

J. N. Hatzopoulos: Declaration for the restoration of education

We scientists find that to face the challenges of modern times, people must acquire education. Today, in the field of education, a situation is maintained that is contrary to the role of education and can be characterized as anti-education [14], as will be clarified below. Those who maintain this state of affairs belong to the system of power that makes top-down decisions, ignoring the essence of democracy, where decisions are made bottom-up [2]. Therefore, for democracy to function effectively, it requires people with education. However, today's education is primarily focused on developing skills without considering whether these skills will ultimately contribute to a better quality of life. With this Declaration, which scientifically formulates its proposals (see Appendices A, B, and C) and draws its material from the timeless and widely accepted values of Hellenism, we have decided to contribute to the restoration of education, so that it stands up to the circumstances and responds to the significant challenges that exist and are constantly increasing. For this reason, we declare the following:

For education to exist according to the fundamental values of Hellenism, it must be based on three pillars [8]:

1. Be the healing of the spirit
2. To be in harmony with Nature
3. To cultivate the sense of beauty

The first pillar supports the notion that, just as the body needs medical care when it is sick, the spirit needs education when it is sick. It also requires a complete understanding of what spirit is, which is an immaterial entity and is identified with the intellect (mind) of man. For this reason, instead of spirit, we will use the term mind. Plato, in his books the Republic [16] and Phaedrus [17], analyzes the human mind (intellect) in three components:

(a) Logic, (b) Desire, and (c) Anger

For people to have a healthy mind and therefore education, they must make a constant effort so that reason (logic) governs the mind and manages and/or balances Desire and Anger [16]. This state of mind is referred to as **internal balance** [8]. To clarify what he means, Plato provides the following example [17]: He considers desire a blind horse and anger a crazy horse, and these two horses are paired to pull a carriage, with logic serving as the charioteer. One thinks about how much practice and competence a charioteer needs to have to guide these two horses on the right course, which, as will be explained below, is the path of virtue [1]. In Appendix A, the example of Plato is presented in a schematic representation, along with the mathematical expression for the mind space, which includes the analysis and calculation of human error based on the charioteer's ability to lead the two horses on the right path.

It is worth noting that desire and anger are essential for the survival and perpetuation of the species. There is a desire for basic needs like food, sleep, rest, fun, love, and more. Additionally, anger controlled by logic strengthens logic.

However, in situations of sudden danger where there is no room for further thought, anger acts spontaneously, saving the person from difficult situations. Keep in mind that almost all emotions of joy, sadness, fear, etc., depend on whether the desire and/or anger is or is about to be satisfied or not.

We also know that the mind in animals consists of desire and anger and is governed by them. However, animals do not possess much destructive power compared to humans because they lack the logic that would enable them to construct bombs and missiles for self-destruction.

We consider **anti-education** [14] when desire and/or anger govern the mind, and logic is used to justify their blind and/or crazy interests. The out-of-bounds, reckless desire (blindness) and the reckless anger (madness) that exist in people today are primarily due to the education system's cultivation of anti-education. This situation requires a change, and cultivating logic is essential to balance and manage blindness and madness (desire and anger), which, as has been said, are necessary to be utilized by logic where required. Desire and anger assemble the beast that humans have inside them, and they must try to tame it so that it is within limits. Note that Nietzsche also mentions anti-education [14], but he does not give a full definition.

The second pillar, which is harmony with Nature, is understood if we consider the laws and rules that govern the regular functioning of entities in Nature, taking into account that man is such an entity. The laws of Nature are known from physics, and whoever violates them directly suffers the consequences. If, for example, someone does not recognize the law of gravity and falls into a precipice, they will directly suffer the consequences of this law. However, the rules have tolerance limits and exceptions, and the dominant rule in Nature, which encompasses almost all the rules, is that of balance. Therefore, the internal balance, as we have defined it, is in harmony with Nature. Tolerance limits and exceptions are necessary for the regular functioning of entities in Nature, allowing diversity and evolution to exist.

To better understand the broader application of the balance rule and its tolerance limits and exceptions, we will mention a few examples: The Earth's rotation around the Sun is based on the balance of two forces, one due to gravitational attraction and the other to repulsion due to the Earth's rotation around the Sun. Earth's orbit is never exactly the same as the previous ones, but it differs from its average orbit by the tolerance limits required by the balance rule for sustainable motion. If this balance is disturbed, the Earth is in danger of colliding with the Sun, being lost in space, or being in an unstable state. This situation means that disturbing the rule of balance outside tolerance limits creates unpleasant conditions. The same applies to stomach acids if they are out of bounds, i.e., surplus or incomplete. The same applies to blood pressure and heartbeats, where, when they are out of bounds, they create sick conditions. An exception to heartbeats is athletes who exceed the upper limits during the competitive process and the lower limits during relaxation. In general, exceeding the limits is justified in situations of self-defense and self-preservation.

The rule of balance, as analyzed in Appendix B, is described mathematically with corresponding equations. It should be understood that mathematics cultivates logic and expands the mind's capacity from limited to almost limitless.

It is simply that the system of education, which is mainly an anti-educational system, does not pay adequate attention to the didactics of mathematics to achieve a specific level of performance in its learning.

Based on the values of Hellenism, the rule of balance is represented by the goddess of Justice, Themis, whose eyes are covered so that she does not see whose judgment she is rendering, and she holds a scale in one hand and a sword in the other. Symbolically, with the scales, she identifies the guilty, who is the one who disturbs the balance, and with the sword, she punishes them.

Therefore, the rule of balance characterizes the education system that is in harmony with Nature and provides education.

Regarding the second pillar to support education, Aristotle, in his book *Nicomachean Ethics* [1], laid the groundwork for understanding how human thoughts and actions can be virtuous. According to Aristotle, for human thoughts or actions to be virtuous, there must be an effort so that they are not defective or excessive, but are in a mid-space between defect and excess, which he called the mid-space of virtue (*mesotita of arete*), and we call it **external balance**. Aristotle gives courage as an example, which, to be a virtue, must be in the mid-space between cowardice (defect) and provocativeness (excess). Similarly, economy as a virtue lies in the mid-space between stinginess (defect) and overspending (excess). Aristotle's mid-space of virtue essentially models human error, which, when it is below a threshold, is considered acceptably correct. This condition means that in every thought and action, right and wrong coexist, and as quantities they are inversely proportional to each other; that is, when one quantity increases, the other decreases and vice versa. The mid-space of Aristotle's virtue, which we have called external balance, is also understood by the following example (for more details, see Appendix B): Suppose that a person who has no physical limitations proceeds on a straight path and encounters an obstacle that he/she will have to lift their foot to pass. If the height of the foot is lower than the obstacle, they will have a false step, which is a defect. If the height of the foot is much higher than the obstacle, the person will roll over, and that is excess. There is a mid-space of efforts to raise the foot with clear boundaries where the individual passes the obstacle without much trouble, and this interval represents the mid-space of Aristotle's virtue.

The internal and external balance determines the **virtuous** person who tries to be governed by logic to manage and balance desire and anger, and who also tries to make his thoughts and actions not defective or excessive. In other words, and according to Aristotle, virtue is the effort to be virtuous, that is, to recognize and evaluate one's mistakes and try to limit them. The virtuous should also bring to Justice the culprits who disturb the internal and external balance.

Regarding the third pillar of education, the virtuous is the one who is capable of cultivating the sense of beauty. Virtue led Greek art to be simple and beautiful, as Xenophon describes virtue in the myth of Hercules [15] about his encounter with virtue and wickedness.

For these reasons, this Declaration should serve as the foundation for restoring education at all levels, encompassing all scientific fields and all citizens, thereby making it the property of every citizen, enabling them to support democracy and the bottom-up movement.

More details of the scientific analysis that supports this Declaration, including the references and Appendices A, B, and C, are given at the link:

http://www2.env.aegean.gr/labs/Remote_sensing/publications/3-I-N-Chatzopoulos-Diakyrksi-Paideias-Anorthosi.pdf

Those who support this Declaration are kindly requested to declare it along with their phone number and address, and their status in the email: ihatz@aegean.gr.

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Appendices

In the Appendices, the scientific foundation of the Declaration for the restoration of education is attempted. Keep in mind that to study philosophy in ancient Greece, one had to possess a solid knowledge of mathematics and astronomy. Today, philosophy has been cut off from the sciences and especially from mathematics; it is almost dead, and that is why there is a significant ambiguity in moral values, which are unable to distinguish right from wrong [4]. Therefore, the appendices employ mathematics in the analysis of philosophical structures, thereby contributing to the reunification of philosophy with the sciences and consolidating philosophy's position as the mother of the sciences, which encompasses all sciences.

Appendix A

Scientific analysis using mathematics for internal balance.

Plato's example of internal balance, which is the effort for the mind to be governed by logic [16] (Eniochus), which will have the competence to manage and balance desire (blind horse) and anger (crazy or mad horse), is given in Figure 1.

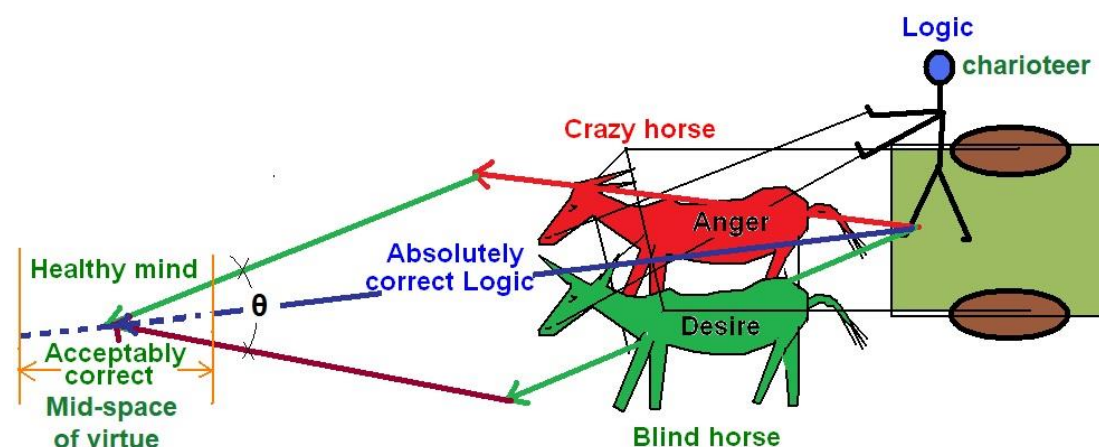


Figure 1. The internal balance. Source: [6], [7], [8]

We notice that in this example, it is a balance of forces or a balance of vectors. The component of the vectors of desire (D) and anger (A) gives us the size of the vector of logic (L_B) that is required to manage and exert control over desire and anger. The vector of balancing logic (L_B) can be calculated from Relation (1):

$$L_B^2 = D^2 + A^2 + D \cdot A \cdot \cos(\theta) \quad (1)$$

Where L_B is the logic required to balance desire and anger.

D and A are the current values for desire and anger, respectively.

θ is the angle formed by desire and anger.

Extending this example by considering the mind space to be three-dimensional, we have the mathematical expression of this space as shown in Figure 2. We consider a rectangular coordinate system with the axes D, A, and L, expressing the current values for Desire, Anger, and Logic, respectively.

In Figure 2, the current state of mind M_S is expressed by three coordinates $M_S(D, A, L)$. The Relation with which we calculate the balancing logic in this system is given by Equation (2):

$$L_B^2 = D^2 + A^2 \quad (2)$$

The difference between current logic and balancing logic gives us the human error E_H from Relation (3):

$$E_H = L - L_B \quad (3)$$

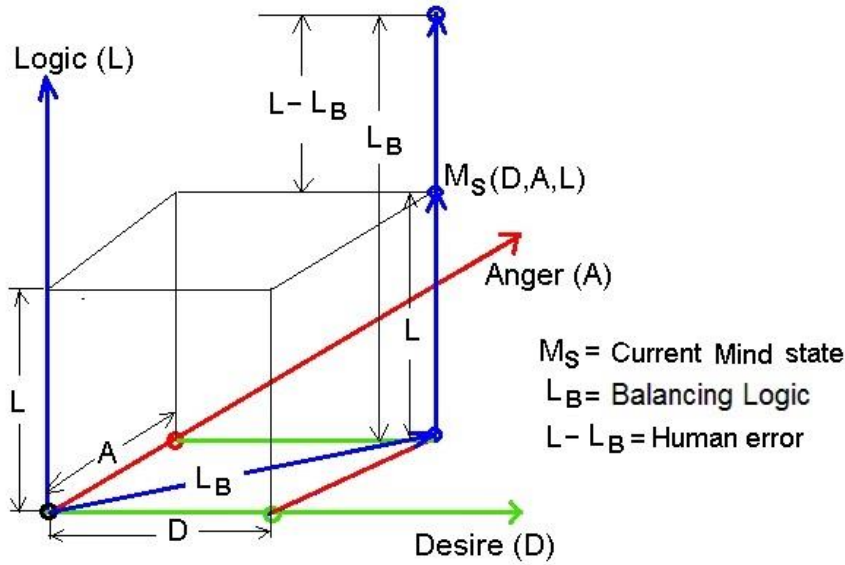


Figure 2. Mathematical expression of the realm of cognition. Source: [6], [7], [8]

Equation (3) expresses the charioteer's performance to lead the two unruly horses of Figure 1 on the right track. The smaller size of E_H 's, the better the charioteer's performance. The quantities D, A, and L are measurable, and if they are measured in different units, the values are normalized [10] so that they are compatible with each other.

As discussed in Appendix B and referred to in Figure 1, balancing logic does not have to exactly balance desire and anger, as long as the deviation from full balance is within the Aristotelian mid-space of virtue. This observation helps us understand that Aristotle, a student of Plato, builds upon Plato's theory, refining it from the absolutely correct to the acceptably correct.

Appendix B

Scientific analysis using mathematics for external balance.

As stated in the Declaration, the rule of balance is represented by the goddess of Justice Themis, as shown in Figure 3. She has her eyes covered so that she cannot see and holds a scale in one hand and a sword in the other. Symbolically,

with the scales, she identifies the culprit who is the one who disturbs the balance of the scales and punishes him with the sword.



Figure 3. Themis, the goddess of Justice.

Also, as stated in the Declaration, the external balance that expresses the Aristotelian mid-space of virtue [1] was clarified by an example given in Figure 4. A person without physical limitations proceeds on a straight road and encounters an obstacle that, to cross, they will have to lift their foot. If the foot's height is lower than the obstacle, it will result in a false step, which is a defect that we consider an error with a negative sign. If the foot's height is significantly higher than the obstacle, the person will roll over, resulting in excess, which we consider an error with a positive sign. There is a mid-space of efforts to raise the foot with clear boundaries where the individual passes the obstacle without much trouble, and this interval represents the mid-space of Aristotle's virtue.

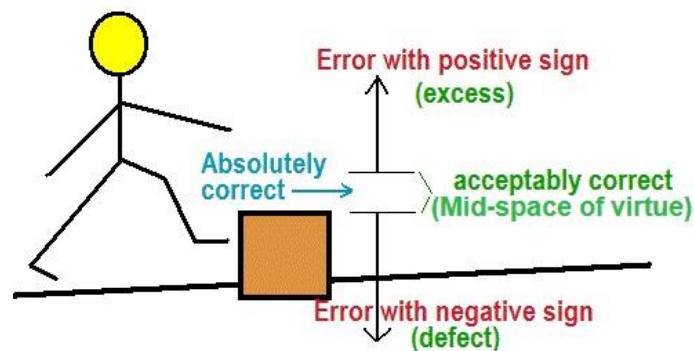


Figure 4. External balance. Source: [6], [7], [8]

Concerning Figure 4, we observe the following:

- (a) The **right/wrong** limits are clearly defined.
- (b) The first time the person may stumble due to lack **of training**, the next time the neurons will **be trained**, and they will do better.
- (c) The average of all successful efforts gives an estimate of what is **absolutely correct**.
- (d) Above and below the absolutely correct and within the limits of successful efforts, we have the **acceptably correct** where right and wrong coexist and the error is less than a threshold.

(e) Right and wrong coexist in all thoughts and actions of a person and are **inversely proportional to** each other.

(f) A possible relationship that may relate the error X with the correct Y is given by Equation (4):

$$X = 1/Y \quad (4)$$

(g) Within the mid-space of virtue, there are **infinite options** for successfully passing the obstacle. This concept helps us to understand **freedom**, which must be within limits, and the individual must have many alternative choices. According to Aristotle, action outside the mid-space limits is not freedom but **slavery**. One becomes a slave to one's passions or a servant of **deceit**.

(h) When a person, while they may be able to cross the obstacle, deliberately stumbles, it helps us to understand **prejudice** and **deceit**.

(i) If the limits of mid-space are unclear, they are determined by a broader consensus of educated persons, and thus the **democratic processes are defined**.

With these definitions in mind, we will try to identify mathematically the limits of the mid-space of virtue. Figure 5 shows the graph of Equation (4). The X-axis represents the wrong (error) and the Y-axis represents the right (correct). We notice that when the error (X) takes values from minus infinity to zero, the correct (Y) tends asymptotically towards minus infinity.

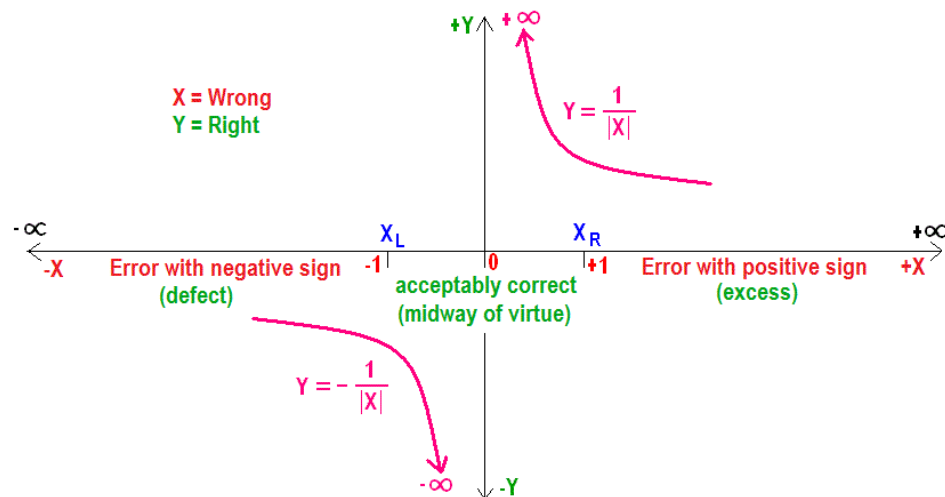


Figure 5. Graph of the mathematical relationship $Y = 1/X$ between right and wrong. Source: [6], [7], [8]

When the error (X) takes values from plus infinity to zero, the correct (Y) tends asymptotically towards plus infinity. That means that at the position $X=0$, Y takes all the values from minus infinity to plus infinity.

It is evident that an entity with zero error in all its thoughts and actions does not belong to the human beings and should be a Supreme entity, whose correctness or virtue is infinite and extends from the minus infinite to the plus infinite, i.e., this entity possesses none of the human weaknesses. This analysis helps us understand the heroes who sacrifice their lives for the good of society, demonstrating great virtue, and thus their error is close to zero; consequently, they approach deification.

In Figure 5, the mid-space of virtue is located on the X-axis on either side of zero, with boundaries $X_L \leq X \leq X_R$. At location zero of the X-axis, we have the absolutely correct, while within the mid-space of virtue between X_L and X_R , we have the acceptably right. Therefore, at the boundaries of the mid-space of virtue, X_L and X_R , right and wrong have the same value [9], i.e., $X = Y$, so the Relation (4) becomes $X = 1/X$ and therefore $X^2 = 1$ or $X = \pm 1$. The value ± 1 provides the unit for measurements on the X and Y axes.

If we now want to see the distribution of error in the human population, it will take the form of Figure 6. In Figure 6, the X-axis represents human error, and the Z-axis represents the total number of people who have an x-error in the x location of the X-axis. Figure 6 shows that specific biases categorize the world's population. **Prejudice** or **bias** can be political, religious, cultural, and even athletic, as well as extensions of all of them. The system of anti-education deliberately creates most biases to have greater and more efficient control of the people by the divide-and-rule method. As a result, groups with opposing biases turn against each other to the point of exterminating each other, such as in wars. It is no coincidence that many wars are taking place today, as they generate substantial profits for the banks that finance them and for the defense industry that supplies them with weapons.

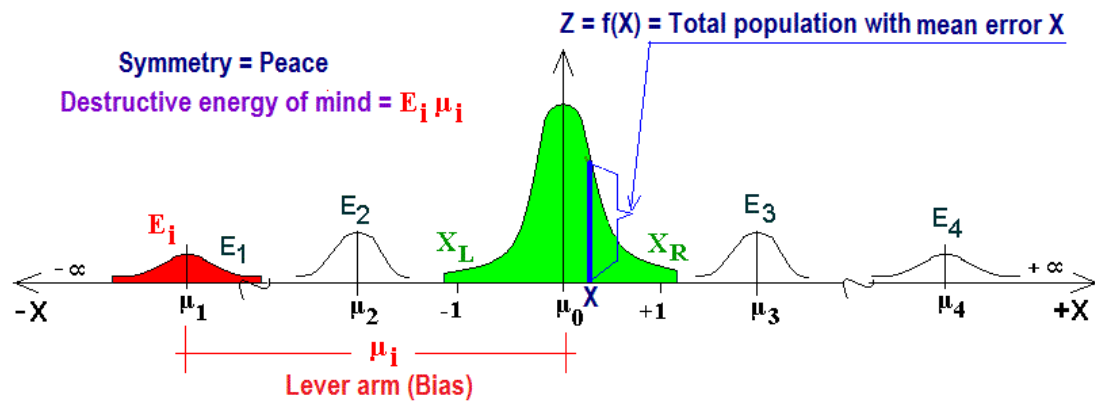


Figure 6. The fragmentation of society into groups with opposing prejudices (biases) leads to conflicts and wars, as well as tendencies towards self-destruction. Source: [6], [7], [8]

As shown in Figure 6, the destructive force (F_D) of a group depends on the group's bias lever (μ_i) over the group's population (E_i) and is given by Equation (5).

$$F_D = E_i \cdot \mu_i \quad (5)$$

Equation (5) means that a small group with a great deal of prejudice (bias) can have enormous destructive power.

If in Figure 6 we have symmetry, then we have **Peace**, and it is given by the Relation (6):

$$\sum_{i=1}^n E_i \cdot \mu_i \approx 0 \quad (6)$$

To have a **stable peace**, the sum of the absolute values of the product $E_i \cdot \mu_i$ must be minimal and is given by the Relation. (7):

$$\sum_{i=1}^n |E_i \cdot \mu_i| \approx \text{minimum} \quad (7)$$

Otherwise, we have **unstable Peace**.

In conclusion, as shown in Figure 6 (green area), most of the population has relatively little prejudice and therefore its strength results from the **unity and rallying it** has around the values of education. However, if anti-education is cultivated in this population, it cannot counter the destructive power of small groups.

Appendix C

Systems theory and its application in education and anti-education

Systems are used to operate complex structures where elements interact with each other to form a single whole. There are two types of systems: the dam system and the intelligent system [2], [3]. The dam system (see Figure 7) has five functions: Input, Output, Transfer, Storage, and Editing. The intelligent system has all the functions of the dam system, and in addition, it has four other modes: Goal, Turbulence, Controller, and Feedback.

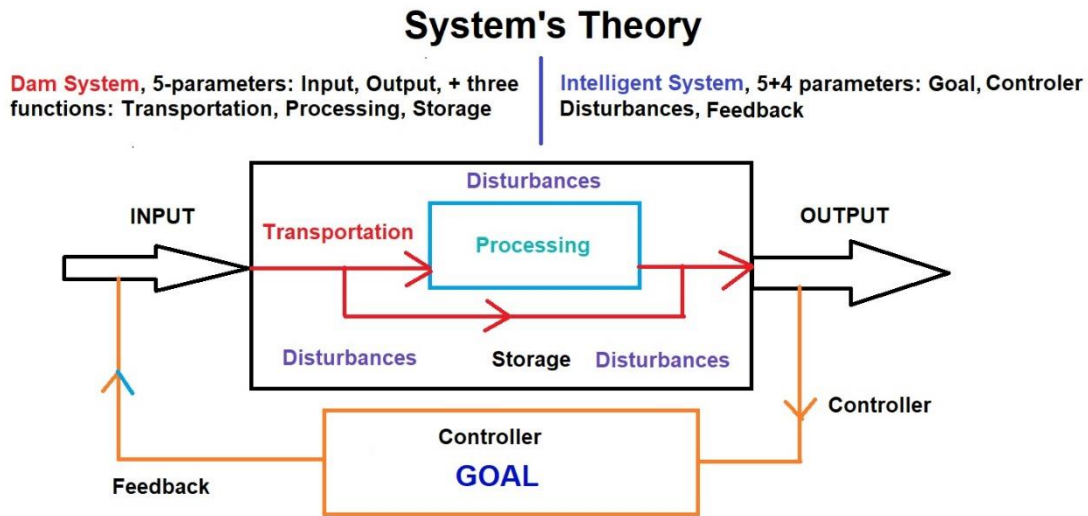


Figure 7. Systems theory. Source: [2]

We will attempt to run the education system with the internal and external balance that determines it, and anti-education as part of the turbulence. The ultimate goal is for thoughts and actions to be virtuous, with logic governing the mind. The input includes the three values (D, A, L) of the state of mind (see Figure 2). The processing uses Equation (2) to calculate the balancing logic (L_B) and then Equation (3) to calculate human error (E_H). The controller, which is logic, checks whether (E_H) is within the limits of the mid-space of virtue, and if so, gives the green light to the exit for the realization of the virtuous act. If not, the controller (logic) changes the input values (D, A, L) so that the (E_H) to be calculated is within the limits of the Aristotelian mid-space of virtue. Upheavals exist from those who

promote anti-education and seek a final destination outside the mid-space of virtue limits, allowing desire or anger to take control.

In a system where a small group of **elites** [18] of substantial prejudice that somehow pulls the strings of power [13] and controls the political, economic, educational and information (media) [12], it can be described as follows: The final destination (goal) is the control of the people so that they vote for persons pre-selected by the elites, have controlled reactions, reduce the life quality and life expectancy, and maximize the profits of the elite. Input is filtered through systemic media and anti-education, which includes, among many others, the following: Isolation technologies that utilize mobile phones, preventing people from communicating with each other and discussing the inhumane situation they are experiencing, and failing to bring those responsible to Justice. Psychological pressure to convince the people that they are unable to change the situation and that their approximately 10,000 oppressors [2] are invincible out of the approximately 8 billion population of the Earth, creating situations of depression and phobias to prevent the people from being active citizens. Preventing citizens from having the greatest satisfaction they may feel from the sense of being creative and productive labor for the benefit of the individual and society, and instead to be lazy, not to work but to have minimal earnings for survival from a controlled socialist-type system, or to have no property and be happy with hunger wages and benefits. The processing attempts various polls to assess the public's reactions and channels the results to the output. The controller, who are usually elite consultants, evaluate the output data. If they are not satisfied with the goal, they change the input data appropriately, usually disrupting the internal and external balance of the audience as much as possible (anti-education). It is evident that educated people united will not succumb to the illegal actions of the elite regarding entry data and will continue their protests until their demands are met, which in this case is the functioning of democracy with decisions made bottom-up [11].