Formalising Taboo as a Prohibition on Informing

Vytautas Čyras[1][0000-0001-6722-8542] and Friedrich Lachmayer[2]

[1] Vilnius University, Naugarduko 24, 03225 Vilnius, Lithuania
[2] University of Innsbruck, Vienna, Austria
`vytautas.cyras@mif.vu.lt, friedrich.lachmayer@gmx.at`

Abstract. The authors formalise a taboo as a prohibition on speaking (in general, on informing). Three levels of norms are distinguished. First are basic prohibitions, Forbidden X. These are norms which prohibit basic actions, $\text{Norm}(\neg X)$. Second-level norms comprise primary taboos which prohibit information about facts or fakes, $\text{Norm}(\neg \text{Inf}(X))$, but permit them to happen. Third-level norms comprise meta-taboos, which prohibit information that a primary taboo exists, $\text{Norm}(\neg \text{Inf}(\text{Norm}(\neg \text{Inf}(X))))$. The message also is that a taboo on the essential causes A of an effect E can be officially camouflaged with a fake relationship between certain facts B and E. The research in this paper is related with the study of the concept of legal machines and regulatory compliance. Here legal machine is defined as a machine in a system whose actions have legal importance and legal consequences.

Keywords: Legal informatics, Legal visualization, Formalization, Belief, Taboo, Metaphor, Fake, Camouflage, Pluralistic ignorance

1   Introduction

The word 'taboo' means "a social or religious custom prohibiting or restricting a particular practice or forbidding association with a particular person, place, or thing."[1] A taboo is a vehement prohibition of an action based on the belief that such behaviour is either too sacred or too accursed for ordinary individuals to undertake.[2] In the fairy tale "The Emperor's New Clothes", an example of a taboo is the prohibition on the mention that the Emperor is naked.[3]

---

[1]   See The Oxford Dictionary, https://en.oxforddictionaries.com/definition/taboo.

[2]   See Encyclopædia Britannica Online, "Taboo", and Wikipedia, https://en.wikipedia.org/wiki/Taboo. Common taboos involve restrictions on or ritual regulations for killing and hunting; sex and sexual relationships; reproduction; the dead and their graves; and food and dining (primarily cannibalism). See also the term *nefas* in archaic Roman law.

[3]   Danish author Hans Christian Andersen wrote about two weavers who promise an emperor a new suit of clothes, which they say is invisible to those who are unfit for their positions, stupid, or incompetent. When the Emperor parades before his subjects in his new clothes, no

In this paper, a taboo is treated as a prohibition on speaking (in general, informing). In this way, we narrow the broader meaning of a taboo, which is a prohibition on an action. We restrict ourselves to the prohibition of a specific action, namely informing.

Specifically, a taboo is imposed on giving information about the essential causes of an effect (which is typically evaluated negatively). We assume an effect E, and facts A, B, C that are in a causal relationship with this effect, as denoted by $A \rightarrow^c E$, $B \rightarrow^c E$, and $C \rightarrow^c E$. Suppose A is the main cause, and a taboo is imposed on it, that is, a prohibition on speaking caused by A. We also suppose that the official information is that B causes E, which is fake. This situation is depicted on the left-hand side of Fig. 1. Taboos can have various meanings and social reasons, such as top-down institutional repression, vertical authoritative power, odd morality, etc.
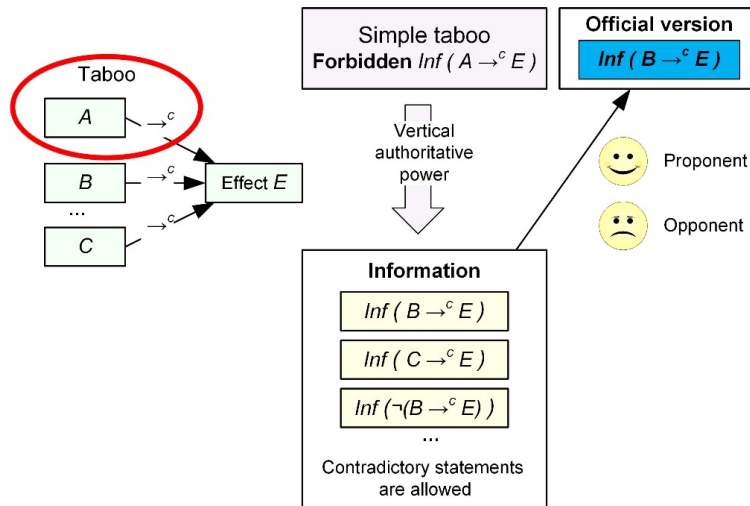

Fig. 1. The concept of taboo in context

The present research is carried out in the context of legal informatics and the study of the concept of legal machines; see (Čyras, Lachmayer 2014). A legal machine can be defined as a machine in a system whose actions have legal importance and legal consequences. There are simple legal machines, such as traffic lights, barriers and vending machines, and complex ones, such as the electronic forms in the Web that are used for taxes and finance. Machines contribute to law enforcement, and their software implements legal norms that have to be taken into account in the requirements engineering phase. Legal taboos may also be embraced by the system of norms.

---

one dares to say that they don't see any suit of clothes on him for fear that they will be seen as "unfit for their positions, stupid, or incompetent". Finally, a child cries out, "But he isn't wearing anything at all!" The story is about a situation where "no one believes, but everyone believes that everyone else believes. Or alternatively, everyone is ignorant as to whether or not the Emperor has clothes, but believes that everyone else is not ignorant." (Hansen 2011) See Wikipedia https://en.wikipedia.org/wiki/The_Emperor's_New_Clothes.

2　Definition of Taboo

The concept of a taboo is briefly overviewed by Duschinsky (2014).[4] He notes that according to Freud, "The meaning of 'taboo', as we see it, diverges in two contrary directions. To us it means, on the one hand, 'sacred' or 'consecrated', and on the other 'uncanny', 'dangerous', 'forbidden', 'unclean'" (Freud [1913] 2001), p. 18. In his book Taboo (1956), p. 22, Franz Steiner studies the subject from the perspective of sociology (or, more precisely, social anthropology). Taboos refer to danger.[5] Steiner notes that to make a comparative category the definition of taboo is narrowed (ibid., p. 121). Next Steiner refers to Margaret Mead's article "Tabu" in Encyclopaedia of Social Sciences, 1937: "Tabu may be defined as a negative sanction, a prohibition whose infringement results in an automatic penalty without human or superhuman mediation."

Taboos may be sensitive from several perspectives: morally, religiously, culturally, socially, politically, and also legally. Taboo norms can be evaluated negatively, although various positions can be explored. Broyde (2002) discusses three different problems: informing a bandit, informing an abusive government, and informing a (procedurally) just system of government. The view "No prohibition to inform when government is just" has a place in a discussion (Broyde 2002). We further focus on formalising statements about taboo; explorations of the function of taboos and social reasons are set aside.[6]

3　Formalising Taboo as a Prohibition to Speak

Let us denote by *Inf (X)* that information about *X* exists (in reality or in a model such as a database). For example, information that *A* causes *E* is denoted by *Inf (A →^{c} E)*. Let us follow the notation in deontic logic and denote that it is forbidden that *X* by **F** *X* or **F***(X)*. The obligatoriness of *X* is denoted by **O** *X* and the permissibility of *X* is denoted by **P** *X*. The prohibition **F** *X* can be defined as **O** ¬*X* (obligatory to omit *X*, i.e. it is obligatory to not do *X*) or ¬**P** *X* (no permission to do *X*).

We start by defining taboo as a prohibition to speak. Thus, a restriction is imposed on a general prohibition **F** *X* of any action *X*. Taboo means that a phenomenon *X* may be permitted, but informing about *X* is prohibited. An example is a taboo on genitals:

---

[4]　Duschinsky begins with the following definition: "'Taboo' is a Polynesian term, which has come to refer in Western academic and public discourses to topics, spaces, or practices that are consecrated as prohibited or to the process itself of marking them off" (Duschinsky 2014).

[5]　Steiner defines: "[T]aboo is an element of all those situations in which attitudes to values are expressed in terms of danger behaviour…" (Steiner 1956) pp. 20–21.

[6]　Centola et al. write: "It is easy to explain why people comply with unpopular norms—they fear social sanctions. And it is easy to explain why people pressure others to behave the way they want them to behave. But why pressure others to do the opposite? Why would people publicly enforce a norm that they secretly wish would go away?" (Centola at al. 2005).

"In our family, it is forbidden to speak about genitals". However, it is not forbidden to have genitals. This is represented as *Taboo(genitals)*. Similarly, at a party, it is forbidden to speak about money. However, it is not forbidden to have money. This is represented as *Taboo(money)*.

A taboo can be expressed with a formula in modal logic $\mathbf{T} X =^{def} \mathbf{F} \, Inf \, (X)$, where **T** is treated as a modal operator that is syntactically analogical to the deontic operators **O**, **P** and **F**. Formalisation of normativity implies a norm as an entity. A taboo on *X* means a norm that prohibits informing about *X*:

$$Taboo(X) =^{def} N(\neg Inf(X)) \tag{1}$$

In our formalisation, all the entities, including actions, facts and norms, exist as truth (true or false) in the realm of science, i.e. in a model such as a database. Norms *N(•)* correspond to the Ought realm or its representation in the model, while *Inf* corresponds to the Is realm. The irreducible Is-Ought duality corresponds to a very old mythical and religious duality between the Earth and Heaven. In the figures, Is is coloured light green and Ought is coloured blue.

A norm *N(A)* must be assigned certain semantics. Consider *N(A)* as a commandment to do *A* and *N(¬A)* as a prohibition on doing *A*. The relation between a norm (rule) and the normative status of the duty can be explored; see Lachmayer (1977), pp. 75–76:

$N(A) \rightarrow O(A)$ – From a commandment, an obligatory duty arises

$N(\neg A) \rightarrow O(\neg A)$ – From a prohibition, a prohibitive duty arises.

Meta-taboo. Next we strengthen the above definition with a double prohibition called a meta-taboo. A *meta-taboo* is a prohibition on informing that there is norm that prohibits speaking about X:

$$Meta\text{-}taboo \, (X) =^{def} N(\neg Inf \, (N(\neg Inf(X)))) \tag{2}$$

In a literal sense, a meta-taboo can be linked with the expression "taboo on the mention of taboo", which is used in the literature; cf. Attridge (2014).[7]

4 Three Levels of Norms on Prohibition

A fact, its content and its institutional meaning are distinguished (Čyras, Lachmayer 2018; Čyras 2017). A fact (in a broad sense) is treated in this paper as an act, and namely, as "a happening occurring at a certain time and in a certain place" and the legal meaning of this act is "the meaning conferred upon the act by the law" (Kelsen

---

[7] John Attridge (2014) writes about the depiction of Englishness in novels. He notes that it was Archibald Lyall who "called the 'taboo on the mention of taboo', in his 1930 book 'It Isn't Done, or, the Future of Taboo Among the British Islanders'".

1967), p. 2.[8] Fakes can be formalised as facts (in a broad sense) whose content is false. Further the facts (in a broad sense), whose content is true, are called facts in a narrow sense (or facts, for short).

Consider a language *L* for expressing statements about facts, fakes and taboos. Its basic entities can be *Fact* (denoted by *FC*) or *Fake* (denoted by *FK*). The reference area of *L* sentences comprises more entities. Firstly there is *Meaning* (*ME*); then relations, such as *Causality* ($\rightarrow^c$), *Telos* ($\rightarrow^{te}$), *Equality* ($\rightarrow^=$), and *Transformation* ($\rightarrow^{tr}$); see Fig. 2. The relations hold between the entities and express the semantics of *L*.
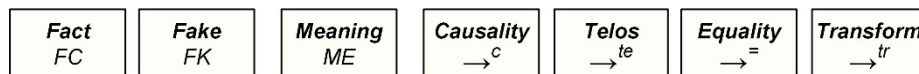

Fig. 2. Basic entities to which norms refer

Norms 1. The next entity within *L* is a norm (denoted by *N*). There are several levels of norms. The first level (*Norms 1*) comprises norms about facts, $N^1(FC)$, and fakes, $N^1(FK)$; see Fig. 3.
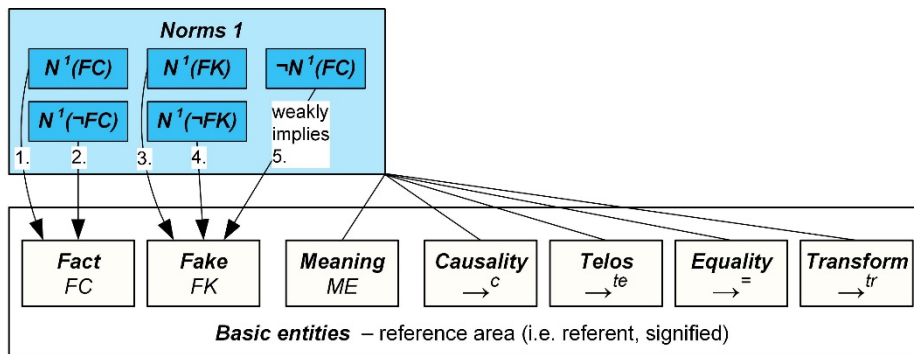

Fig. 3. Types of norms at the first level, *Norms 1*, and their references

The following are examples of cases which can be created:

1. $N^1(FC)$ means a commandment to establish a fact *FC*. For instance, *N(door_closed)*, represents a commandment to close the door. Closing the door is a compliant action. This type of norm refers to *Fact*; see Fig. 3.
2. $N^1(\neg FC)$ means a prohibition of a fact *FC*. For instance, *N(¬door_closed)*, means a prohibition on closing the door. Opening the door is a compliant action. This type of norm also refers to *Fact*.

---

8 Kelsen writes: "The command of a gangster to turn over to him a certain amount of money has the same subjective meaning as the command of an income-tax official, namely that the individual at whom the command is directed ought to pay something. But only the command of the official, not that of the gangster, has the meaning of a valid norm, binding upon the addressed individual" (Kelsen 1967, p. 8).

3. $N^1(FK)$ means a commandment to establish a fake *FK*. As an example, imagine a community of liars. This type of norm refers to *Fake*.
4. $N^1(\neg FK)$ means a prohibition of a fake. This is a normal case. In general, fake facts are prohibited. For instance, news with false content is prohibited; the use of counterfeit money is also prohibited. This type of norm refers to *Fake*.
5. $\neg N^1(FC)$ means an absence of commandment to establish a fact *FC*. We hold that an absence of a norm about a fact weakly implies a norm about a fake. As an example, we suppose a world with one door, and suppose that the door is closed. Hence, the proposition "'*The door is closed*' is a fact" is true. Suppose that $\neg N^1(door\_closed)$ holds in this world. The latter means the absence of any commandment to close the door. Next, suppose a fake news report of '*The door is opened*'. However, nobody is obliged to react to this fake, because of the absence of any commandment to close the door. In this sense, the fake is compliant in this world. Therefore we hold that the type $\neg N^1(FC)$ refers to *Fake*.

We do not explore case 5. It is important only to focus on cases 1 and 2, which refer to *Fact*, and cases 3 and 4, which refer to *Fake*.

Info 1 and ***Norms 2***. Information is next entity in *L* to be explored. Information about *X* is denoted by *Inf(X)*. More precisely, the latter means the output of an act of informing about *X*. Information is primarily about facts, fakes and norms. The first-level information, *Info 1*, firstly comprises informing that *FC* exists as a fact, denoted by $Inf^1(FC)$, or, secondly, informing that *FK* exists as a fake, denoted by $Inf^1(FK)$; see link (i) in Fig. 4. This can be treated as follows. Given a (news) statement *X*, the act of informing Inf^1 produces a flag (or a tag) which means that *X* is either of true content (thus assigning *X* to *Facts*) or false content (thus assigning *X* to *Fakes*).
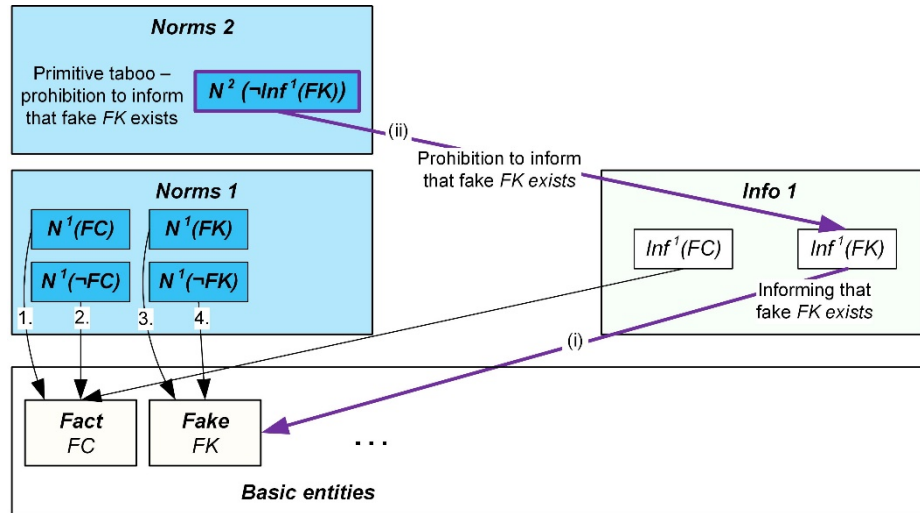

Fig. 4. Primitive taboos (*Norms 2*) and *Info 1* added to Fig. 3

Second-level norms, *Norms 2*, formalise primitive taboos; see Fig. 4. Here, norms are of the type

$$N^2(\neg Inf^1(FK)) \tag{3}$$

This means a prohibition N^2 to inform that *FK* is a fake; see link (ii) in Fig. 4. Hence, *Norms 2* secure fakes. Note that Equation (3) above coincides with the right-hand side of Equation (1) after substituting *X* with *FK*. Fakes flourish (on the basic level) because they are secured by *Norms 2*. Recall "All that is necessary for the triumph of evil is that good men do nothing." (https://en.wikiquote.org/wiki/Edmund_Burke). Therefore *Norms 2* can be evaluated as evil.

***Info 2* and *Norms 3*: Meta-taboo.** The second level of information, *Info 2*, consists of information about primitive taboos; see link (iii) in Fig. 5. Indeed, $Inf^2(N^2(\neg Inf^1(FK))$ means an act of informing that a prohibition N^2 exists against informing Inf^1 that a fake *FK* exists.

The third-level norms, *Norms 3*, formalise meta-taboos. Here the norms are of type $N^3(\neg Inf^2(\bullet))$. This means a prohibition N^3 on informing Inf^2 about anything; see link (iv) in Fig. 5. Specifically, *Norms 3* comprise a prohibition N^3 to inform, *Info 2*, that a prohibition N^2 exists to inform, *Info 1*, that a fake *FK* exists. Thus a meta-taboo secures a primitive taboo; see the top-down path (iv)–(iii)–(ii)–(i) in Fig. 5.
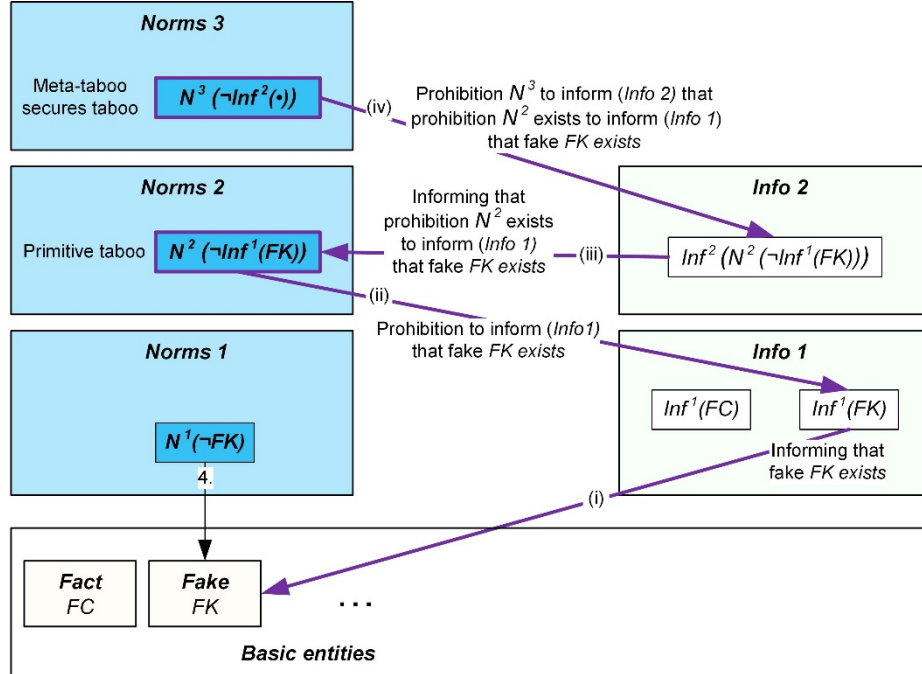

Fig. 5. Meta-taboos *Norms 3* and *Info 2* added to Fig. 4

Taboo on Fact. Taboo on fact and taboo on fake form a duality. A taboo on a fact *FC*, denoted by *Taboo(FC)*, means a prohibition on informing that *FC* holds as a fact. The proof is based on the idea that *FC* being a fact implies that $\neg FC$ is a fake. Indeed, the content of *FC* being true implies that the content of $\neg FC$ is false. Let us apply the taboo on fakes, Equation (3), and substitute *FK* with $\neg FC$ to obtain $N^2(\neg Inf^1(\neg FC))$; this reads 'A prohibition to inform that $\neg FC$ is a fake'. This is equivalent to reading 'A prohibition to inform that *FC* is a fact'. This paragraph explains the definition (1).

Example. In the fairy tale, a fact is that the emperor is naked. A taboo is formally imposed on this fact as a norm $N^2(\neg Inf^1($'The emperor is naked' is a fact$))$. Dually, a fake is that the emperor is wearing new clothes. A taboo is formally imposed on this fake as a norm $N^2(\neg Inf^1($'The emperor is wearing new clothes' is a fake$))$.

Taboo on Any Basic Entity. Above, we have explored the taboo on fakes and facts. A taboo can also be imposed on other basic entities, such as the causal relation between facts, teleology of actions, equality of meaning of facts, transformation of meaning, etc.

5 Taboo on a Combination of Three Elements of a Relation

A binary relation *R* between two sets S_1 and S_2 is defined as a subset of a Cartesian product $R \subset S_1 \times S_2$. For any $x \in S_1$ and $y \in S_2$ we write *xRy* to abbreviate $(x,y) \in R$. Elements of the set *R* are pairs (x,y).
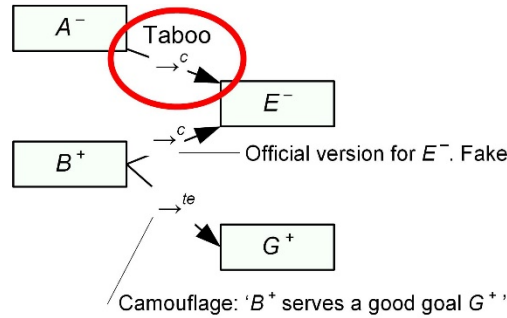

Fig. 6. A taboo on a causal relationship $A^- \rightarrow^c E^-$ is camouflaged in three steps, with a teleological relation $\rightarrow^{te}$ between B^+ and a certain goal G^+, which is evaluated positively: 1) in fact, both A^- and E^- are evaluated negatively; 2) therefore, the official version is announced that a certain cause B^+, which is evaluated positively, causes E^-; 3) a camouflage is that B^+ serves a good goal G^+, which outweighs E^-

Several meanings can be assigned to a taboo on the causal relation $A \rightarrow^c E$ between a fact *A* and an effect *E*. The original meaning is a prohibition to inform that *A* causes *E*. The second idea is a prohibition to inform about the fact *A* only, *Taboo(A)*. The

third meaning is a prohibition to inform about the effect E, *Taboo(E)*, and fourthly, a prohibition to inform about the causality relationship $\rightarrow^c$ (its intentional description), *Taboo($\rightarrow^c$)*. The last meaning appears, for example, in the case of a fake official version that the relation $A \rightarrow^c E$ is accidental or a correlation, in other words, the causality $\rightarrow^c$ is simply a mystery of faith (*mysterium fidei*).

The last taboo, *Taboo($\rightarrow^c$)*, can appear, for example, in a network of facts, effects and other entities, such as actions, goals, teleological relations, etc. Suppose a taboo exists on the relation $A^- \rightarrow^c E^-$. To camouflage this taboo, a teleological relation $B^+ \rightarrow^{te} G^+$ can be introduced, where the goal G^+ is evaluated positively (Fig. 6). Additionally, a fake official version can be introduced that the effect E^- is caused by a certain fact B^+. Thus the principle "the end justifies the means" is followed.

6   Related Work on Pluralistic Ignorance

We have modelled the meaning of Andersen's fable as a taboo on speaking that the emperor is naked. This tale illustrates the phenomenon of *pluralistic ignorance*, which defined as a situation where "no one believes, but everyone thinks that everyone else believes" and is mainly studied in social psychology. Hansen (2011) describes pluralistic ignorance as "the phenomenon where a group of people shares a false belief about the beliefs, norms, actions or thoughts of the other group members" and formalises it using epistemic/doxastic logic (based on plausibility models). Hansen focuses on the question of what it takes to dissolve the phenomenon, and talks about the dynamics of knowledge and beliefs of a group of agents. Public announcements are the simplest form of actions. In addition to Andersen's fable, Hansen provides classical examples including the "questions in a classroom".[9] Hansen formulates examples in terms of beliefs, but notes that pluralistic ignorance is often defined in terms of norms, e.g. "a situation where a majority of group members privately reject a norm, but assume (incorrectly) that most others accept it"; see (Centola et al. 2005). The latter also note that "It is not hard to find everyday examples of this fable in the academic kingdom. We can all think of prestigious scholars who are widely proclaimed as having the most brilliant new ideas, yet privately, people find the work entirely incomprehensible". Centola et al. study the "willingness to feign support for a public lie" and provide further examples.

We would model the classroom example with a primitive taboo on questions, i.e. a norm that prohibits students from saying that they have questions. The fact is that students do have questions.

---

[9] "[T]he classroom example in which, after having presented the students with difficult material, the teacher asks them whether they have any questions. Even though most students do not understand the material they may not ask any questions. All the students interpret the lack of questions from the other students as a sign that they understood the material, and to avoid being publicly displayed as the stupid one, they dare not ask questions themselves. In this case the students are ignorant with respect to some facts, but believe that the rest of the students are not ignorant about the facts." (Hansen 2011)

7 Conclusions and Future Work

The present research is carried out in the context of regulatory compliance as an ideal. Legal machines are purposed at regulation by computer code. Here we confer to the concept "[computer] code is law" (Lessig 2006). It is important to detect the noncompliance of legal machines in the early stages of the software life cycle. It should be noted that legal knowledge need not lean heavily on the sources of law that are traditionally considered in compliance frameworks. Legal machines are required to provide transparency concerning the legal rules they implement.

Modelling taboo in this paper gives rise to a terminological framework, which is depicted in Fig. 5. Three levels of norms and two levels of information are singled out. We introduce the terms 'primitive taboo' and 'meta-taboo', which secures the former.

References

1. Attridge, J.: 'A taboo on the mention of taboo': taciturnity and Englishness in Parade's End and André Maurois' Les Silences Du Colonel Bramble. International Ford Madox Ford Studies 13, 23-35 (2014)
2. Broyde, M. J.: Informing on others for violating American law: a Jewish law view. Journal of Halacha and Contemporary Society (2002). http://www.jlaw.com/Articles/mesiralaw2.html
3. Centola, D., Willer, R., Macy, M.: The emperor's dilemma: a computational model of self-enforcing norms. American Journal of Sociology 110(4), 1009-1040 (2014). https://doi.org/10.1086/427321
4. Čyras, V.: Different views on law determine the separate representations of legal meanings in information systems. Informacijos mokslai 79, 58-70 (2017), DOI https://doi.org/10.15388/Im.2017.79.11391
5. Čyras, V., Lachmayer, F.: Compliance and software transparency for the design of legal machines. In: Haav, H.-M., Kalja, A., Robal, T. (eds.) Databases and Information Systems VIII, pp. 275–288, http://dx.doi.org/10.3233/978-1-61499-458-9-275. IOS Press, Amsterdam (2014)
6. Čyras, V., Lachmayer, F.: Meaning and metameaning as entities: content (Is) and institutional meaning (Ought). Jusletter IT, 24 May (2018)
7. Duschinsky, R.: Taboo, overview. In: Teo, T. (ed.) Encyclopedia of Critical Psychology, pp. 1921-1923. Springer, New York (2014)
8. Freud, S.: Totem and taboo, Routledge (2001) [1919] (Totem und Tabu, 1913)
9. Hansen J. U.: A logic-based approach to pluralistic ignorance. In: Academia.edu (2011), http://www.academia.edu/1894486/A_Logic-Based_Approach_to_Pluralistic_Ignorance
10. Kelsen, H.: Pure theory of law, 2nd ed., Knight, M. (transl.) (Reine Rechtslehre, 2. Auflage. Deuticke, Wien 1960). University of California Press, Berkeley (1967)
11. Lessig, L.: Code version 2.0. Basic Books, New York (2006)
12. Lachmayer, F.: Grundzüge einer Normentheorie: Zur Struktur der Normen dargestellt am Beispiel des Rechtes. Duncker & Humblot, Berlin (1977)
13. Prentice, D. A., Miller, D. T.: Pluralistic ignorance and alcohol use on campus: Some consequences of misperceiving the social norm. Journal of Personality and Social Psychology 64(2), 243-256 (1993)
14. Steiner, F.: Taboo. Cohen & West, London (1956)