all familiar with.

Temporal symmetry suggests to us that the value of a contract (or promise) must be the same at the time of its conclusion, at the time of delivery, at the time of payment.

The value of a treaty such as the Charter of the United Nations should have been the same on 10 September and on 12 September 2001; however, by attacking Iraq, the UN charter which defends the territorial integrity of nations and the respect of their governments was violated.

A break in symmetry does not mean that a contract or treaty may be systematically violated! And temporal symmetry does not mean that contracts or treaties cannot be renegotiated. They can be, provided the three previous principles apply:

- first**, each partner has an equal right to renegotiate;
- second**, should a party wish to modify a clause, e.g. the date of delivery or the quality of the product, reciprocity would apply and the seller could ask for a clause to be modified, such as the price;
- third**, this price should be more or less proportional to the value of the favour asked; and
- finally**, all parties should agree.

So which ethical values does this temporal symmetry suggest? One might first think of **SUSTAINABILITY** and its environmental impact. Still, the term “**Responsibility**”, in the sense of “answering for one’s words and acts in time”, affords it significant coverage, and includes environmental protection. Let us consider a topical example: an automotive manufacturer guarantees the use of a vehicle for a certain period of time. In case of defect, he repairs the vehicle, re-establishing symmetry by having it comply with the contract. He is responsible, he is bound to his customer.

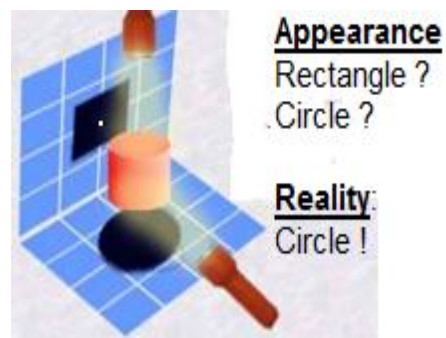
### Rotational symmetry

Besides the aforementioned fundamental symmetries, physicists have discovered scores of other space-time symmetries, so that this ethical system may be improved in proportion as we integrate new symmetries. Now listen to Steve Weinberg (Nobel Prize Laureate in Physics) who, in his own way, confirms the words of Mr Rubbia when he says:

*“Nature is governed by laws of great simplicity and great beauty. All our experiences, especially in the 20<sup>th</sup> Century, lead us to believe that the principles of symmetry are essential components thereof. A principle of symmetry expresses that Nature remains the same when considered from different points of view, which may be distinct orientations of a laboratory in space or various ways to name certain particles, such as the names “electron” and “neutron”, “weak” and “electromagnetic”. To state that Nature does not change when seen from different points of view is of major importance, as it determines the structure of equations<sup>5</sup>.”*

Fundamental laws are invariable; thus, the unity of rationality is preserved. Thanks to this invariance (symmetry) of laws, a scientist established in Buenos Aires can perform the same experiment as if he were in Tokyo, and he will get the same results. Gravitation on the Moon follows the same laws as on Earth, even though it is proportional **to** the mass. Therefore, designing an ethical system based on the laws of symmetry presents an immense advantage: that of making it universal.

Suppose I hold a cylinder before me: you would see a rectangle while I, looking at it from above, see a circle. And yet, we see the same cylinder, the same reality. Perceived reality merely depends on our viewing angles. Our different points of view result in two different truths for a single reality!



This discovery has, of course, an ethical bearing. It suggests the respect of the Other’s opinion, because everyone may see the same nature from a different

<sup>5</sup> CD-ROM: *Le Défi de l’univers* (The Challenge of the Universe).

Comment: This symmetry of rotation appears beyond 100 million light-years. It is then said that the universe is isotropic.

point of view. Whether one is a tanner or musician, a monk or gas-station attendant, a mechanic or physicist, all of us can know the same reality.

This discovery also tells us that we are equal observers, although different because of our situation, and that plurality and diversity are not contrary to the principle of equality.

Finally, this diversity of “truths” imposes upon us a spirit of tolerance. Nature tells us that there is a wealth in reality, and that it is up to us to discover it.

### **First conclusion**

It is common to find well-intentioned people showing their passionate defence of one value or another. Some political parties advocate responsibility, others equality, etc. However, the laws of nature tell us we cannot consider these values separately, as neither forces nor symmetries are available “à la carte”! We may not choose them according to our mood or inclination. All symmetries are inextricably linked, as are all forces. Therefore, equality, fairness, reciprocity, solidarity, truth, proportionality, responsibility, freedom, etc., are interdependent values which only become ethical values when acting together. A boss can not be responsible if he does not act in a proportionate manner. How can healthy relationships be maintained when reciprocal behaviour is unfair or unequal? Let us pursue our study of ethics and its multiple forms.

### **Truth**

“*Adaequatio rei et intellectus*”, “the intellect [of the knower] must be adequate to the thing [known]”, as the Ancients put it. Truth is a kind of mirror of reality as seen, heard, felt, and then described by the subject. Truth should be objective because its reference is that which is born of the rupture: what “IS.” Therefore, it depends on the place, the time and the perceptions of the subject, which reflect an image of the truth to him, as with mirror symmetry, but slightly deformed (inverted sides). What is “true”, in this sense, is synonymous with what “IS”. Truth is living, it changes according to time and space. It cannot be one thing and its opposite. The principle of non-contradiction is its defence. Truth is only another facet of life, of the living and dynamic reality.



Untruths or lies are a distorted representation of reality; they only reflect the thoughts of the subject, they are self-referential. Truth is fragile; it depends on balanced force ratios, failing which it loses its objectivity, its reliability, and becomes subjective. In relations between a strong person and a weak one, it may occur that the person in the weaker position resorts to lies for protection. But the opposite is more serious: “Might makes right!” said La Fontaine. In such a case, the truth of the stronger person becomes ever more subjective, reflecting only his thoughts, his vision, his peace, his price; in other words, his falseness. A great imbalance corrupts the quality of the relationship.

Reality is ever changing, because interactions are constantly shaping, kneading and remodelling it. When we try to define truth through words or texts, without specifying any time or space criteria, we risk placing it out of touch in relation to the living and evolving reality. That is the problem of legislatures, which have a hard time adapting to the changes in reality.

Yet, there is an objective and specific truth, the reference of which is a kind of symmetry. These are the laws of nature, as described by mathematics. Equations are said to be “true” because they are symmetrical; however they “are” not, these are not living truths. They have no existence of their own, being merely descriptions of the laws that govern part of the universe.

Truth, like liberty, therefore appears as another facet of reality. It consists of a referential system and of interactions, *i.e.* perfect or slightly broken symmetries and force ratios.

## Justice

The balance symbolizes the equilibrium between an offence and its penalty, between crime and punishment. It is a symbol of equality.



The famous *lex talionis* is an example of mirror symmetry: “An eye for an eye, a tooth for a tooth.” Its reciprocity is supposed to be a deterrent. The punishment shares the same nature as the offence.

In Europe, we have opted for a slightly different justice, which appears under the guise of a scale symmetry: the punishment is proportional to the seriousness of the offence, but it does not share the same nature. It may correspond to the deprivation of liberty, to a fine, and, if possible, to a compensation for the damage.

So there are several ways in which justice may be conceived, but all depend on the same principle: a symmetry between the offence and the punishment, subjected to the referential system which is the law.

In both cases, the punishment is intended to deter, to discourage the repetition of the offence. Usually, justice also seeks to facilitate the offender’s reinsertion into society and to give him a second chance. Despite everything, it remains fallible. If ten witnesses state that the cylinder<sup>6</sup> is rectangular and the accused claims it is circular, he must assuredly be wrong, even though he is telling the truth.

The same problem arises in democracy, where a majority may claim that only its vision, its opinion is true, even though that is not the case, because majority rule has the power of the thundering cannon, while ethics is only a whispering voice...

***Sine Justicia nulla libertas...***

Without justice, there is no freedom...

This quote, borne on the pediment of the Palace of Justice in Assen (Netherlands), is far more than a principle: it is a truth, probably due to Justinian, who codified Roman law. It reminds us that justice and liberty are intimately related. Alas, the western world, since 1789, seems completely obsessed with the notion of unrestricted liberty, to the expense of the idea of justice...

## Good and evil

The notions of “good” and “evil” are intimately linked to the notions of “life” and “death”. In olden days, when human activities were simpler, edible mushrooms had to be picked, that was “good”, while poisonous ones were “evil.” You had to kill the bear rather than be devoured by it. These notions of “good” and “evil” were clear, although subjective. Killing Pyrenean bears is the very example of what must no longer be done today if one is striving for the common good.

In the Middle Ages, monks would clear the land left and right. They would cut down trees to prepare the soil and cultivate it. What they did was “good.” Today, critics abound against the Brazilian deforestations which upset the rainfall regime. The ensuing droughts starve the small Northeast farmers. Clearing the land is “bad.”

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<sup>6</sup> See the chapter on Rotational symmetry, the respect of different points of view

Are the notions of “good” and “evil” fluctuating, or subject to temporary fashions? Actually, these notions also depend on which referential system we choose. When we judge situations subjectively, in relation to ourselves, when the bear is seen as a threat to our life or property, we kill it. On the other hand, when we judge situations objectively, in relation to what IS, in relation to an unbalanced nature, the concern for bringing balance back to nature demands that we protect the bear. Therein lies the entire difference between a “subjective” or self-referring system and an “objective” one. The subjective referential system generates tensions between individuals and even between nations. It encourages a spirit of competition. However, there are situations wherein the individual must take care of himself to survive and to maintain his autonomy as long as possible, so as to avoid being a burden to others. The choice of an objective or subjective referential system depends on the context and, in some cases, “Freedom of conscience” – albeit subjective – assumes its full meaning for individuals.

On the other hand, a national or international institution whose declared objective is a form of common good needs an objective ethical system; a subjective ethical system such as that used by millions of individuals has no place. An institution must define for itself an objective ethical system meant to serve the community. It needs not concern itself with its reproduction; its own survival should depend solely on its ability to promote the common good.

In human and international relations, failure to respect the principles of “equality to be”, of reciprocity, proportionality, and responsibility, leads us from symmetry to dissymmetry. It is a natural slope which creates tensions. These increase as we move away from symmetry; thus, suffering, hate, injustice, even violence, increase in the same proportion. It is the beginning of evil.

Generally, I note that good spreads out around symmetry, while evil grows on the path of dissymmetry and eventually ends up spitting its venom into the asymmetry of relations and force ratios.

Suffering and shame allow victims to become aware of an asymmetry, and therefore to react. Doing good is first and foremost choosing a coherent referential system, and then deciding to reduce tensions by moving towards symmetry, even if one never reaches it. Doing good is a path one follows, an impulse one gives, a direction one chooses. A certain well-being immediately results from this tension-reducing impulse. This well-being appears as soon as the tendency towards dissymmetry is reversed, which marks the rebirth of the hope to recover balance, peace, justice, health, happiness, pride.

As with truth, the principle of non-contradiction applies. One cannot do good here by doing evil elsewhere in the name of efficiency. That would be incongruous.

### **Rights and duties**

The five benchmark references and limits embodied in the principles of equality, reciprocity, proportionality, responsibility and freedom, along with their related values such as truth, solidarity, etc., are both rights and duties. These rights and duties are closely linked to the human forces, much like the opportunities and constraints linked to the natural forces. For instance the gravity is both an opportunity for the skiers which have the right to go downhill and a constraint for them as they have a moral duty to control their speed, for their own security and that of Others. One could say that the opportunities and constraints given by the natural forces are the right to BE and to evolve and this right to BE implies a moral duty of reciprocity equal to that of the Others.

There is symmetry between rights and duties. Both our rights and our duties end where those of the Other begin. At first glance, these rights and duties seem to be barriers between individuals, but actually, they are bridges that link beings to each other. Symmetry unites them. These ties are immensely powerful, their power being the ability to form Mankind into a true community. It is through these links or bridges that the social fabric is woven.

When symmetries are ever so lightly broken, rights and duties become more human: concepts like tolerance, forgiveness and kindness are then introduced. A light rupture of symmetry softens the rigidity of the principles, ties become stronger, friendship, brotherhood, solidarity develop.

Everyone may read this text under the light of his own choosing. A legal expert might retain the importance of rights and duties, while a physician might favour the relational aspect these benchmark reference-bridges create between him and his patient. Life's complexity prevents us from fixating on any single aspect of reality. A holistic view fosters the approach to truth.

While democracies only swear by human rights, philosophers stumble over the Kantian rhetoric of Man's duties. Duty, Kant tells us, is "*The need to act out of respect for the law.*" If it were out of respect for natural quantum laws, I would agree with him, but he refers to a "metaphysical" moral law too pure to be true. As I see it, duties are only the inverted image of rights, as seen in a mirror. They are inseparable, and are the result of the principle of **RECIPROCITY**. The right to fish in the river next to my home only makes sense if the residents upstream of me are duty-bound not to pollute this river. One's right ends where the Other's begins. I am not the only one who wishes to go trout fishing: I accept that others also fish.

The Convention on the Rights of the Child makes the best of intentions considering past abuses: it offers an impressive list of children's rights, but alas, mentions none of their duties! How could anyone yield to the illusion that a child can have rights without offsetting duties, not even that most elementary duty of respecting the rights of Others? Children ignore or underestimate their duty to respect their teachers. That is also because people confuse the right to be with equality in status. Children have the right to be and to live, just as adults do, but they are not their equal. They must start by learning the rules of the great game of life, by being educated about their rights and duties. They must become autonomous, as far as possible, before they have equal rights to adults.

## Liberty

When symmetry breaks down, Nature must choose between one possible solution and others, according to Mr C. Rubbia. The ability to choose is the beginning of freedom. Choosing means exercising one's liberty, but it also marks the beginning of responsibility, because choosing also means giving something up.



Freedom is a non-normative value which allows us positive and/or negative actions. But its space-time, as vast as it may be, is not sufficient; it also requires a more or less symmetrical environment. When we are in good health, we enjoy great freedom. On the other hand, when we suffer an accident or illness, when our physical or psychic balance is broken (broken leg, coma), our freedom to move about or to speak is affected. Therefore, liberty depends on a certain balance, a certain symmetry.

Locked up in a tiny cell, where would our freedom of action be? In the desert, we are supposed to be free to move about... Yet would we really be free had we just time and space, but no resources (water, supplies, fuel)? Space-time and resources are intimately linked to bring substance to our liberty. In this case, resources must be proportional to the

needs of the journey. Should the principle of PROPORTIONALITY be violated, liberty would decrease.

If all the services we provide through our work earned us no salary or other consideration, *i.e.* if the principle of RECIPROCITY did not exist, where would our liberty be?

What is a man's liberty under torture? When force ratios are unbalanced, when the principle of EQUALITY is violated, liberty disappears. It is common for us to say that our freedom stops where the other's freedom begins, but for the tortured man, his freedom begins where his torturer's freedom ends...

We are free to choose the make, model, colour, *etc.*, of our vehicle. But should our insurer shirk his responsibility and abandon us after our car had been set on fire, where would our liberty be? Our freedom depends on the Others, and on their compliance with the principle of RESPONSIBILITY.

We have just discovered that freedom is not an absolute value. It is also born of the rupture of symmetry. It is through this small crack that determinism disappears to yield the way for Mrs. Liberty. It is through this crack that a space-time is created, with possibilities of choices which only survive within the limits of the respect for the various symmetries.

Freedom gives the responsible individual all his dignity. The ability of humans to evolve depends heavily on their relationship to the environment and to other humans. In other words, it depends on their relationship to the mind/matter that is governed by the rules of symmetry which introduce normative values unknown to freedom. Human beings are not only material and spiritual, but also relational ones. As such they cannot overlook the limits dictated by the rules of symmetry.

These limits give freedom all its meaning and *raison d'être*: unrestricted freedom would have neither sense nor value. The formula according which one's freedom ends where that of others begins perfectly reflects the principle of equality.

Freedom reflects the reality which surrounds us. It also consists of space-time and energy/matter, all of which is topped by a precise, reliable referential system. Liberty appears to be but one of the various facets (or properties) of reality.

## **Liberalism**

This economic doctrine claims the market as its foundation, and entrepreneurial liberty and free competition as its natural allies. It is also a frame of mind that allows each person to be satisfied with his status and which defines liberty as the starting point of an ongoing creation, not a state of nature which should be preserved intact. «*Originally, liberalism was a political philosophy for which the French Revolution became the solemn consecration. In the mid-17<sup>th</sup> century, John Locke had already set himself up as the ardent defender of individual rights, the roots of which he stressed were to be found in Man's nature, something which suddenly forced governments to recognise and protect them*»<sup>7</sup>. The liberal doctrine of the 19<sup>th</sup> century bore within itself the seeds of future "human rights".

Liberalism conceived trade as an expression of individual freedom within which commercial interactions were to develop with no constraint other than competition. Other limitations to trade were accepted only as exceptions. However, nature has a different "philosophy"! For her, all interactions are subject to rules of symmetry which set limits, without exception! Gravity, electromagnetism and radioactivity are sometimes constraints and sometimes

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<sup>7</sup> F. Balle - Encyclopaedia Universalis

opportunities which we accept naturally. So why would we not accept the rules of symmetry that govern them?

Liberalism was able to free itself from the restrictions imposed by the States but failed to regulate itself and set adequate moral limits. It eventually swept away the western world in the excesses of its quest for liberty and individualism, all too often ignoring the principles of proportionality, balance, fairness, solidarity, social justice and responsibility. "The market will fix all that!" said the liberals. It is because man's initiative has too long been silenced by the leaden cloak of former totalitarian regimes that the rejection of state control has been so violent and – let us give credit where it is due – so creative. However, this impetus of some to amass wealth was often at the expense of those least able to defend themselves, and its excesses contributed to the rise of socialism, a reaction to liberal abuses. In the wakes of the past century's wars and their parade of suffering, liberalism found itself severely limited, and state interventions became extensive in all fields. In turn, the abuses of state interventions (nationalisations, protectionism, production and export subsidies), coupled with the conviction that the market could settle problems better than the State could, was the reason for a major reform, wherein the GATT gave birth to the World Trade Organization (WTO).

The neo-liberal theory developed by the Chicago school of economics and promoted by the International Monetary Fund laid the foundations of a new economy, deregulated in some ways and badly regulated in others, whose negative effects are visible everywhere we look. According to Milton Friedman<sup>8</sup> economic theories need not be based on true or realistic assumptions as long as they are predictive<sup>9</sup>. The critics have easily demonstrated that these new economic theories, completely out of touch with reality, predicted neither the stock market crashes nor the numerous recessions. How could they when the decisions of each agent, often irrational and sometimes imbued with morality, retroact on the system? Can we still speak of "economic science"? Is it not rather an ideology, a determinist one at that?

The WTO became the champion of neo-liberalism based on free trade. Alas, this very same WTO is not at liberty to correct its mistakes, hindered as it is by the national interests of certain influential Member States. Is it customary for a gentleman farmer to compete with an Egyptian fellah for the production of rice, cotton or lentils? According to this organisation, it is, as the States signed the agreements by consensus. Yet no one would think of setting up a boxing match between a heavyweight and a featherweight; a beginner does not challenge the world tennis champion; football is not played ten players to twelve. Why? Because the rules of symmetry are omnipresent in sports. The dominant school of thought in economics believes it may escape these rules by stating loud and clear that the freedom to conduct business and free trade fosters progress. But what progress? In the shantytowns of the large megacities, millions of peasants ruined by asymmetric competition can bear witness to their experience of free trade and market efficiency.

With the financialisation of the economy and the "maximisation of profits"<sup>10</sup>, the new, popular financial theories have imposed unrealistic performance criteria. Return on equity has to be at least 15 to 20%, otherwise companies are declared non-performing. Why 15% and not 5% or 30%? No objective reason has been given except that capital being scarce, it must be used wisely and its return maximised. This new « truth », largely accepted by the academic and financial communities, has imposed severe constraints on States and companies, all the while profoundly transforming society.

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<sup>8</sup> Winner of the Prize in Economic Sciences in Memory of Alfred Nobel, commonly referred to as the « Nobel Prize in Economics »

<sup>9</sup> "The Methodology of Positive Economics"

<sup>10</sup> Milton Friedman suggested that companies did not have any higher social responsibility than to maximise their profits.

The consequences for “non-performing” companies have been tough because the interest rates at which they borrowed, threatened to increase. The pressure on managers has been considerable in all sectors where margins are low. In turn, managers have exerted pressure on staff and suppliers so as to improve performance. Gradually the spirit of cooperation that could reign in companies gave way to an ever-tougher spirit of competition and tensions became apparent between employees under stress.

For the sake of productivity, companies were subjected to the dictates of return on equity and have adapted. They have sacrificed a little quality here (particularly in services), and a little security there, and some have relocated their production facilities. Elsewhere risky conjectures have been engaged in. Some companies have cheated and falsified their accounts. Finally other companies and banks bought back their own shares. Thus, by reducing their capital stock, they have given the illusion of higher returns; suddenly they are vulnerable and were put at risk when the financial crisis erupted in 2008. Fortunately other companies threw themselves into innovation, often successfully. In agriculture, on the contrary, innovation with transgenic seeds was not unanimously received.

Globalisation and the opening up of the markets was an economic necessity recognised by the majority of large companies. Increasing their market share allowed production costs to be lowered and ambitious financial targets to be achieved. This is what happened to many innovative companies. But the opening up of the markets has created competitive conditions that have weakened many traditional companies. If with a budget of 1 million dollars a company can employ 10 people in the West while in Asia it can employ 50 or more with the same budget, there is a competitive distortion, an asymmetry that could be compared to a football match taking place between a team of 7 and a team of 15. The result is a foregone conclusion. The disproportion comes to an end one time or another by claiming its dues. The victims regularly fall into the net of the social services.

The banks have adapted in their own way. In addition to share buybacks, the large institutions have located themselves in emerging markets, which is fair game. The investment banks have succumbed to the lure of financial mathematics. Most of these formulae being built on deterministic models<sup>11</sup> completely out of touch with reality, these banks existed in the illusion of reliable predictions and have engaged in financial speculation as disproportionate as it is senseless. They have developed products and systems for automated high frequency trading just as the pirates who roamed the seas in olden times. Some 150 years ago American merchants invented the futures market to mitigate the risks for grain producers, millers etc. In turn, the financiers developed derivative products with the same intention: to protect themselves from ruinous fluctuations. But by some warping or other, these products have been widely used to speculate excessively on anything and everything, including the property of others. Certain so-called “synthetic” products are even disconnected from their underlying base. These abuses of freedom of trade by some, dangerously impinge on that of others. They discredit liberalism and show the dark side of banking practices under the guise of neo-liberalism: a minimalist ethic. The leverage effect of all of these products is so powerful that the central banks are powerless to control them. The systematic risk caused by these products eventually burst like a soapy bubble. The collapse of the mathematical models generated losses so large that the States had to intervene enormously by getting into debt to support these institutions and to avoid the overall collapse of the economy.

While the companies and banks were adapting, the governments applied the new theories with the support of the major holders of capital. Capital being king, taxes perceived on the great fortunes had to be cut<sup>12</sup> and the wrangling that impeded their freedom of movement

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<sup>11</sup> The Brownian motion, the Gaussian function (bell curve) etc.

<sup>12</sup> Too much taxes kill taxes declared President R. Reagan.

had to be removed. The governments of Ronald Reagan and of Margaret Thatcher worked towards implementing the framework conditions to foster the growth of Wall Street and of the City all the while being emulated across the world, even as far as China. Numerous prestigious achievements such as citations in major journals and the media or even the many Nobel Prizes in economics have added the finishing touches to the structure giving the Chicago school of economics an unprecedented credibility. The new ideology became a scientific truth.

Some decades later, the day of financial reckoning was nigh. The European and American governments are heavily indebted. The tax breaks for the wealthy and the social compensation for the victims of the system revealed the extent of the disaster. The race for excessive returns in an area of almost infinite freedom has led to serious imbalances, tensions and much suffering. It has generated phenomenal inequalities while destabilising the system which has now lost credibility and legitimacy.

Would this mad dash for money, this focus on capital, be one or other of these “initial” conditions<sup>13</sup> to which the current financial chaos would have been sensitive? When in 2008 M. A. Greenspan<sup>14</sup> testified before the US Congress and acknowledged that there was a “flaw” in the financial system, to which flaw was he referring? To this initial order to maximise profits? To this belief in rationality and market efficiency? To this complacency towards capital?

The eminent biologist Pierre Curie offers us an answer through his famous « Curie principle » which says:

*“When certain causes produce certain effects, the elements of symmetry of the causes must be found in the effects produced. When certain effects reveal a certain asymmetry, this asymmetry must be found in the causes that produced them”*

Is it a coincidence that the excesses of the financial incentives and orders are found in the excesses of economic and financial imbalances? If the inequalities in the tax treatment of the rich and famous 1% is found in the social inequalities that affect the other 99%?

The *outraged*<sup>15</sup> denounce the treason of the elites who promoted neo-liberal dogmas without a critical mind-set. Is it not absurd to require so much effort from workers, always pushing them to produce more, sometimes in defiance of nature, often in defiance of their health, while simultaneously, the financial system destroys the wealth produced to the tune of tens of billions? Is it not absurd that this finance still awards its players so disproportionately in relation to their contributions to the common good and their risk management?

The incentives to seek personal gain at the expense of the common good have of course inflated the individualism and egocentrism of certain financial operators. Three centuries earlier, B. Spinoza stated, “When each man seeks most earnestly what is most useful to himself, that is when men are most useful to each other” (Ethics, IV.) Might this vision also have influenced the individualist conception of neo-liberalism? This concern over profit is old and neo-liberalism has further reinforced it so that Western societies are deeply marked by this tireless quest for personal gain. It is useless to exalt this natural desire that is enrooted in each of us. Living together requires other values.

The instability created by financial and monetary imbalances provokes other disturbances. To shelter their assets from devaluations, the investors buy “strong” currencies. These

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<sup>13</sup> See the Chaos theory

<sup>14</sup> Former President of the Central American Bank (Fed).

<sup>15</sup> Reference to the book of Stephane Hassel, “Time for Outrage”.

transactions, with respect to free trade, look perfectly harmless – in fact, are they not encouraged by the guaranteed freedom of trade? They are and yet they can ruin the healthiest economies. Why? Because currency is not merchandise! Exchanging a strong currency for a weak one without any compensation is a fool's bargain, because the exchange rate does not reflect the objective value of the goods exchanged, because there are not any! It reflects the subjective value of the fear and despair of investors affected by the collapse of the credibility of their benchmark currency. The freedom of the financial operator interferes dangerously with that of the entrepreneur and of the workers who can no longer sell their products at their fair values. It destroys what liberalism seeks to promote: trade without barriers. It becomes a barrier itself.

The proponents of liberalism generally forget that freedom is a “non-normative” value (One can do good or evil in its name). It is therefore essential for it to be accompanied by normative values. The liberal economy is not a science of economic life that can be described with a detached perspective (what is<sup>16</sup>). It should be a normative science *to serve the living* rather than capital, *to serve others* rather than oneself. It should raise the question of what ought to be done<sup>17</sup> and how to do it.

Freedom of trade is not an untouchable dogma; sooner or later this freedom will have to be better structured, in the interests of fairness. After years of globalisation and liberalisation, will the excesses of commercial and financial imbalances promote the return of the State in organising the world? Will it promote an ethically responsible organisation?

The International Monetary Fund was supposed to preserve the stability of the international monetary system. How could it, having not ceased to promote extreme theories and solutions? Let us hope that one day the Fund will make an example of itself in developing a reliable code of ethics to guide its own actions<sup>18</sup>.

This slow swing of the pendulum, between the freedom of the individual – which was deemed the guarantor of efficiency and progress - and the fairness and solidarity of individuals, the guarantors of social cohesion, has transformed into more frequent and more violent destabilising oscillations. Over the last thirty years, the Western world, under the influence of neo-liberalism, has given the impression of being completely obsessed with a need for limitless individual freedom, at the expense of the most basic ethical values. The damages caused by an unbridled market economy are the results of its mercantile worldview, one which ignores that the common good is built on inalienable fundamental principles. Can it be blamed when, to this day, there still exists no objective universal ethical system to guide its actions?

## **The meaning of life**

In breaking ever so slightly, symmetries have driven out determinism and given life a direction and a first meaning. It is a narrow, limited path, with liberties that offer us possible choices; most of these have moral consequences since regressions are possible. A bad choice, the choice of death for example, can drive us to a temporal determinist evolution.

Allow me to offer another reflection on the meaning of life, one among many. Rebecca Horn is a Berlin artist, and her exhibition:

### **“The global map of bees”**

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<sup>16</sup> Positive economics

<sup>17</sup> Normative economics

<sup>18</sup> It has a code of ethics for its staff, but none to guide its actions.

suggests to me an interpretation wherein art becomes as much a search for truth as an æsthetic search.

Sixteen inverted baskets, suggesting hives, project a luminous beam on broken, revolving circular mirrors. Sometimes, they project it onto aquatic disks with a stick breaking the water's surface, *i.e.* breaking the mirror symmetry, with the same effect.



A poem is projected onto these broken mirrors: "The bees have lost their balance...". The deformed letters appear on the walls and ceiling. Were the mirrors not broken, you could read the poem upside-down, but, alas, the message is completely unintelligible because the letters are stretched in one direction or another, here compressed, there swollen and tortured. In this sort of second-degree art, what matters is not what the artist shows us, as there is little to contemplate! The power of the work lies in this hidden message which, in a flash, becomes obvious: "**In dissymmetry, meaning is lost.**" It is a beautiful lesson in modern ethics, expressed through an art that makes that which we do not see spontaneously more obvious. So? Would recovering the symmetries also mean recovering the meaning of life and recovering a certain harmony?

### **The new ethical system for international institutions**

As a pendulum swinging to and fro, as a lung breathing in and out, this proposal for an ethical system hovers between symmetry and slight dissymmetry. It is the art of approaching the good with "just the required bit of dissymmetry". This ethical system tells us to break overly-rigid symmetries ever so slightly whenever we meet them; however, in most cases, we face serious dissymmetries, and our main ethical duty consists in acting so as to recover the symmetries which were lost or violated.

Besides, behaving ethically does not require reaching a predefined goal. What matters is the path one takes, the impulse one follows in the search for the various symmetries, the perseverance used in following this path, which is ethical in itself.

I stress the importance of the path in relation to the goal because I fear those who, with excessive zeal and overabundant good intentions, invest so much energy in reaching their goals that they could become tyrannical, both to themselves and to Others.

You already know the principles of equality, reciprocity, proportionality and responsibility, and their derivatives. What is new is your discovery of the fact that their roots plunge into the very heart of matter, of the universe. They are therefore universal, as are the symmetries. They can form the basis of a new ethical system, one that rises above political, religious or philosophical contingencies. They apply equally to individuals, companies, and nations. Symmetries existed long before mankind first appeared, before our planet even existed. Consequently, it is no wonder that they apply to Man as well as to Nature and our social and political constructions, for they lie at the very base of their birth.

This new ethical system does not seek to reinvent a new whipping post; it is a true decision-making aid. It will only be recognized as universal, objective and reliable if its foundations are recognized as being logical, true and verifiable! By drafting this proposed ethical system on

the forces that move us and the laws of symmetry that govern them, I believe I've met this requirement.

However, we cannot dissociate the symmetries, nor the ensuing ethical principles. The four proposed benchmark-limits are not "*à la carte*" options. They form an inseparable whole, just as does space-time<sup>19</sup>. Reductionism is useful when one seeks to understand Nature, but Nature works as a whole.

In short, there are three ways in which we can err and create an exponential chaos. The first lies in choosing a wrong referential system. The second is to labour toward dissymmetry by increasing tensions and unbalances, rather than flowing with symmetry, as indicated by our four benchmark references. The third is not to do anything, to let things be...

An uncontrolled or poorly-controlled market, according to liberal "*laissez-faire*" principles, one in which the majority suffers events instead of controlling them, is a market where randomness tends to destroy rather than build, to sow chaos rather than foster order. The world markets are so complex that they evolve naturally towards ever-growing chaos rather than towards a hypothetical stabilization. The more complex a system is, the more it is subject to breakdowns and malfunctions.

There are thousands of ways of forging ahead in the right direction without alienating our freedom of action! This proposed ethical system still leaves us significant leeway, an incredible playing field. It is not a doctrine, but rather a flexible framework within which we can evolve and shape a common good without harming Others. Each one's free will remains intact, as does his responsibility.

The benchmark-limits that this framework sets up are like elevator doors impeding our falling into the void; they are there for our own safety. But when "near symmetry" conditions are met, these doors open to grant us access to a higher level of relationship with others consisting of empathy, consideration, truth and justice. It is thanks to these doors that the social fabric may become richer.

Contrary to deontology, which only defines our duties, this ethical system stresses our freedom, our rights and those of the Others. It allows truth to flourish. It depends essentially on our level of conscience, our common sense, our choices and our good will. Obviously, it is a trifle more complex than the mere notions of "good" and "evil." It is an ethical system for the future of the major institutions and for individuals exerting some power.

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<sup>19</sup> One might say this is a "vector-based ethics", insofar as it fits within the 4 dimensions of space-time and is identified to a series of 4 values, corresponding to the 4 fundamental types of symmetry.

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