

# Towards an Upper-Level Ontology for the Social Domain

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**Abstract.** This paper borrows from philosophical discussions about social entities in order to lay the foundations for an upper-level ontology for the social domain. It starts from an analysis of those social entities which are established through explicit speech acts ('formal institutions'), and which include marriages, the President of the United States, and money. The paper then reviews other social entities which are not explicitly established, including informal institutions like friendship and language, but also emergent social processes like inflations. The paper analyses the properties of explicitly established social entities and discusses how other social entities may deviate from the paradigm of explicitly established entities. Finally, it suggests a formal characterization of these classes as a first step towards a principled upper-level ontology of the social entities.

**Keywords.** Applied Ontology, Social Ontology, Upper-Level Ontology, Institutions

## 1. Introduction

Within the OBO Foundry ([obofoundry.org](http://obofoundry.org)) [18], social entities still have something like a niche existence. Relevant entities are discussed in the Information Artifact Ontology (IAO) and the Ontology of Medically Related Social Entities (OMRSE). However, a principled upper-level ontology for social entities is still a desideratum. In this paper, I turn to philosophical discussions of social entities to lay the foundations for such an upper-level ontology for the social domain. In particular, I will discuss the theories of John Searle [15–16] and Margaret Gilbert [5–9]. In doing so, I will also draw on previous work of mine [10–12].

Many paradigmatic social entities are established through explicit speech acts. These include marriages, the President of the United States, and money. Various authors identify different kinds of speech acts relevant for such an explicit establishment of social entities. While Searle stresses declarations, Gilbert rather cites commissive speech acts like promises or agreements. Not all social entities, however, are explicitly established. Both Searle and Gilbert mention and discuss various examples of such entities. These include cocktail parties, inflation, friendship, and language. The social sciences often address these two groups of social entities as “formal” and “informal institutions”, respectively.

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Both Searle and Gilbert want to extend their respective account to cover at least some entities that are not established explicitly. For Searle, institutional reality is rooted in collective intentionality – that is, according to Searle, in sufficiently many individuals having appropriate we-intentions for the ascription of a certain institutional status. These intentions are part of a complex neural-causal background that leads to role-conforming behaviour. For Gilbert, in turn, plural subjects are constituted by joint commitments – which, or so Gilbert claims, can arise without an explicit agreement, e.g., gradually by repeated interaction of the same kind.

I argue that both of these strategies are problematic. Gilbert's strategy faces the problem that it cannot explain how repeated action can have the same obliging power as an explicit agreement. While repeated interaction will indeed lead to certain expectations on the side of participants, these seem to be rather epistemic than deontic expectations. Searle's strategy fails for the opposite reason: If having appropriate neural-causal background is sufficient for the ascription of an institutional status, it is difficult to explain how this can possibly come along with the transfer of deontic powers.

An explicit establishment comes along with the immediate transfer of deontic powers and the possibility of codification. This is, however, not possible without an explicit establishment, because without it, no such transfer of deontic powers is possible. Instead of leading to obligations, matching we-intentions lead to matching dispositions of their bearers to act accordingly. Analogously, repeated interaction will primarily lead to action dispositions, not to joint commitments. Only secondarily, duties can be attached to the action patterns in questions. These duties will be derived from moral norms, while the explicit establishment of social entities brings about social norms.

The paper proceeds as follows: Section 2 analyses explicitly established social entities. Section 3 reviews a list of deviant examples, argues that an adequate upper-level ontology for the social domain has to do justice to both formal and informal institutions, i.e., of those social entities that are explicitly established and those that are not. Section 4 suggests candidate classes for such an upper-level ontology. Section 5 concludes the paper by demonstrating how these classes can help to categorise the examples from Section 3.

## **2. Making it Explicitly**

There can be little doubt that there are some social institutions explicitly created by human beings. Companies are established, charities are founded, constitutions approved and amended.

Important proposals in contemporary social ontology take on this idea of explicit establishment of institutions. Margaret Gilbert, for example, suggests that people can fuse to so-called plural subjects – subjects, that is, for joint actions – by mutually signalling their will to participate in these joint actions. One person asking, 'Shall we go for a walk?', the other person answering, 'Yes, let's do it!', is sufficient to establish a plural subject for walking together. And at least one strain in John Searle's complex theory of the construction of the social world uses the language of explicit speech acts to establish institutional facts (I will later turn to other strands of Searle's theory): We can declare the bazaar open, the electorate of the United States can elect someone President of the United State, and a bishop can ordain priests.

Most of these acts of establishment of institutions employ themselves an institutional framework. When companies are established, they are established within the legal

framework for businesses of the respective country. When charities are founded, they are founded on the background of the respective laws for association and taxation. When priests are ordained, they are ordained according to the respective church regulations.

Not all establishments of institutions, however, require a pre-existing institutional framework. For a long time, political theories have discussed the idea that states and government have their roots in a social contract – an agreement that requires no more than individual expressions of will in a mutually understood language. At this point, it is not important whether actual states have in fact been established this way. The point is, rather, that even in the absence of a binding legal framework, there is one mechanism always at hand to create institutions, namely the expression of unanimous agreement among a plurality of persons. This, or so it seems, is the basic mechanism of explicit establishment of institutions. It is by far not the only mechanism, as it can be used to develop mechanisms that are more sophisticated – by passing constitutions, laws, and by-laws which can from then on regulate further acts of establishment of institutions. Not all institutions are established by unanimous agreement. Some institutions may have members without them knowing to be members of this institution, and many institutions (like money or borders) do not have members at all.

Margaret Gilbert discusses a whole bunch of such mechanisms: Persons can decide to join forces for a single action, but they can also decide to join forces for regular actions (e.g., meeting every Wednesday), or conditional actions (e.g., meeting if the weather is fine). Persons can also delegate a certain decision to a particular person or group; e.g., a couple may decide to go to the cinema together and leave it to her to decide which film to watch. Delegation is, of course, also possible to people outside the group (as in Hobbes's social contract theory of the state, where the sovereign is not part of the group establishing the state), or to a subgroup, or to another group altogether.

### *2.1. Presuppositions of Explicit Establishment of Institutions*

Nevertheless, the procedure of unanimous decision notwithstanding, there seem to be some presuppositions for the successful creation of institutions. Most explicit establishments of institutions make use of language. It is debated whether this language needs to be a language shared by all participants, e.g., in a social contract. Maybe participants can, to employ Gilbert's terminology, signal their readiness in languages not shared by the others, be it by means of a translator or by means of natural meaning.

What seems clear, though, is that institutional facts need to have a linguistic description, and this description is part of the intentional content of what goes on in establishing an institution. Nobody who has no idea of what a cardinal is can create one, and if whoever does not know that he or she is currently about to marry, cannot be said to actually marry someone. This makes also clear that the establishment of institutions require a shared cultural background. Understanding the word "marriage" implies rich knowledge of not only linguistic, but also social, legal and cultural norms. Only in a culture in which marriage is known will it be possible to marry someone.

Moreover, whoever wants to establish an institution needs the authority to do so. Only the pope has the authority to create cardinals. But whence comes such authority? Such authority to establish an institution seems itself to be an institution. This would constitute a vicious circle, were it not for the option to create institutions 'from scratch' by unanimous consent.

## *2.2. What Happens in an Explicit Establishment of Institutions?*

What happens when institutions are explicitly established? First, of course, there need to be some mental acts: Relevant participants of the act of establishment need to have appropriate intentions; they need the will to establish the institution in question. However, while the mere will may be sufficient to create a cardinal, it is not normally sufficient for the establishment of an institution. That is, second, some actual speech acts are necessary in order to establish the institution in question, be they in spoken or written language. In the latter case, we could more appropriately talk about ‘document acts’ [4, 17]; in the following, I will nevertheless use the term ‘speech act’ in a generic way in order to include acts in both spoken and written language. I will now argue that these speech acts can be of several types.

Theories of the social world differ with respect to which kind of speech acts they give pride of place. Central to Gilbert’s theory are promises and agreements – that is, commissive speech acts. In contrast, declarations are central to Searle’s account of institutional facts: X counts as Y in a context C, because someone has declared X to be a Y in C.

To be sure, these speech acts do not need to be explicit speech acts, but they may well be explicit, as in the following example:

- I declare you man and wife.
- I agree to go for a walk with you.

But establishing speech acts need not be explicit, for the same force is exercised by their implicit counterparts:

- You are now man and wife.
- I will go for a walk with you.

Somewhat paradoxically, that is, an explicit establishment of an institution may make use of an implicit speech act. It might as well make use of an indirect speech act. Relevant speech acts might, e.g., take the form of a question or a request:

- Do you want to go for a walk?
- Come on, go for a walk with me!

## *2.3. Properties of Explicitly Established Institutions*

So far, I have argued that the explicit establishment of an institution requires one or several speech acts. This implies a number of important properties of explicitly established institutions. To start with, the establishment of such an institution will be datable. We will thus be able to say when the institution commences. Second, we will be able to attribute the establishment to the speakers or writers involved in these speech acts. Thirdly, as speech acts can be counted, we will also be able to count explicitly established institutions. Fourthly, explicit establishment comes along with a clearly ascribed status and specific deontic powers. Finally, there are often culturally or even legally approved procedures to establish an institution of a certain kind.

A paradigmatic example for explicitly established institutions is marriage. Indeed, we marry by uttering speech acts in churches or town halls. We memorize the date and celebrate it every year. Normally, we register in detail who married whom, that is we can count how many marriages there have been in a given church in a given year. Though people may have more than one married partner (either successively, or in some cultures even at the same time), people normally know exactly how many times they have been married. Fourthly, married people are, for example, mutually the heir apparent of the other; they may be eligible for tax redemption, or special housing benefits, or so on. Finally, cultures, states or religious communities normally have specific rites or procedures how to marry, which most people are glad to obey.

### 3. Beyond Explicitly Established Institutions

#### 3.1. Deviant Examples

Having now discussed explicitly established institutions and their typical properties, I will now go on to review a number of deviant (or seemingly deviant) examples from Searle, where particular institutions are not explicitly established. This should both clarify and further develop my thesis.

First, imagine Searle's example of a particular dollar bill that has fallen between the cracks in the printing plant [15]. Nobody ever declares this dollar bill a dollar bill. As a particular, it will indeed never be the object of any thought or speech act. Nevertheless, Searle tells us, it can have the institutional status of a dollar bill because there is a status ascription to the type it belongs to:<sup>2</sup> All instances of the type "green rectangular paper of a specified form, printed following a request from the Federal Reserve Bank" will have the status of being a dollar bill. The rule regarding this type of paper needs, of course, to be explicitly established by law or decree. Dollar bills, thus, are explicitly established institutions, only that they are established on the level of types, not of particular tokens. This means that it is sufficient to be the instance of an institutional type that has been explicitly established in order to be an explicitly established institution.

A clear case without an establishment is an episode of inflation [16, p. 22] with reference to [1]). Searle calls such 'macro institutional facts' 'systematic fallouts': Whether there is inflation or not does not hinge at all on someone declaring something an episode of inflation. Nor does it require anyone to know that there is inflation. Inflation, for sure, requires a dynamic development of the exchange value of money. That money has a certain face value is an institutional fact explicitly established by law. That you can exchange it for a certain amount of bread is also an explicitly established institutional fact, though this fact is normally established not by law but by the bakeries and grocers. While the face value remains stable, the prices for bread may change. Inflation, one may say, is the average development of prices in a certain regional market. It does not need to be explicitly established, but supervenes on the explicit price decisions in this market.

Cocktail parties are another interesting example discussed by Searle [15, p. 53]. Nobody needs to explicitly declare a certain party a cocktail party. But, or so Searle

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<sup>2</sup> The type-token distinction used by Searle is close to the distinction between a universal and its instances, with the difference that types can be delineated quite arbitrarily and can also comprise arbitrarily defined classes (as the example shows).

suggests, somebody has at least to think that it is a cocktail party. Close to cocktail parties are, according to Searle, friendships. In both cases, you may think of such a mental representation of the party as a cocktail party, or of that acquaintance as a friend.

Finally, there is the case of language, to which I turn in the following section.

### *3.2. The Presupposition of Language*

The examples discussed so far show that there must be more to the institutional world than explicitly established institutions. Not only are there a lot of institutions which are, as we have seen, not explicitly established. In establishing institutions, there is also always the need to rely on language, which can, in its beginnings, not have been created by the use of language. At the most basic level, language cannot be introduced by an act of institution – or, as Searle says, by declaration – because this would already presuppose language [16].

Once we have language, we can use it to establish other institutions. We can also use it to introduce new linguistic elements. For example, we can introduce new words by means of an explicit definition. This happens very often in mathematics, science or law. But it cannot be the first beginning of language – simply because it already presupposes language. This argument bears a strong structural similarity to the regress problem for definitions. Definitions, or so it is sometimes said, are not possible because they either are circular, yield an infinite regress, or use undefined terms. Along this line we can build a regress argument for the ultimately informal basis of social entities: Formal institutions presuppose language as a means for their establishment. Ultimately, language itself cannot be established by means of language. Hence, at its bottom, language cannot be a formal institution.

Whitney has put forward another argument against the creation of language by means of an explicit establishment [20, p. 444]. We can, of course, imagine that someone constructs a whole new language – like Esperanto or Volapük, for example. But what happens in the construction of such an artificial language is like what happens when we today tell an engineer to ‘invent’, say, a steam engine or a car. Today, an engineer already knows what a car is and how it functions, and she may exchange some parts and improve on others. Before the invention of the car, however, it would not make any sense to encourage anyone to ‘invent a car’, because nobody knew what that is. The same applies to language. Before there was language, nobody knew what language is about, how it could function and for what purposes it might be used. Thus, it is not possible to construct a language if there is not already a language that could serve as its paradigm.

### *3.3. Friendship as a Paradigmatic Informal Institution*

We have, thus, to acknowledge the existence of institutions that are not explicitly established. One might be tempted to defend the unity of the social domain by dismissing the class of explicitly established institutions. This, however, is not possible either. We cannot simply abandon explicitly established institutions, as institutions without an explicit establishment have quite different properties [10]. Marriages, I said, are paradigmatic explicitly established institutions. They are crisp entities in several respects: temporally, intensionally and extensionally. Marriages have a crisp beginning and a crisp end (by death or divorce). There is a clear meaning connected to the term “married”, and couples either are married or they are not. Part of the reason for this is

that there is a clear procedure for marriage, which comes along with codified rights and duties.

Friendship is different in all these respects. Friendship is a paradigm for an institution that is not explicitly established. Friendship is vague – temporally, intensionally and extensionally. Normally we cannot point to the very day and hour when we became friends with each other. In addition, there are quite different types of friendship, which are often not distinguished terminologically – like business friends, sport friends, intimate friends, and so on. Moreover, friendship seems to come in degrees, and sometimes it might be difficult to tell whether someone is a distant friend or a good acquaintance only. Finally, friendship does not come along with codified rights and duties.

We have, thus, to distinguish two levels or aspects of institutions. First, there are explicitly established institutions – sometimes called ‘formal institutions’. Second, there are those institutions that are not explicitly institutionalized – sometimes called ‘informal institutions’ in the social sciences [12].

Moreover, it is not possible to turn at will institutions without an explicit establishment, like friendship, into institutions that are explicitly established. Just imagine what would happen if states introduce the status of ‘officially registered friendship’. Just as now in the case of marriage we would go to the town hall and register as friends, and have the respective rights and duties conferred on us. However, as in the case of sham marriages, we can imagine people to register as friends with arbitrary people without really being befriended with them, in order to take advantage of the codified benefits connected with this institutional status. Explicit establishment of an institutional status, that is, comes along with the possibility of abuse. (One might wonder how close ‘friends’ in social media come to this thought experiment.) There are, thus, informal institutions that are essentially informal. This implies that at least in some cases it is not an accidental feature whether an institution has been established explicitly or not. An upper-level of the social domain has to take this into account.

**Table 1:** Suggested class hierarchy for an upper-domain ontology for the social domain

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- *Social entity*
    - *Institution*
      - *Formal institution*
        - *Token-related formal institution*
        - *Type-related formal institution*
      - *Informal institution*
        - *Token-related informal institution*
        - *Type-related informal institution*
    - *Emergent social entity*
  - *Institutional entity*
    - *Act of establishment*
      - *Token-related act of establishment*
      - *Type-related act of establishment*
    - *Bearer of institutional status*

#### 4. Implications for Formal Ontology

In order to represent institutions within formal ontologies, we need to pay attention to the distinctions laid out during the discussion so far. First, we have seen that there are several types of social entities: explicitly established social entities (*aka* formal institutions), institutions that are not explicitly established (informal institutions), social entities that are not themselves institutions, but somehow related to them, either as acts of establishments, or as social entities emerging from institutions or institutional changes. Thus, we can establish the following provisional class hierarchy detailed in Table 1.

The next task then is to characterise the respective classes axiomatically. First, social entities can be defined as those entities that are ontologically dependent on some social act. The class *Social act* is already contained in the Information Artefact Ontology (IAO), defined as a subclass of the class *Planned process* from the Ontology of Biomedical Investigations (OBI). Inspired by Reinach [13], it is defined as a *Planned process* that is “carried out by a conscious being or an aggregate of conscious beings, and is spontaneous, directed towards another

conscious being or another aggregate of conscious beings, and that needs to be perceived” (IAO\_0021003):

*Social entity* equivalentTo *Social act*  
or **specifically dependent on** some *Social act*  
or **generally dependent on** some *Social act*)

We can characterise formal institutions as those institutions that arise from explicit acts of establishment:

*Formal institution* equivalentTo  
(*Institution* and **specified outcome of** some *Act of establishment*)

*Act of establishment* subclassOf (*Planned process*  
and **has part** some (*Speech act* or *Document act*)  
and **has specified outcome** some *Formal institution*)

As I have argued in Section 3.1, acts of establishments can impose a status on particulars or on certain types of particulars. Accordingly, we can distinguish two subclasses. Token-related acts of establishment are those which refer to one or several particulars; as these particulars can be from virtually any ontological category, the top-most class *Entity* is used in defining them. In contrast, type-related acts refer to types. While this cannot be expressed in OWL, they can nevertheless be characterised as acts of establishments that are not token-related:

*Token-related act of establishment* equivalentTo (*Act of establishment*  
and **is about** some *Entity*)

*Type-related formal institution* subclassOf (*Act of establishment*  
and not *Token-related act of establishment*)



Similarly, type- and token-related formal institutions are distinguished by virtue of their respective act of establishment: A formal institution is token-related (or type-related, respectively) if and only if its act of establishment is. Hence:

*Token-related formal institution* equivalentTo (*Institution*  
and **specified outcome of** some *Token-related act of establishment*)

*Type-related formal institution* equivalentTo (*Institution*  
and **specified outcome of** some *Type-related act of establishment*)

Second, we can characterise informal institutions. I argue elsewhere that, in contrast to formal institutions, informal institutions are grounded in certain socially acquired dispositions to act in certain ways [12]. Although there are some patterns to model dispositions [3, 14], it is not obvious how to capture this in a formal characterisation. Therefore, I suggest defining them *via negativa* as those institutions that are no outcomes of explicit acts of establishments:

*Informal institution* equivalentTo  
*Institution* and not (**specified outcome of** some **Act of establishment**)

Finally, we need to classify those entities that relate to institutions but are not themselves institutions. For lack of a better term, I will call these ‘emergent social entities’. The class *Emergent social entity* can be defined in a negative way as those social entities that are neither institutions nor social acts (which include those social acts that are acts of establishment of formal institutions). The class *Institutional entity* is intended to comprise all those entities that either are institutions or are related to institutions, e.g., by being the bearer of the institutional status in question:

*Emergent social entity* subclassOf (*Social entity*  
and not *Institution*  
and not *Social act*)

*Status bearer* subclassOf *Institutional entity*

*Status bearer* equivalentTo **bearer of** some *Institution*

All instances of *Emergent Social Entity* are social entities; the instances of *Institutional entity*, or of *Status bearer*, however, may or may not be social entities. E.g., a bearer of the institutional status of citizenship is a human being, and thus a natural and not a social entity. Note that *Act of Establishment* is a subclass of *Institutional entity* because of the last clause in this characterisation – they have institutions as their outcome. It would be tempting to say that *Institutional entity* comprises those entities that are specifically dependent on an institution, while Emergent Social Entity is explicitly characterised as those social entities that are generically dependent on some institution. Indeed, participation, inherence and outcome are relations of specific dependence. However, the characterisation does not feature inherence, but its inverse, **bearer of**, which is a relation of generic dependence: A person, say, can be bearer of some political office at any time, though this does not need to be the same political office at all times.

The suggestions given here are first attempts at formal characterisations. The specific way of generic dependence should be spelt out more explicitly. It should also be noted that the classification presented here is orthogonal to existing top-level ontologies like the Basic Formal Ontology (BFO) [2]. E.g., there can be institutions that are material objects, places or times [12, Ch. 9]. Following the rule that a social  $F$  is an  $F$  [11], there are, thus, institutions in the BFO classes *Material object*, *Spatial region*, and *Temporal region*.

## 5. Conclusion

In this paper, I contrasted explicitly established social entities, sometimes also called ‘formal institutions’, from other varieties of social entities. It turned out that we need to distinguish a wide variety of social entities that do not have an explicit establishment. Formal institutions are ‘made’, to use Sumner’s term [19]: They are explicitly instituted, often (but not always) codified, and they come along with direct deontic powers. In contrast, informal institutions are ‘grown’ [19]: They are never codified, come along with derived deontic powers only.

I suggested that at the upper level of an ontology of the social world, several distinct categories are needed: Next to formal and informal institutions, there need to be several categories for social entities that are related to institutions, but are no institutions themselves. I suggested the categories of *Institutional entity* and *Emergent social entity* for these entities, for example, acts of establishments or episodes of inflation. Moreover, acts of establishments, as well as formal and informal institutions can relate to types or to tokens.

These classes can help to classify the examples discussed in Section 3: A particular marriage is, of course, a token-related formal institution; the respective marriage ceremony is a token-related act of establishment. A particular friendship is, in contrast, a token-related informal institution, while the cultural rules how to deal with your friends in general are type-related informal institutions. The persons that are spouses, friends, or presidents, are bearers of an institutional status, and thus institutional entities. Inflation, finally, is an emergent social entity.

The suggestion presented here cannot be more than a first suggestion. It remains for future work to characterise these categories more precisely, to check their completeness, and to connect them more thoroughly with a general top-level ontology like the Basic Formal Ontology. It is also very much desirable to connect this fragment to already existing suggestion for the treatment of social entities in formal ontologies. Future work should also test their usefulness in organising classes from the social domain in a consistent and coherent way.

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