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**Society, law, morality and bioethics: a systemic point of view**

***Société, droit, morale et bioéthique : un point de vue systémique***

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## **Abstract**

Society can be seen as a system that organizes interactions between individuals to ensure its survival, through legal and moral standards in particular. Law and morality enact and apply these standards, whereas bioethics studies their operationality in the precise case of the emergence of new phenomena relating to natural sciences or medicine. In other words, whereas law and morality judge new phenomena, bioethics studies them to identify the ethical issues they raise, to evaluate the associated risks and benefits and to propose solutions, which may include modifying the standards, to maximize the survival of society. This systemic approach can help us to understand why and how bioethics differs from law and morality, and more.

**Keywords:** Bioethics; Law; Morality; Society; Systemic

## **Résumé**

Postulons qu'une société est un système, qui organise les interactions entre individus en fonction de sa survie, en particulier grâce à des normes juridiques et morales. Le droit et la morale édictent, et appliquent, alors ces normes, tandis que la bioéthique étudie leur opérationnalité, dans le cas précis de l'émergence d'un phénomène relatif aux sciences naturelles, ou à la médecine. En d'autres termes, pendant que le droit et la morale jugent ce phénomène, la bioéthique l'étudie, pour identifier les enjeux éthiques, évaluer les bénéfices, ainsi que les risques, et proposer des solutions impliquant de modifier, ou non, ces normes, mais maximisant la survie de cette société. Cette approche systémique permet ainsi de mieux comprendre pourquoi, et comment, la bioéthique diffère du droit et de la morale, et plus encore.

**Mots-clés** : Bioéthique ; Droit ; Morale ; Société ; Systémique

## **Background**

Society can be seen as a system, a “collection of elements interacting dynamically and organized around a goal” in which the elements are individuals and the interactions are the sharing and exchanging of material and immaterial things [1]. The overall aim is the survival of society. Various phenomena, such as new natural science or medical phenomena, may emerge. Society must then determine whether the phenomenon concerned has a positive or negative effect on its survival and decide how to react. Bioethics intervenes at this point, but in a very different way from law and morality. This systemic approach can show us how and why bioethics is different from law and morality.

## **Systemic approach and society**

Let us begin by presenting the systemic approach. This approach is at the crossroads between structuralism, cybernetics, information theory and general systems theory [2-10]. It is suitable for use in studies of complex entities, defined as entities resulting in the organization of a large number and diversity of interacting elements [11]. These entities exist at different scales and in different forms. We can thus opt for a systemic approach in formal sciences, in natural sciences and in human sciences [12]. Whatever the scientific discipline, this approach is holistic, teleological, graphical and operational ([Figure 1](#)) [13].

This approach is holistic because it studies complex entities in their entirety, through the interactions between elements, rather than considering the individual elements separately. It is teleological because it studies these entities according to their goals rather than their origins. It is graphical because it studies these entities with the help of a graphical language. It is operational because it studies these entities with a view to acting on them to help achieve

the goals of the system. This approach can thus be used to delimit a system, defined as “a collection of dynamically interacting elements organized around a goal”, to represent this system graphically and to act upon it according to its aim [1].

The systemic approach can also distinguish feedback: actions that respond to effects and act on those effects [5, 10]. At the scale of the system, this feedback follows the emergence of phenomena potentially affecting the goal of the system. This approach can, therefore, be used to determine the possible effects of emerging phenomena on this goal, and the possible feedback effects of the system in response to these phenomena (Figure 1). We can use this approach to study a society. A society results from the organization of large number of diverse interacting individuals [10]. It is a complex entity [11]. The systemic approach is, thus, entirely appropriate.

Let us adopt a synthetic, graphical approach (Figure 2). A society is a collection of individuals that interact, over space and time, through the exchange and sharing of material and immaterial things [14-16]. These interactions are organized, over space and time, by society, to ensure its survival [14-16]. A society is thus a system, defined as “a collection of dynamically interacting elements organized around a goal” in which the elements are the individuals and the interactions are the exchanges and sharing of material and immaterial things; the goal is the survival of the society [1].

Let us assume that a phenomenon relating to natural sciences or medicine then emerges (Figure 2). A phenomenon in this context is a recurrent or singular entity, with one or several characteristics that are observable, representable, qualifiable and/or quantifiable over space and/or time. A phenomenon is considered to relate to natural sciences or medicine when it presents characteristics that link it to one or other of these domains [17]. Society must evaluate the effect of the phenomenon on its survival and decide how to act in return

(feedback) to amplify or reduce this effect (Figure 2) [18]. At this point, law, morality and bioethics come into play.

### **Law and morality versus bioethics**

A society organizes interactions between individuals and different groups of individuals with a view to its survival, through legal and moral standards in particular [14, 15]. A standard is a collection of rules allowing a system to organize itself optimally and to function optimally according to its goal [14, 15]. A legal standard is inscribed in law (but not only), whereas a moral standard is not [19]. Infringement of a legal standard can lead to penal, judicial or civil punishment, whereas infringement of a moral standard can lead only to societal sanctions [19]. However, together, they allow a society to organize itself and to consider the effect of phenomena relating to natural sciences or medicine on its survival. Let us continue with this systemic approach.

These considerations are based mostly on the judgments of law and morality (Figure 3). Law and morality enact and apply legal and moral standards [17]. If law and morality consider a phenomenon to be legal and moral, i.e. to respect legal and moral standards, then society will consider the phenomenon concerned to have a positive effect on its survival and will act to promote it. Conversely, if they consider the phenomenon to be illegal and immoral, i.e. not respecting legal and moral standards, then society will consider the phenomenon concerned to have a negative effect on its survival and will act to suppress it.

More precisely, if law and morality consider a phenomenon to be legal and moral, society will consider the phenomenon to have a positive effect on its survival and will act to amplify that effect (Figure 3). Conversely, if they consider it to be illegal and immoral, then society will consider the phenomenon to have a negative effect on its survival and will act to decrease that effect (Figure 3). Nevertheless, individuals or groups of individuals can oppose

the effects of society, by reacting differently. An ethical issue is an entity or situation in which certain individuals or groups of individuals oppose the legal and moral standards in place and react differently to emerging phenomena. Bioethics intervenes at this point (Figure 4).

Bioethics studies this phenomenon, to identify the ethical issues and propose solutions, by evaluating the benefits and risks, to determine whether this phenomenon really does have a positive or negative effect on the survival of society (Figure 4) [17]. The solutions proposed, based on this evaluation, aim to act on this phenomenon, and on society, to amplify positive effects and reduce negative effects, thereby having a positive or negative feedback effect on the phenomena and society itself, through the maintenance of or changes to legal and moral standards (Figure 4). Bioethics could also use a systemic approach for this purpose [17].

Indeed, the phenomena considered here have the particular characteristic of being related to natural sciences of medicine, but they often arise from the organization of a large number of diverse interacting elements. Above all, they are complex entities. The systemic approach could therefore, be entirely appropriate for studies of this type of phenomenon in bioethics. By studying the phenomenon, in its entirety, through the interactions between elements relative to its goal, with the aid of graphical language, bioethics enables us to identify ethical issues more clearly, to evaluate the benefits and risks more effectively, and to propose better solutions.

## **Conclusion**

The systemic approach can help us to understand that the function of bioethics is not to enact or to apply legal and moral standards. Instead, it is to study the operability of these standards. In the face of the emergence of a phenomenon relating to natural sciences or medicine, bioethics seeks to identify solutions, which may, or may not imply a modification

of these standards. More precisely, whereas law and morality judge new phenomena, bioethics studies them, to identify the ethical issues, to evaluate the benefits and risks and to propose solutions that may or may not imply a modification of these standards, but which are designed to maximize the survival of society. The quality of the solutions proposed is, thus, essential, and depends on the method used. We suggest, here, the systemic approach.

A wide variety of methods exists in bioethics [20], especially in empirical bioethics [21]. The systemic approach is just new one. Actually, this approach has already been used in the past [20], and more recently to study the emergence, in France, of the phenomenon of personalized medicine [17], through the observation of 23andMe in particular [22], and multidisciplinary molecular tumor boards [23]. Personalized medicine is commonly defined as the adaptation of treatment to the various characteristics of the patient, including genetic characteristics in particular [24]. The solution proposed in this case was dynamic informed consent [25]. This type of consent would favor the development of this phenomenon in France, and would not necessarily require a feedback effect on this phenomenon and society through a modification of standards [17].

The systemic approach merits wider use in bioethics. It should also be improved further, to make it even more appropriate in this context. The quality of the solutions proposed depends on such improvement, as might the survival of a society. However, with the dawning of the era of artificial intelligence, other methods will undoubtedly be invented. Creativity in research should not, in any case, be limited. It would also be relevant to distinguish between “macroethical” (at the scale of society) and “microethical” (at the scale of the individual) issues, because we are well aware that the use of a method, and even the method itself, may vary, if these issues can be better identified.

However, whatever the method used, such research activities can only take place in dedicated laboratories of trained researchers. In other words, bioethics requires bioethics



laboratories and bioethicists and continuation of the development of this field as an academic discipline in its own right. Bioethics should not become a legal and moral object of law and morality. Furthermore, it should not become a political or ideological object of anyone and should remain free to be used anywhere, to drive ideas often at complete odds with reality, and the survival of society.

Like society, bioethics requires bioethicists who have followed a dedicated and complete university training (Bachelors, Masters and PhD) and not just an additional specialization at the end of their training or during their diverse and various professional careers. Furthermore, in addition to belonging to bioethics laboratories, bioethicists, like biostatisticians and bioinformaticians, should also be integrated into scientific and medical laboratories. Indeed, new phenomena relating to science or medicine emerge almost every day. It would not be unreasonable for society to wish to integrate bioethicists directly at the source of these phenomena rather than simply consulting them in cases of problems or to obtain approval.

## **Perspectives**

Bioethics thus differs from law and morality, and from all forms of ideology. Just like genetics, which is an academic discipline practiced by geneticists in genetics laboratories, bioethics should become an academic discipline practiced by bioethicists in bioethics laboratories or in scientific and medical laboratories. Continuing to establish bioethics as an academic discipline in its own right, that is developed, practiced and taught as such, and creating new bioethics laboratories, training bioethicists and, perhaps refounding bioethics for the 21<sup>st</sup> century is the principal necessity for both bioethics and society.

## Figures legend

**Figure 1.** Schematic diagram of the systemic approach.

*Diagramme schématique de l'approche systémique*

**Figure 2.** Schematic diagram of the effects of a phenomenon relating to natural sciences or medicine on the survival of a system, such as society.

*Diagramme schématique de l'effet d'un phénomène relatif aux sciences naturelles ou à la médecine sur la survivance d'un système, tel qu'une société*

**Figure 3.** Schematic diagram of the effects of a phenomenon relating to natural sciences or medicine on the survival of a system, such as society, and the involvement of law and morality in the underlying mechanisms. Elements positive for the survival of society are shown in blue, whereas elements negative for the survival of society are shown in red.

*Diagramme schématique de l'effet d'un phénomène relatif aux sciences naturelles ou à la médecine sur la survivance d'un système tel qu'une société, et le rôle du droit et de la morale dans les mécanismes sous-jacents. Les éléments positifs pour la survie de la société sont en bleu, et les éléments négatifs en rouge.*

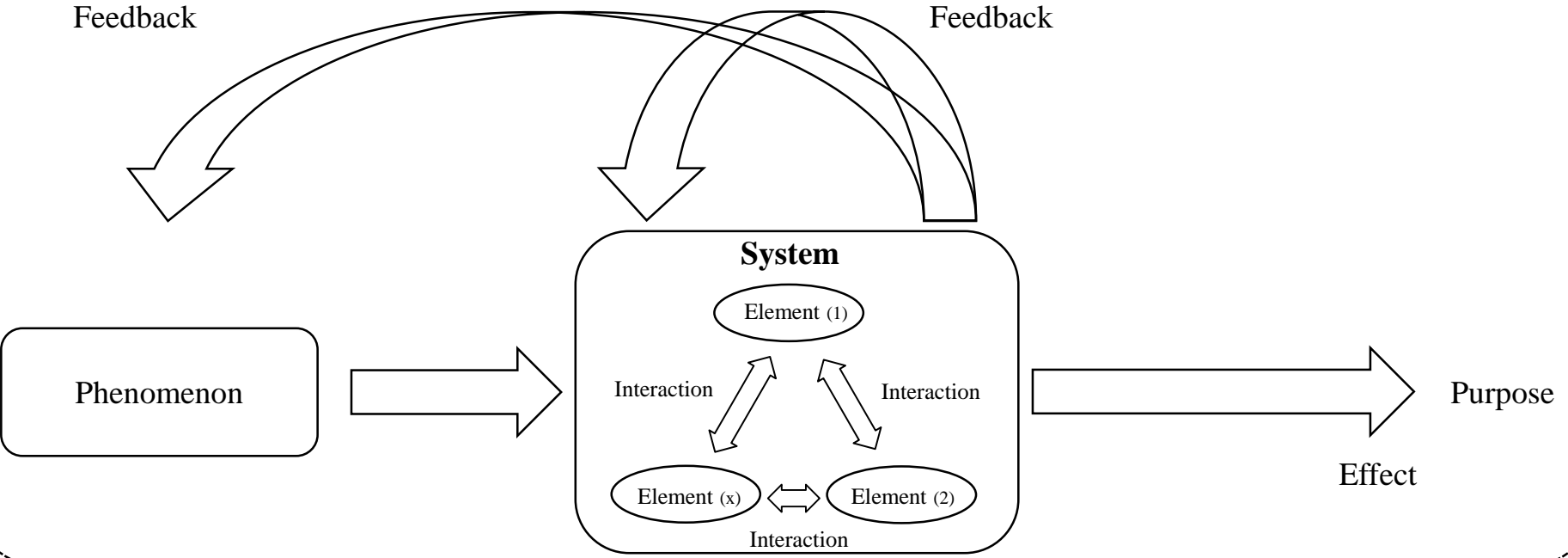
**Figure 4.** Schematic diagram of the possible effects of a phenomenon relating to natural sciences or medicine on the survival of a system, such as society, and the role of bioethics in the underlying mechanism. Elements positive for the survival of society are shown in blue, whereas elements negative for the survival of society are shown in red.

*Diagramme schématique des effets possibles d'un phénomène relatif aux sciences naturelles ou à la médecine sur la survivance d'un système tel qu'une société, et le rôle de la bioéthique dans les mécanismes sous-jacents. Les éléments positifs pour la survie de la société sont en bleu, et les éléments négatifs en rouge.*

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Figure 1



**Systemic**

Holistic

Teleological

Graphical

Operational

Figure 2

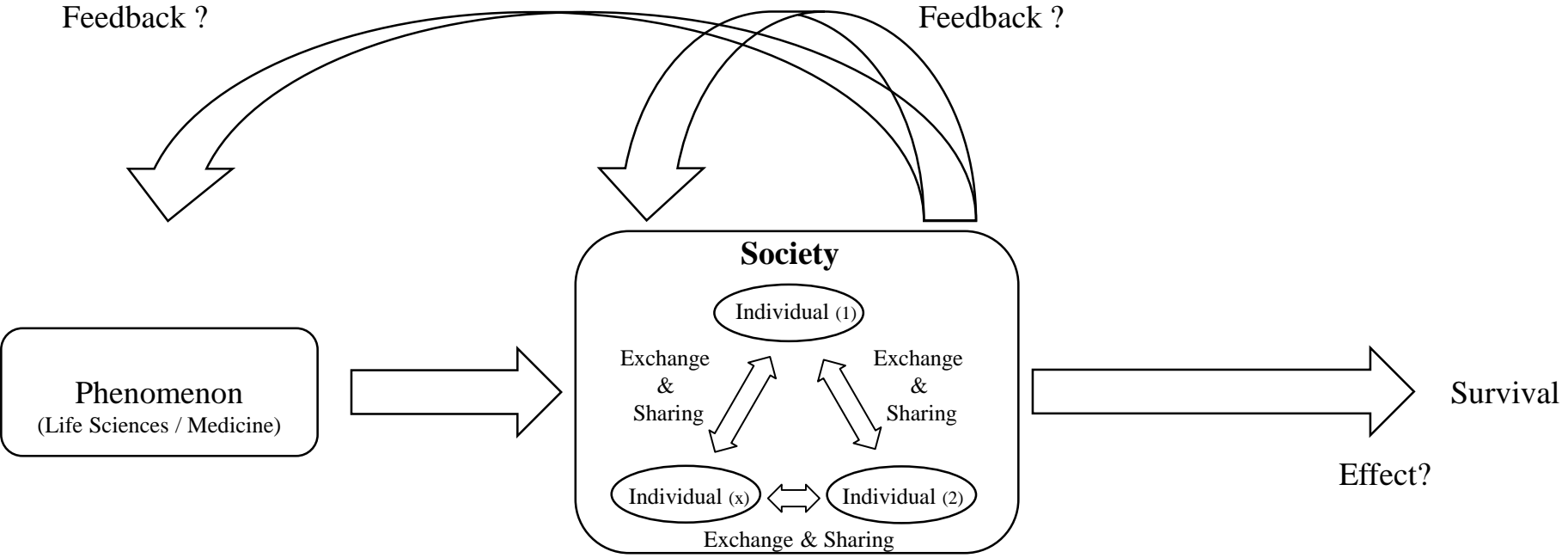


Figure 3

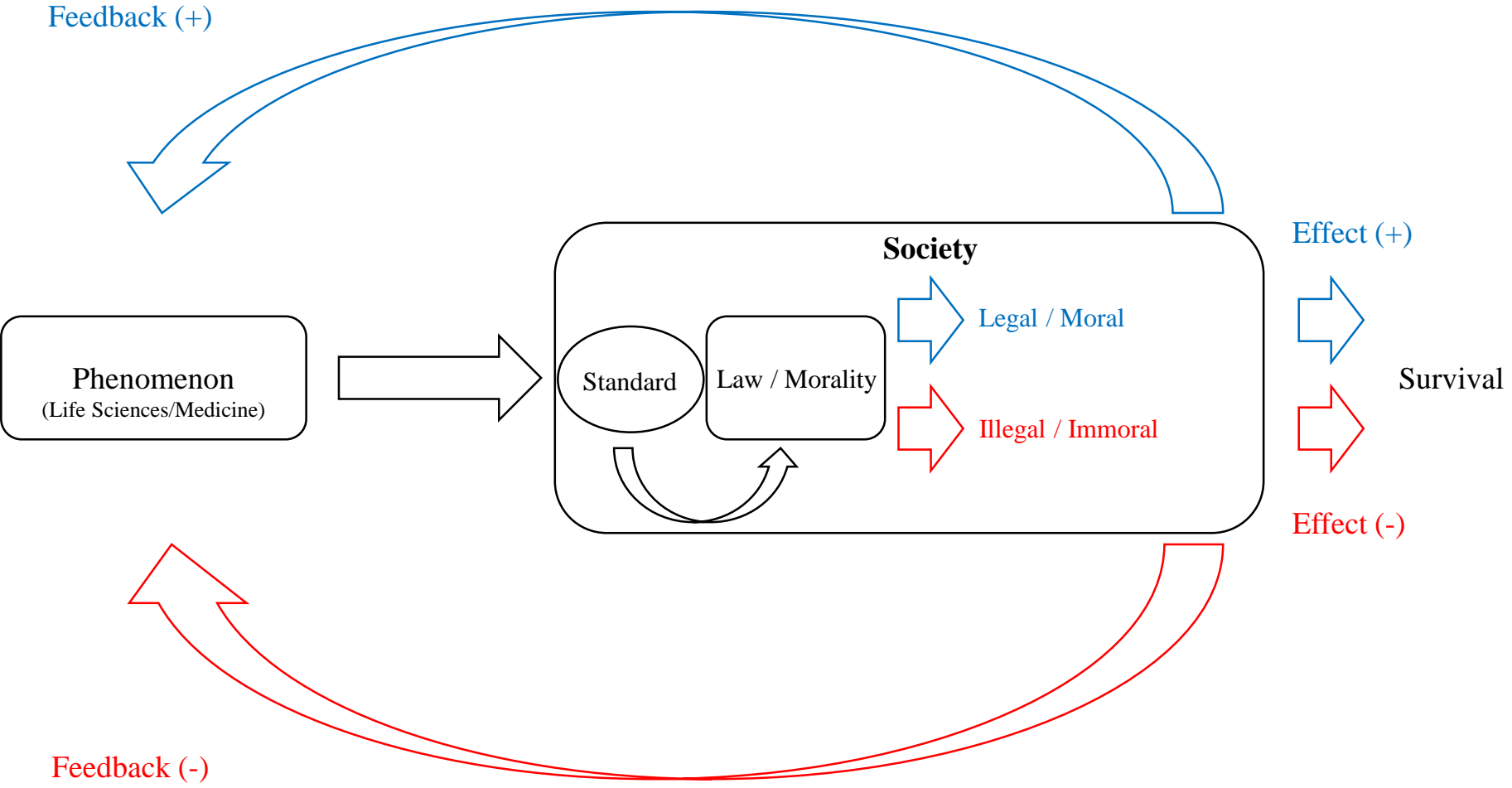


Figure 4

