ANALYTIC PHILOSOPHY OF NATURAL LANGUAGE OF JURISPRUDENCE, ETHICS, AND THEOLOGY (FOUR MATHEMATICALLY DIFFERENT FORMAL-AXIOLOGICAL MEANINGS OF "LAW" AND FOUR ONES OF "POWER")

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Abstract. The analysis of the natural language of the philosophy of natural law, natural morality and natural theology results in the realization of the existence of a quartet of mathematically different formal-axiological meanings of the word "law" and their definition in the two-valued algebra of formal axiology. The positive constitutional law of the separation of legislative and executive powers is substantiated by calculating the corresponding functions in this algebra.

Keywords: law, power, moral-legal-value-function, two-valued algebra of moral-legal actions, formal-axiological law, separation of law-giving and law-executing powers

АНАЛИТИЧЕСКАЯ ФИЛОСОФИЯ ЕСТЕСТВЕННОГО ЯЗЫКА ЮРИСПРУДЕНЦИИ, ЭТИКИ И ТЕОЛОГИИ (ЧЕТЫРЕ МАТЕМАТИЧЕСКИ РАЗЛИЧНЫЕ ФОРМАЛЬНО-АКСИОЛОГИЧЕСКИЕ ЗНАЧЕНИЯ СЛОВА «ЗАКОН» И ЧЕТЫРЕ – «ВЛАСТЬ»)

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Аннотация. Результатом анализа естественного языка философии естественного права, естественной морали и естественной теологии является осознание существования квартета математически различных формально-аксиологических значений слова «закон» и определение их в двузначной алгебре формальной аксиологии. Позитивный конституционный закон разделения законодательной и исполнительной властей обосновывается путем вычисления соответствующих функций в этой алгебре.

Ключевые слова: закон, власть, морально-правовая ценностная функция, двузначная алгебра морально-правовых действий, формально-аксиологический закон, разделение законодательной и исполнительной властей

It must be emphasized then – and with all rigor – that Classical law was a law of *bodies* while ours is a law of *functions*. The Romans created a juristic static; our task is juristic dynamics. For us persons are not bodies, but units of force and will; and things are not bodies, but aims, means and creations of these units. The Classical relation between bodies was positional, but the relation between forces is called action.

O. Spengler [1. P. 82].

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"The future will be called upon to transpose our entire legal thought into alignment with our higher physics and mathematics. Our whole social, economic, and technical life is waiting to be understood, at long last, in this wise. We shall need a century and more of keenest and deepest thought to arrive at the goal. And the prerequisite is a wholly new kind of preparatory training in the jurist.

O. Spengler [1. P. 83].

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"…the end of the Divine government is God Himself, and His law is not distinct from Himself.
T. Aquinas [2. P. 208].

1. Analyzing the semantics of natural language and quartets of mathematically different formal-axiological meanings of "law" and "power"

Since the mid-20th century, the analytic philosophy of natural language of jurisprudence and of lawyer practice has been studied systematically. Intellectually respectable examples of such studies can be found, for instance, in [3–10]. However, some aspects of juridic language are still almost not analyzed. Today, the *descriptive-indicative* semantics of juridic language is investigated sufficiently, but the *formal-axiological* (moral-legal-value-*functional*) semantics of natural language of theory of law-and-state still remains an almost blank. The blank is almost not filled in, either by negligence or on principle (due to the legal positivism, for example). The almost unknown moral-legal-value-*functional* (formal-axiological) semantics of natural language in general (and of juridic one especially) is based on the presumption that meanings of the language are either elementary *functions* or compositions of *functions* (in proper *mathematical* meaning of the term "function"). Initially, such an unusual view (ideal) of language of lawyers and philosophers of law was proclaimed by Oswald Spengler [1] about a century ago, but still his extraordinary view remains relevant as the grave problem he formulated in [1] is not solved yet, and the aim (ideal) formulated by Spengler is still not realized.

According to Spengler, who was a celebrated specialist in both history of mathematics and history of law-and-state, in contrast to the ancient Roman law doctrine which had been a jurisprudence of *persons and things*, our contemporary theory of law-and-state should be a jurisprudence of *functions* in the proper mathematical meaning of the term "function" [1. P. 82]. When, at the very beginning of the 1970s, I was creating and developing a two-valued algebra of actions (as a system of compositions of moral-legal-value-*functions*) [11], I was not aware of the relevant content of Spengler's famous treatise [1], discussing history of jurisprudence and history of mathematics. Later (in 1985, in Helsinki), when I had read the treatise by Spengler, I recognized that my innovative work was developing exactly in that very direction which had been indicated by Spengler in [1]. But I noticed that Spengler had not constructed a concrete system of legal functions determined by legal arguments (in proper mathematical meanings of the terms). Moreover, he had not indicated even concrete examples of such legal functions. His innovative discourse of the fundamental similarity and coordination between different cultures of mathematics and different cultures of jurisprudence had been too abstract, ambiguous, and metaphorical, as during the discourse he had been confined within natural language exclusively. In contrast to Spengler himself and to the professional lawyers ignoring his genius discourse, I constructed such an algebraic system of *functions* which could be used for mathematizing jurisprudence. In this article, I shall try to demonstrate that the mentioned algebraic system could have fruitful applications in law theory and practice.

Continuing movement in the concrete direction indicated originally by Spengler, I have arrived to the below-presented interesting results concerning meanings of the words "law" and "power". In natural language, these words have many different meanings. Some of them are well-known. But some of them, namely, *formal-axiological* meanings of words are almost unknown. By definition, *the formal-axiological meanings are nothing but moral-legal-evaluation-functions determined by their moral-legal-evaluation-arguments*. Herein it is important to recognize that the words "law" and "power" are *homonyms* even within the *formal-axiological* subsystem of semantics of natural language. In this subsystem, each of the two words has no single and only formal-axiological meaning but several mathematically different ones. If, in the two-valued system, the discourse is reduced to *only one-placed* moral-legal-evaluation-functions, then the qualitatively different formal-axiological meanings of "law" and "power" (in natural language) can be defined precisely by the following Tables 1 and 2, respectively.

Table 1. **Law**

x	L_1x	L_2x	L_3x	L_4x
g	g	b	b	g
b	b	g	b	g

In Table 1, the symbol L_1x stands for "*law by* (what, whom) x", or "*law of* (what, whom) x", or "x's *law*", or "x's *being a law*". Herein, x denotes the moral-legal-value-argument, taking its values from the set {g (good), b (bad)}, and the sign L_1x denotes the moral-legal-value of the function L_1 determined by x. The functions L_1, L_2, L_3, L_4 take their moral-legal-values from the set {g (good), b (bad)}, as well. The symbol L_2x stands for "*law for* (what, whom) x", or "*law over* (what, whom) x", or "x's being regulated by law". The sign L_3x denotes "oneness

(unity) of L_1x *and* L_2x", or "*x*'s law for (over) *x*", or "*absolute lawlessness, anomie (normlessness)* concerning *x*, i.e. existence of *neither* L_1x *nor* L_2x". The symbol L_4x stands for "*absolute lawfulness* concerning *x*", i.e. "*division (separation) of* L_1x *and* L_2x". The functions L_1, L_2, L_3, L_4 are defined by Table 1 placed above.

In Table 2 located below, the symbol P_1x stands for "*power (rule) by* (what, whom) *x*", or "power (rule) of (what, whom) *x* (as a ruler)", or "*x*'s power (rule)", or "*x*'s *being a power*". P_2x stands for "*power (rule) over* (what, whom) *x*", or "*overpowering, forcing, violating* (what, whom) *x*", or "*x*'s being overpowered, violated, subjected". The sign P_3x denotes "oneness (unity) of P_1x *and* P_2x", or "*x*'s power over *x*", or "*absolute powerlessness* concerning *x*, i.e. existence of *neither* P_1x *nor* P_2x". The symbol P_4x stands for "*absolute powerfulness* concerning *x*", i.e. "*division (separation)* of P_1x *and* P_2x". The moral-legal-value-functions P_1, P_2, P_3, P_4 are defined below by Table 2.

Table 2. **Power**

x	P_1x	P_2x	P_3x	P_4x
g	g	b	b	g
b	b	g	b	g

Comparing the above-presented tables, one can notice a surprising isomorphism between them to be explicated below by means of algebra of moral-legal actions.

2. Modeling formal axiological semantics of natural language of jurisprudence, ethics, and theology by two-valued algebra of formal axiology

By definition, the two-valued algebraic system of natural-law-and-morals as formal axiology is based on the set Δ of all such and only such *either-realized-or-not-realized actions* (elementary or complex ones – it does not matter), *or either-existing-or-not-existing agents* (individual or collective ones – it does not matter), which are *either good or bad* ones from the viewpoint of a *moral-legal valuator V* (individual or collective one – it does not matter).

Algebraic operations defined on the set Δ are *moral-legal-value-functions*. *Moral-legal-value-variables* of these functions take their *moral-legal-values* from the set *{g, b}*. Here the symbols "*g*" and "*b*" stand for the *moral-legal-values* "good" and "bad", respectively. The functions take their values from the same set. Thus, in contrast to the ancient Roman law focused on concrete moral-legal *relations among* various *elements of the set of bodily persons and bodily things*, the here-presented *qualitatively new* (substantially modernized and mathematized) natural legal-law theory is focused on *formal-axiological relations* among various *moral-legal-value-functions*. In perfect accordance with [1], *not bodies* (i.e. sensual things and persons reduced to bodies) but *moral-legal actions and functions* make up the proper subject-matter of successfully reanimated and progressively developed natural jurisprudence of our time [12]. The set of actions and agents (persons), on which the algebraic system of actions is defined, is quite homogeneous, as persons are effectively reduced to totalities of actions realized by these persons.

The symbols "*x*" and "*y*" stand for *moral-legal-evaluation-forms* of elements of Δ. Moral-legal-evaluation-forms of actions and persons can be either elementary or compound ones. Elementary moral-legal-evaluation-forms deprived of their concrete contents represent independent *moral-legal-value-arguments*. Compound moral-legal-evaluation-forms deprived of their concrete contents represent *moral-legal-value-functions* determined by these arguments. In the previous section of the article, the abstract discourse of moral-legal-value-*functions* has been instantiated by the four one-placed ones called "law" and the four one-placed ones called "power". Now, by means of the following glossary, let us introduce and define some additional one-placed moral-legal-value-functions immediately related to contents of the present article.

The *glossary* for the below-located Table 3: Let the symbol *Rx* stand for "*restriction*, limitation, definition, definiteness, limitedness of/for (what, whom) *x*". The symbol *Cx* stands for "*creation*, construction, generation, production of (what, whom) *x*". *Ex* is "*execution*, performance, realization of (what, whom) *x*". *Bx* – "being (existence), life of *x*". *Nx* is "*nonbeing* (non-existence), death of *x*". *Zx* is "absolute nonbeing of *x*". *Ax* is "absolute being of *x*". *Ox* is "*opposite of/for* (what, whom) *x*". *Gx* is "*God of/for* (what, whom) *x* (or *x*'s God) in a *universal monotheistic* religion". *8x* is "*infinite, indefinite*, unlimited, eternal, immortal (what, who) *x*". *Fx* stands for "*finite, definite*, limited, temporal, mortal (what, who) *x*". *Mx* is "*mutable*, changeable, variable, volatile (what, who) *x*". *Ix* is "*immutable*, constant, perpetual (what, who) *x*". *Ux* is "*universal* (what, who) *x*". *Yx* is "*particular*, partial (not universal) *x*". *Sx* is "*contingent*, accidental (not necessary) *x*". The introduced unary moral-legal-value-functions are defined below by Table 3.

Table 3. **The one-placed functions**

x	Rx	Cx	Ex	Bx	Nx	Zx	Ax	Ox	Gx	8x	Fx	Mx	Ix	Ux	Yx	Sx
g	b	g	g	g	b	b	g	b	g	g	b	b	g	g	b	b
b	g	b	b	b	g	b	g	g	g	b	g	g	b	b	g	g

In the two-valued algebra of natural law-and-morals as formal axiology, not only one-placed moral-legal-value-functions but also two-placed ones are considered. Let us introduce some binary moral-legal-value-functions by the following glossary for **Table 4**.

The *glossary* for the below-located **Table 4**. (In this article the upper number-index 2 standing immediately after a capital Latin letter informs that the indexed Latin letter denotes a moral-legal-value-function determined by *two* moral-legal-value-arguments.) Let the symbol L^2xy stand for the two-placed moral-legal-value-function "*y's law for (over) x*". R^2xy stands for the binary moral-legal-value-function "*y's restriction, regulation, limitation, definition of/for x*". P^2xy is "*y's power (rule), violence over x*", or "*overpowering,* violating (what, whom) *x* by *y*". K^2xy – "*x's being with y*" or "*x's and y's being together*", or "*joint being of x and y*", or "*oneness (unity) of x and y*". N^2xy is "*realizing neither x* nor *y* (annihilation of both *x and y*)". D^2xy – moral-legal operation "*divorce (division), separation of x and y*". T^2xy is binary moral-legal operation "*termination*, destruction, corruption of *x* by *y*". C^2xy is binary moral-legal operation "*conservation*, preservation, protection, defense of *x* by *y*". O^2xy is "*y*'s *being an opposite* of/for *x*", or "*y*'s

contradiction with (opposition to) *x*". These moral-legal-value-functions determined by two arguments are precisely defined below by Table 4.

Table 4. **The moral-legal-value-functions determined by two arguments**

x	*y*	L^2xy	R^2xy	P^2xy	K^2xy	N^2xy	D^2xy	T^2xy	C^2xy	O^2xy
g	g	b	b	b	g	b	b	b	g	b
g	b	b	b	b	b	b	g	b	g	b
b	g	g	g	g	b	b	g	g	b	g
b	b	b	b	b	b	g	g	b	g	b

Now let us define precisely the notions "*formal-axiological equivalence* (*of moral-legal-value-functions*)" and "*formal-axiological law*" (or "*universally and immutably good form* of moral-legal actions"), which (notions) are fundamental ones of/for the two-valued algebraic system of formal axiology of moral-legal actions.

Definition DF-1 of the binary relation "*formal-axiological-equivalence (of moral-legal-value-functions)*": in the algebraic system of formal axiology, any moral-legal-value-functions Ξ and Θ are *formally-axiologically equivalent* (this is represented by the expression "Ξ=+=Θ")*,* if and only if they acquire identical moral-legal-values (from the set {*g (good), b (bad)*}) under any possible combination of the moral-legal-values of their moral-legal-evaluation-variables.

Definition DF-2 of the fundamental notion "*formal-axiological law*": in algebra of *formal axiology of law and morals*, any evaluation-function Θ is called *formally-axiologically (or necessarily, or universally, or absolutely) good* one, or a *law of algebra of formal axiology* (or a "*law of natural jurisprudences and natural ethics*"), if and only if Θ acquires the value *g (good)* under any possible combination of the values of its moral-legal-evaluation-variables. In other words, the function Θ is *formally-axiologically (or constantly, or absolutely) good* one, iff Θ=+=g (good).

With respect to the above-given definition DF-1, here it is worth mentioning and emphasizing that in the ambiguous natural language, very often the relation "Ξ=+=Θ" is represented by the words-homonyms "is", "means", "implies", "entails", "equivalence" (They may stand for the *formal-axiological equivalence* relation "=+="). As in the ordinary natural language the words "is", "means", "implies", "equivalence" also may stand for the logic operations "equivalence" and "implication", there is a possibility of confusions produced by absolute identifying and, hence, substituting for each other the substantially different notions "=+=" and logic operation "equivalence" (or "=+=" and logic operation "implication"). In the above-defined algebraic system of formal axiology of moral-legal actions, such chaotic linguistic blends and substitutions are strictly forbidden. Ignoring this prohibition necessarily heads to grave logic-linguistic paradoxes.

To expose how the above-defined discrete mathematical model can be utilized with respect to natural law, natural morals, and natural theology, i.e., to illustrate the above-presented abstract formal-axiological discourse by concrete examples, now it is opportune to start constructing and discussing the algebraic equations concerning the quartet of mathematically different meanings of "law" and the quar-

tet of mathematically different meanings of "power". Using the above-presented definitions one can generate the following list of *formal-axiological equations* of compositions of the above-defined functions.

1) $Bx=+=L_1x$: being of x is equivalent to being of x's law.

2) $x=+=L_1x$: any x is equivalent to x's law.

3) $L_1Yx=+=YL_1x$: law by particular x is particular (not universal) law by x.

4) $L_1Fx=+=FL_1x$: law by definite (limited) x is definite (limited) law by x.

5) $L_1Sx=+=SL_1x$: law by contingent x is contingent law by x:

6) $L_2Fx=+=FL_2x$: law for/over finite (temporal) x is temporal law for/over x.

7) $L_1Gx=+=Gx$: law by God of x is identical to God of x. "… His law is not distinct from Himself" [2. P. 208].

8) $8Gx=+=8L_1Gx$: eternal God of x is identical to eternal law by God of x.

9) $L_1Fx=+=Fx$: law by mortal x is equivalent to mortal x.

10) $L_1x=+=P_1x$: law by x is equivalent to x's power (rule).

11) $L_2x=+=P_2x$: law for (over) x is equivalent to power (rule, violence) over x.

12) $L_2x=+=Rx$: law for (over) x is equivalent to restriction, limitation of/for x.

13) $L^2xy=+=T^2xy$: there is the formal-axiological equivalence between "y's law for (over) x and destruction (termination) of x by y".

14) $L_2x=+=OL_1x$: law for (over) x is an opposite of/for law by x.

15) $Bx=+=RL_2x$: being (life) of x is equivalent to definiteness (limitedness) of law for (over) x.

16) $NRL_2x =+=Nx$: nonbeing of definiteness (limitedness) of law for (over) x is formally-axiologically equivalent to nonbeing (death) of x.

Thus, according to the mathematical model, in contrast to *Divine* law which is a *constant*, usually, *positive* laws are represented by the functions L_1, L_2, and L^2, which are not constants. However, in some rare situations, *positive* laws are represented by the functions L_3 and L_4 which are constants. A concrete example of such a rare situation is given below.

3. Justifying the positive constitutional law of separation of legislative and executive powers of state by computationally demonstrating a natural (formal-axiological) legal law of separation of law-giving and law-executing in the two-valued algebra of moral-legal actions

Above, it has been exposed how the discrete mathematical model can be utilized with respect to natural law, natural morals, and natural theology, namely, in relation to the quartet of mathematically different moral-legal-value-functions called "law" and in relation to the quartet of the ones called "power". Now it is opportune to consider a concrete example exposing how the mathematical apparatus works in relation to a concrete *positive* law created and executed by the corresponding powers of a human-made state. In this article, the concrete example shall be taken from the *positive constitutional* law. Rationally to limit the indicated domain of application of the algebraic system, I have decided to reduce the domain to the *positive constitutional* law systems of the Russian Federation and the U.S.A.

According to Tables 1–3, under any value of the variable x, the functions P_1Ex (power of *execution* of x) and P_1CL_2x (power of giving a *law for x*) possess opposite values. According to Table 4, the function D^2xy has the value g (good), when

and only when x and y have opposite values. Consequently, under any value of the variable x, the composition of functions $D^2P_1ExP_1CL_2x$ possesses the value g (good). Consequently, due to the definition DF-2, the function $D^2P_1ExP_1CL_2x$ is a natural (formal-axiological) law of algebra of moral-legal actions. A translation of the equation $D^2P_1ExP_1CL_2x=+=g$ from artificial language into natural human one is the following: separation (division) of power of *executing x* and power of *giving a law for x* is a natural legal law. By definition, the natural legal law is such a moral-legal-value-function which is a *positive* moral-legal-value-*constant*. The natural legal law is "always good" according to the ancient Roman law doctrine personified by Paul – one of its famous representatives [13. P. 2–3].

Thus, the *positive* constitutional law of separation (division) of the executive and the legislative powers of a human-made state has been vindicated (justified strictly deductively by computing compositions of relevant functions) in the two-valued algebraic system of natural legal law as formal axiology. Hence, the two philosophies of legal law (the naturalistic and the positivistic ones) are not absolutely excluding each other. The mathematized theory of natural legal law can provide a convincing demonstration (vindication) of some well-done positive laws. Thus, the concrete example, showing how the algebraic system in question can help to find out, clarify, and define precisely some almost unknown formal-axiological meanings of words and word-combinations of natural language of jurisprudence (and to justify a proper *positive* law created by law-giving power of human-made state), is provided.

In [10], a theoretically interesting proper *axiomatic* view (pattern) of positive constitutional law has been presented. Being a complement to [10], the given article has presented a theoretically interesting proper *algebraic* view (pattern) of positive constitutional law.

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