

# General System Theory. Reform Science

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## Abstract

Our research in physics [1] based on new method, '*systemic intuition*', generalized and abstracted, revealed true interpretation of General System Theory which, if applied to modern science, turns it into new, true science – *reform science*. Reform science has *structure* common for all branches of science, which allows to introduce *classification of concepts*, thus purifying, perfecting and organizing whole science. Reform science consists of three parts, called *Medium*, *Population* and *Associations*, each with different logic – *transition to duality*, *reflection* and *evolution*, respectively. Research in reform science is sequence of stages each consisting of two steps - speculation and formal statement of concept. Research starts with finding *origin* of science in question and proceeds with revealing its *essence*, working out its *project* and fulfilling its *realization*, embodiment of its essence. Every stage is discovery rather than intellectual effort. State of reform science is characterized by three tables of concepts corresponding to respective parts of research. Reform science keeps only those research works that are identified as its *sources* thus potentially drastically reducing volume of scientific libraries.

*Reference:* [1] Igor S. Makarov. *A Theory of Ether, Particles and Atoms*. Second Edition. Manchester, UK, 2010. Order: ISBN-13: 9781441478412. Online: <http://kvisit.com/S2uuZAQ>.

**Key words:** general system theory, reform science, essence of science, systemic intuition, dialectical logic, state of reform science

## Introduction

Now that civilization, enlightened, agitated and inspired by the current technological revolution, expects the proper changes in social and political spheres and, to survive, should be organized as a whole, the role of modern science as an influential source of ideology is of paramount importance. Modern science, however, despite its stunning technological achievements, is experiencing now a deep crisis, thus being unable to develop into the spiritual guide of society, which it is potentially. Instead, paradoxical as it is, modern science seems to present now the main threat to society and should be reformed and organized first.

To reform modern science, it is necessary to have the proper ideology in this respect. Providentially, Hegel's works, critical of scientific methods of his time, convincingly suggest that such an ideology should be some systemic theory based on *dialectical logic* [1]. No wonder that suggestion prompted Karl Marx to undertake his own interpretation of Hegel's philosophy and apply it for his life-long research in economics [2]. However, despite the importance and great consequence of that work, it has remained unclear whether it was worthwhile and possible to proceed on the same way with other sciences and economics itself. Fortunately, in the course of our research in systems theory and theoretical physics [3], we have succeeded in our own interpretation of Hegel's Logic and found the solution to the above enigma.

Our research in physics resulted in the reform of modern physics, solved all its fundamental problems and actually discovered the true interpretation of the General System Theory (GST), an elusive and unclear discipline long sought for [4]. That result was generalized, abstracted and used to create the frameworks of the true sciences of politics and economics, the sciences nonexistent or underdeveloped before [5].

Those results amount, in our view, to an important landmark in the history of modern science and society. Although those results were published online and on paper, they have not yet been properly discussed and recognized officially. For this reason, we have decided to elaborate some of the results of work [5] and publish them in a professional journal.

## 1. Reform science

Reforming any branch of modern science (physics, biology, economics, etc.) means reorganizing and stating it as the General System Theory in terms of the respective branch. As a result, the branch of modern science transforms into a new science, a *reform science* (reform physics, reform biology, reform economics, etc.). The reform science is the true science able to solve all fundamental problems of the respective branch of modern science. Naturally, it is only systemic, fundamental sciences, with their intrinsic systemic structure, that can be reformed, unlike nonsystemic sciences such as archeology, for example. The reform science has unique properties stated below.

### 1.1. Method of reform science

The method of reform science is based on Hegel's dialectical logic and may be called '*the method of systemic intuition*'. This method is not a clear-cut one easy to use in all cases; it cannot be formalized and should be applied with the highest extent of professionalism and creativity.

According to this method, every stage of research consists of two phases, *a paragraph of speculation* and *a statement of the concept*, the former suggesting the latter by necessity, any concept corresponding to *an entity*. The whole research is a series of such stages, with any new statement being analyzed by a further speculation suggesting a new statement, and so forth until the end. The first concept is the *origin* of the reform science, corresponding to the *origin* of the research object itself; it is always *a fundamental contradiction* revealed by the speculation about the nature of the object. Thus the development of the reform science follows the development of the research object. So, unlike modern science where the terms 'science' and 'research' have generally different meaning, in reform science they mean the same.

### 1.2. Structure of reform science

The reform science consists of three parts, that may be called *Medium*, *Population* and *Associations*, each with a different logic, that of *transition to dual opposite*, *reflection* and *evolution*, respectively. Unlike modern science that is actually a collection of research works and theories in a particular field, the reform science keeps only the research works recognized as reform science works, *the sources*, and, in addition, the records of *the current state* of reform science in every particular field. The state of reform science is described by three tables of concepts, one for each part: Table 1 (Medium), Table 2 (Population) and Table 3 (Associations), as is shown in Sec. 2.

Like modern science, reform science is actually a system of concepts corresponding to various *entities* relating to the research object. But, in contrast to modern science, the reform science has a *structure* common for all branches of science, which allows to introduce *a classification of concepts*, thus purifying, perfecting and organizing the whole science. So the reform science is the truly systemic science based on a logically consistent system of concepts. Owing to this property, reform science is able to sort out the existing concepts, correct and generalize them, find the proper meaning to them and, when it is necessary, introduce new concepts.

Reform science is a thoroughly *theoretical* science, which corresponds to Hegel's dictum that '*truth*

*cannot be observed, it can only be thought'* [1]. Thus the reform science cannot be developed or verified experimentally; on the other hand, it takes into account all theoretical and experimental achievements of modern science and can provide true explanation to every experimental fact. Reform science realizes the goals advanced by modern science.

## 2. Research

Before starting the reform of a particular branch of science, the researcher is recommended to get acquainted with the works mentioned above, at least. Then he can start his research in his own field, using those works for reference by analogy.

### 2.1. Part 1. Medium

The structure of Part 1, with its classification of concepts, is presented by Table 1. *Medium*. In this table, the columns A, B, C are intended for the concepts and their brief description, while the column Q is for the qualitative characteristics of the corresponding *entities* of the column C. Every concept of Table 1 is classified as SC-1ik, where SC is the common two-letter abbreviation of the name of the particular science (PH for physics, BI for biology, etc.), i – the column letter (A, B, C), k – the row number (1-6). So the researcher must fill in all the cells of the table with the proper concepts and qualitative characteristics.

The research starts with a paragraph of speculation to suggest the origin of the reform science, an entity, corresponding to the concept SC-1A1. This step may prove to be most difficult, because this concept has no predecessor and, as mentioned above, should be determined by a speculation about the nature of the research object itself, its original fundamental contradiction, the one to be resolved by the whole further research.

Then the research proceeds with a speculation about the entity SC-1A1 to suggest its *transition* to its *dual* entity marked by the concept SC-1B1. Then the research proceeds with a speculation about the two preceding entities, *the thesis* and *the antithesis*, to suggest their *synthesis*, a new entity marked by the concept SC-1C1. The latter has its specific *quality* to be indicated in the cell SC-1Q1. The speculation about the entity SC-1C1 generates the entity SC-1A2 to be transited by a new paragraph of speculation to the entity SC-1B2, and so forth until determining the entity SC-1C6 and its quality SC-1Q6. The entity SC-1C6 is *the essence* of the reform science, its concept being central for the whole theory. Thus every step is *a discovery* revealed by *intuition* rather than found by a formal work of intellect.

**Table 1. Medium**

A Thesis	B Antithesis	C Synthesis	Q Quality
SC-1A1 (Origin)	SC-1B1	SC-1C1	SC-1Q1
SC-1A2	SC-1B2	SC-1C2	SC-1Q2
SC-1A3	SC-1B3	SC-1C3	SC-1Q3
SC-1A4	SC-1B4	SC-1C4	SC-1Q4
SC-1A5	SC-1B5	SC-1C5	SC-1Q5
SC-1A6	SC-1B6	SC-1C6 (Essence)	SC-1Q6

## 2.2. Part 2. Population

Part 2 is similar in many respects to Part 1. Its structure presented by Table 2 is similar to that of Table 1, and its concepts are classified similarly as SC-2ik. Instead of transition to dual opposite, from thesis to antithesis, there takes place here their mutual reflection leading also to their synthesis, the birth of a new *creature* which settles the conflict between its two constituent entities and is characterized by its specific quality. This part of the research starts with a paragraph of speculation about the concept SC-1C6 and ends with the concept SC-2C6 which, as suggested in [3], may be called *the Project* of the reform science.

Every statement must again be preceded and necessitated by the proper speculation about the statement of the preceding step. As a result, this stage of research generates a series of six creatures, SC-2C1 to SC-2C6, of increasingly higher order and quality, populating the Medium.

**Table 2. Population**

A Thesis	B Antithesis	C Synthesis	Q Quality
SC-2A1	SC-2B1	SC-2C1	SC-2Q1
SC-2A2	SC-2B2	SC-2C2	SC-2Q2
SC-2A3	SC-2B3	SC-2C3	SC-2Q3
SC-2A4	SC-2B4	SC-2C4	SC-2Q4
SC-2A5	SC-2B5	SC-2C5	SC-2Q5
SC-2A6	SC-2B6	SC-2C6 (Project)	SC-2Q6

## 2.3. Part 3. Associations

This part is different. Its classification of concepts is presented by Table 3 which illustrates the evolution of the *species* from the simplest one to the most complex. The classification of the species is given in the first column as SC-3-i, where  $i=1, 2, \dots, 7$  is the number of the row. Columns A-G are intended for the description of *substructures*, which are classified as SC-3ik, similar to the classification in the preceding tables. The evolution of species happens by developing new substructures of increasingly higher order. The species SC-3-i,  $i=1, 2, \dots, 7$ , have increasing numbers of substructures up to the most complex one, SC-3-7, with seven substructures. Similar substructures belonging to different species are generally different and need different classification, as shown in Table 3, but this subtlety may be omitted in the beginning. The last column is intended for the qualitative characteristics of different species.

The research of this part starts with a paragraph of speculation about the creatures SC-2C5 and SC-2C6 to suggest their *merger* into the species SC-3-0, *the fundamental component of substructures*. A speculation about the latter should suggest the species SC-3-1 consisting of two identical species SC-3-0 and identical to its first substructure SC-3A1. Further speculation should expose an internal contradiction of SC-3-1 necessitating its development, *evolution*, by generating a new substructure, SC-3B2, which adds to SC-3B1 to make the species SC-3-2. The research proceeds further until generating the substructure SC-3G7 which adds to the preceding six substructures, SC-3A7, SC-3B7, SC-3C7, SC-3D7, SC-3E7, SC-3F7, to make the most perfect species SC-3-7, *the Realization* of the reform science. To complete in rough the research, it is necessary to show the entity SC-3-7 to be indeed the realization of its project SC-2C6.

**Table3. Associations**

Substructure Species ↓	A	B	C	D	E	F	G	Q Quality
SC-3-1	SC-3A1							SC-3Q1
SC-3-2	SC-3A2	SC-3B2						SC-3Q2
SC-3-3	SC-3A3	SC-3B3	SC-3C3					SC-3Q3
SC-3-4	SC-3A4	SC-3B4	SC-3C4	SC-3D4				SC-3Q4
SC-3-5	SC-3A5	SC-3B5	SC-3C5	SC-3D5	SC-3E5			SC-3Q5
SC-3-6	SC-3A6	SC-3B6	SC-3C6	SC-3D6	SC-3E6	SC-3F6		SC-3Q6
SC-3-7	SC-3A7	SC-3B7	SC-3C7	SC-3D7	SC-3E7	SC-3F7	SC-3G7 (Realization)	SC-3Q7

### 3. Reform science formats

The structure of the reform science and its logic outlined above require a definite format of the research work to be published. The first requirement is that the research work should include, at least, one of the whole Part 1 or Part 2 or, possibly, Part 3 of a particular branch of science, because otherwise it would be difficult to use the self-correction property of the reform science to estimate the correctness of the whole work. As to Part 3, which may prove to be the most difficult one, it is admissible to proceed with the research in this part and its publication by substructures, in accordance with the logic of the part. In this connection it is recommended to use the definite research work formats stated below.

#### 3.1. Format of Part 1

Title of the work (Name of the branch. Part 1)

Introduction: a short overview of the branch showing its contradictions and the necessity of the reform.

Part 1. Title of Part 1 (Name of the *Medium* – as suggested by the concept SC-1C3)

1. Name of the branch

A. Speculation about the origin of the branch suggesting the concept SC-1A1.

B. Speculation about SC-1A1 suggesting the concept SC-1B1.

C. Speculation about SC-1A1 and SC-1B1 suggesting their synthesis SC-1C1, quality SC-1Q1.

2. Name of the concept SC-1C1

A. Speculation about SC-1C1 suggesting SC-1A2.

B. Speculation about SC-1A2 suggesting SC-1B2.

C. Speculation about SC-1A2 and SC-1B2 suggesting their synthesis SC-1C2, quality SC-1Q2.

3. Name of the concept SC-1C2 (A, B, C)

4. Name of the concept SC-1C3 (A, B, C)

5. Name of the concept SC-1C4 (A, B, C)

6. Name of the concept SC-1C5

A. Speculation about SC-1C5 suggesting SC-1A6.

B. Speculation about SC-1A6 suggesting SC-1B6.

C. Speculation about SC-1A6 and SC-1B6 suggesting their synthesis SC-1C6, quality SC-1Q6.

Table of concepts (Table 1)

Conclusion

References

### 3.2. Format of Part 2

Title of the work (Name of the branch. Part 2)

Part 2. Title of Part 2 (The general name of the *Population* suggested by the concepts SC-2C)

Introduction: a short overview of Part 1 showing the necessity to proceed with the research

1. Name of the concept SC-1C6

A. Speculation about SC-1C6 suggesting the concept SC-2A1.

B. Speculation about SC-2A1 suggesting the concept SC-2B1.

C. Speculation about SC-2A1 and SC-2B1 suggesting their synthesis SC-2C1, quality SC-2Q1.

2. Name of the concept SC-2C1

A. Speculation about SC-2C1 suggesting SC-2A2.

B. Speculation about SC-2A2 suggesting SC-2B2.

C. Speculation about SC-2A2 and SC-2B2 suggesting their synthesis SC-2C2, quality SC-2Q2.

3. Name of the concept SC-2C2 (A, B, C)

4. Name of the concept SC-2C3 (A, B, C)

5. Name of the concept SC-2C4 (A, B, C)

6. Name of the concept SC-2C5

A. Speculation about SC-2C5 suggesting SC-2A6.

B. Speculation about SC-2A6 suggesting SC-2B6.

C. Speculation about SC-2A6 and SC-2B6 suggesting their synthesis SC-2C6, quality SC-2Q6.

Table of concepts (Table 2)

Conclusion

References

### 3.3. Format of Part 3

Title of the work (Name of the branch. Part 3)

Part 3. Title of Part 3 (The general name of the *Associations* suggested by the concepts of the first column)

Introduction: a short overview of Part 2 showing the necessity to proceed with the research

1. Name of the species SC-2C6

Speculation about SC-2C6 suggesting its merger with SC-2C5 giving birth to species SC-3-0 (the fundamental component of substructures) with quality SC-3Q0.

2. Name of the species SC-3-0

Speculation about SC-3-0 suggesting SC-3-1 (substructure-center SC-3A1) with quality SC-3Q1.

3. Evolution of the species SC-3-1

3.1 Name of the species SC-3-1

Speculation about SC-3-1 suggesting SC-3-2 (new substructure SC-3B2) with quality SC-3Q2.

3.2 Name of the species SC-3-2

Speculation about SC-3-2 suggesting SC-3-3 (new substructure SC-3C3) with quality SC-3Q3.

3.3 Name of the species SC-3-3

Speculation about SC-3-3 suggesting SC-3-4 (new substructure SC-3D4) with quality SC-3Q4.

3.4 Name of the species SC-3-4

Speculation about SC-3-4 suggesting SC-3-5 (new substructure SC-3E5) with quality SC-3Q5.

3.5 Name of the species SC-3-5

Speculation about SC-3-5 suggesting SC-3-6 (new substructure SC-3F6) with quality SC-3Q6.

3.6 Name of the species SC-3-6

Speculation about SC-3-6 suggesting SC-3-7 (new substructure SC-3G7) with quality SC-3Q7.

3.7 Name of the species SC-3-7

Speculation about SC-3-7 showing it to be the realization of the Project (SC-2C6) and the solution of the original fundamental contradiction (SC-1A1).

Table of concepts (Table 3)

Conclusion

References

#### 4. Reform science media

The reform science community needs three kinds of medium:

- (1) *The Reform Science Journal*, to publish and discuss the research works suspected of being likely sources of the reform science.
- (2) *The Reform Science Archive*, to keep both the research works, recognized as reform science sources, and their respective documentation.
- (3) *The Reform Science Bulletin*, to publish and keep the states of different branches of reform science in the form of the above three tables of concepts for every branch.

#### Conclusion

This article provides, for the first time, the true sense of the concept *General System Theory*. The above text suggests that the whole research of the reform science, in its every branch, is a great endeavor focused on finding the Origin of the branch, revealing its Essence, working out its Project and fulfilling its Realization. By elucidating the structure of the reform science and the meaning of its cornerstones, this article makes the formerly unimaginable task of reforming modern science much less daunting, much more feasible and perhaps even more fascinating.

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