
ANDREA ADDIS
Infora S.c.a.r.l.
andrea.addis@gmail.com

OLIMPIA G. LODDO
University of Cagliari
olimpia.loddo@gmail.com

MASSIMILANO SABA
University of Cagliari
massimiliano.saba@unica.it

SOCIAL ACTS IN DIGITAL ENVIRONMENTS¹

abstract

Adolf Reinach's theory of social acts and Czesław Znamierowski theory of the environment can show a new perspective of analysis in the fields of computer science and digital communication. This paper will begin analysing the performance of social acts in two categories of digital environments: (i) fictional digital environment and (ii) real digital environment. The analysis will be supported by examples from the history of computer science. In both kinds of digital environments, organigrams play a significant role and depend on the users' digital power to perform a real or fictional social act. Finally, the paper will analyse one of the possible roles that AI plays in performing social acts in digital environments. It will show how AI could affect the perception of social acts.

keywords

Adolf Reinach, Czesław Znamierowski, social act, digital environments

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*The grammar of the word “knows” is evidently
closely related to that of “can”, “is able to”.
But also closely related to that of “understands”.
(‘Mastery’ of a technique)
(Wittgenstein, 1958, § 150).*

- 1. Introduction** In this paper, the authors will try to apply Adolf Reinach’s theory of social acts and its ideal development, Czesław Znamierowski theory of the environment, to the field of informatics and digital communication. The first paragraph gives a short account of the two approaches. In the second paragraph, the authors distinguish and analyze two categories of digital environments, (i) fictional digital environment and (ii) real digital environment. The research will take into account examples from the history of computer science. The third paragraph points out that, in a digital environment, there can be organigrams. These organigrams depend on the user’s power to perform different forms of social acts. More specifically, the hierarchical status concerns both the extension and the intention of the social act: in fact, the hierarchical status of the user could be affected both by the typology of the performable social acts (commercials, invitations to treat, posts) and the (number and the kind of) potential addressees that are reachable in the digital environment. The fourth paragraph focuses on the role of AI in the performance of social acts in digital environments and how could AI affect their perception.
- Reinach’s and Znamierowski’s historical-cultural context was very different from the one in which digital environments achieved social significance. However, both Reinach and Znamierowski provide a useful conceptual apparatus that can clarify two aspects of the social dynamics: the structure of the social acts and the relevance of the environment for their performance. These aspects are particularly relevant in a digital environment since the user can perform a specific act if the digital environment embodies its structure (type). More precisely, the conceptual apparatus proposed by Reinach and Znamierowski can clarify both how the users perform social acts and the developers’ way of acting (how developers can create new forms of acts performable in a digital environment, and how the users can perform those acts).
- One can argue that other more recent philosophical theories could better clarify the digital environments’ social dynamics. One of these philosophical theories could be, for instance, the theory of speech acts, developed more recently, mainly in the framework of analytic

philosophy. Contemporary authors, who were more aware of the dynamics that characterise digital environments since they operate in a more technologically advanced context supported the theory of speech acts. However, Reinach's phenomenological approach allows us to build a conception of social acts under which the distinction between the social act structure and its manifestation is more explicit.

Interestingly, Reinach (1911) clearly distinguishes three moments of the social act: (i) the internal experience, that is, the presupposition of the social act; (ii) the social act that is rooted in the inner experience; (iii) the external form of expression of the social act. A question (that is an example of social act) presupposes an internal experience (a doubt) and is manifestable, for example, with a verbal expression.

Moreover, Znamerowski develops the analysis of the manifestation of the social act focusing on the environment where the expression of the act takes place. According to Znamierowski, on the one hand, the environment makes possible the social act and, on the other hand, affects the form of its manifestation.

The relevance of the environment in the form of manifestation of social acts emerges in computer sciences. Curiously, computer scientists distinguish mark-up language from programming languages; both languages are fundamental for creating the same digital environment, where, as we will see, it is possible the performance of social acts. The use of these two different languages can often mirror the distinction between the social act and the form of manifestation. Presentational markup languages (such as HTML) often are used for defining how to present (make visible) the structured data. For instance, through HTML, the developer can create a button that the user can click to accept a specific proposal. Acceptance and proposal are typical examples of social acts and, in this case, to click on the button 'accept' counts as the manifestation of a social act. Indeed, through the expression of the social act, the social act becomes visible to the addressee.

In 1911, during a lecture, the young phenomenologist Adolf Reinach first enunciated his social acts theory. He further analysed the concept of "social act" in his most famous book, *The A Priori Foundations of the Civil Law* (1913).

According to Reinach, social acts do not rest on themselves but need another subject to be performed. Unlike other acts (such as deciding or walking), social acts are not individually performable. These acts are necessarily addressed to another person, and their eidetic aim is to be perceived (*vernommen*) by that person. The main characteristic of social acts is the necessity to be perceived (*Vernehmungsbedürftigkeit*). Promises, commands, communications, acceptances are all examples of social acts.

Since social acts' aim is their perception by an addressee, when they are performed between human beings (who do not possess telepathic powers), the agent shall manifest them to the addressee. In this sense, Reinach talks about the social act's function of manifestation (*Kundgabefunktion*).¹ Thanks to its manifestation, the social act projects itself into the external environment. From a merely material point of view (at the pre-semiotic level. See Lorini 2008, p. 116), a social act occurs in the external physical environment. In this respect, the social act's manifestation is a modification of the environment: the agent modifies the environment to make the perception of the act by the recipient possible. The Polish philosopher of Law, Czesław Znamierowski, proposes a reinterpretation of the concept of social act highlighting the role of the environment (*środowisko*) in its performance and the role of a specific kind of norms "construction norms" (*norma konstrukcyjna*). To explain this peculiar category of

2. The Social Act and the Environment

1 See Loddo 2020.

norms, Znamierowski (1924) hypothesizes that two children in a play make an agreement: if one of them raises a little flag, the other should respond by raising a little flag himself. The connection between the two raisings of the flag is instituted by a norm that gave them a specific significance. In virtue of this constructed connection, the first physical movement becomes a greeting, while the other becomes a response to that greeting. Znamierowski calls “construction norms” the norms which bestow new conventional meaning on objects and acts.

We can find a similar schema in digital environments. When a new type of action is embodied in a digital environment, the developer attributes an institutional meaning to a phenomenon that in itself it is not institutional, and this operation reflects the logical structure of constructive rules. Indeed, some constructive rules can pre-exist the construction of the virtual environment. The developer can import in the digital environment institutional concepts from the non-digital social world. For instance, the constructive rules that create and regulate bitcoin as a virtual institutional fact presuppose the constitutive rules that build a non-virtual institutional fact, such as money. Some other constructive rules can be developed by the creator of the virtual environment, for instance, when the developer elaborates a hierarchy of users for an online platform. The developer incorporates in the digital environment both the constitutive rules from non-digital social reality and the ones created to define the different roles of the users that will operate in the digital environment. These rules are a condition of possibility for the performance of a social act by the user.

Starting from the analysis of the social act proposed by Reinach, Znamierowski identified three fundamental moments in the social act: (i) the experience, intentional and active, (ii) the change of the environment, necessary in the realization of the intention, (iii) the change in the social structure. Only the first moment, according to Znamierowski, was analysed by Reinach. Znamierowski thinks that a change in the external (physical) environment plays a significant role in fulfilling the social act. Any change in social reality is a consequence of the recipient’s perception of the social act (Lorini 2008, pp. 23-41). The environment is the *medium* that makes possible social interaction between humans. There is always an impersonal “environment” between agent and recipient (Znamierowski 1921, p. 13). The modification of the physical environment is necessary for the performance of social acts to the extent that conscious changes in one person’s mind cannot directly cause psychic changes in another person’s mind.

Moreover, given different types of social acts (such as communication, promise, offer), the environment determines the diversification of the acts’ manifestation.

Besides, the environment “makes long-term activity possible” (Znamierowski 1921, pp. 13-15). Changes in the environment (produced by an agent who intends to manifest a social act) do not necessarily have to reach the recipient immediately. It is sufficient that they produce a structural change in the environment and, even after some time, this change may become the cause of the psychic processes that will lead the recipient to the perception of the social act. For example, a note, addressed to a friend (that is not in the room) and left on his table, represents a lasting change in the environment that will allow us to postpone the moment of perception.

To sum it up, the environment is a condition for the existence of social relationships [*stosunki społeczne*] (Lorini and Żelaniec 2016).

3. Digital Environments

Digital communication systems and virtual platforms are examples of how the environment can play a role in social acts’ performance. As mentioned before, the architecture of the digital environment embodies rules and institutional concepts. Therefore, it could be a condition of possibility for the performance of a set of social acts. These environments are fundamental in our daily life, and no company can survive without undergoing a digital transformation (Weber 2020; Pal 2019).

We can observe two macro-categories of digital environments: *fictional* digital environments and *real* digital environments.

Fictional digital environments are structured digital environments designed for carrying out fictitious social acts. These environments are typical of the videogame world (the virtual setting *par excellence*). They not only transposes real settings with the possibility of meeting, socializing, interacting and communicating (indeed useful even to promote these activities in daily life (Peng et al. 2012)), but they add additional powers and tools as, e.g., the possibility of teleportation, flying, planning to build with means and materials unavailable in reality, pushing the potential of the users to the extreme. For this reason, scholars analysed their impact on real social acts (Greitemeyer and Mügge 2014). However, these environments do not coincide entirely with the videogame field. Sites that allow playing board games (such as online chess) are excluded. The competitive dimension of the game, which is a real dimension, must be kept distinct from the role-playing game, which involves introducing the user into a fictitious social reality. The two dimensions can be present in the same game, but they do not coincide.

Real digital environments are digital environments that allow the fulfilment of real social acts. These environments include both the world of multimedia platforms and digital tools aimed at conducting video conferences. The world of multimedia platforms, which is generally more constricting and binding in terms of relationships, however, is hugely more pervasive: online newspapers, service sites, e-commerce, but above all social networks, can host a massive number of users (hundreds of millions and, sometimes, billions).

Video conferencing tools must also be mentioned, having undergone a vast diffusion and popularity during the lockdown due to the coronavirus outbreak.

For decades, these worlds have been considered parallel to conventional reality (Damer 1998). Their future implications are being more and more investigated (Mazuryk and Gervautz 2012). Reasoning on the possibility not only that they will eventually become indistinguishable on a sensorial level (Tallinn 2012), but dusting off philosophical questions raised already by Plato and revisited with theories like *the simulation hypothesis* (Bostrom 2003), which advocates the non-excludability of our existence in an already fictitious reality.

Before the advent of social networks, video games were the most common digital environment. Since then, the term '*creator*' indicates the person who created the game, while the players are the *actors* because they play roles planned by the *creator-director*, who puts several limits to the actors' free will. The actors cannot perform actions that are not foreseen by their hierarchical role built by the platform's creator.

Moreover, the creator can encourage certain behaviours awarding the actors, therefore forcing them to follow the rules and influencing them through behavioural psychology paradigms such as positive reinforcement.

Some of the most common examples of fictional digital environments naturally involve the videogame field. For example, the online virtual world *Second Life*, developed by *Linden Lab* around 2003, has experienced a rapid expansion reaching approximately one million regular users in a few years.² The *residents* live the virtual reality through social and economic relationships also dictated by the trade of goods and lands and institutional activities, which is still a pioneering feature.

Sandbox Video Games as *Minecraft* are another example.

Minecraft was officially released in 2011 and, since then, has not seen a significant decline in playing, becoming a best seller with 200 million copies sold on all gaming platforms and

3.0. Fictional Digital Environment vs Real Digital Environment

3.1. Fictional Digital Environment

2 Linden Lab 2014.

126 million monthly active users (Warren 2020). It is playable in a direct multiplayer fashion, for example, on LAN (local area networks). Still, the worlds that host entire communities of players are possible thanks to the *Minecraft Servers*³. The servers allow players to interact, communicate, sometimes fight (through the Player versus player combat, PvP (Bartle 2003)), plan the use of resources and actions as a real community, with all the advantages of the virtual setting. The operators cover the vital role of guaranteeing and maintaining order, the playability of the worlds, avoid or contain the actions of *cyber vandals* or *griefers*⁴, often drawing up intricate lines of conduct that must be learned and followed by the players before being allowed to join the community (Garrelts 2014), to not having some of their social skills (e.g., communication, teleportation, interaction with the world's objects) blocked, or, for more serious matters, their temporary or permanent exclusion (banning).

To get an idea of these worlds' size, one of the most populous servers, *Hypixel*, has been visited by about 14 million *unique players*⁵ (Fogel 2018).

As the last example, the rapid expansion of the latest edition of the *Animal Crossing* video game series, belonging to the class of *social simulation video games*, developed and published by Nintendo. In this case, the players are anthropomorphic creatures that can perform various activities that include social interactions and non-social acts (such as fishing, building, carrying out archaeological excavations).

Since its release, the game, and its spin-offs, sold tens of millions of copies, the only *New Horizon* has sold almost 14 million copies⁶.

In all these fictional digital environments, even within a single game, hierarchical organizational structures, spontaneously defined during the game, emerge. These structures are often strongly influenced by leading figures who, by charisma or ability, take over the team's management.

3.2. Real Digital Environment

Some authors stress that the interaction in a digital environment is as real as face-to-face interaction. The mental reactions to a non-digital social event, and digital social event can be identical (Chayko 2018, p. 55). Despite that digital environments often find their expression in ludic environments, the "virtual world" does not necessarily consist of fictitious transpositions of real environments. Indeed, digital multimedia environments can represent the substratum of real institutional facts (Mathiason 2009). A digital platform could allow interactions between different users who intend to perform real social acts (purchases, questions, requests, communications). Within the platform, users will operate within different roles or "privileges" that enable them to perform a subset of social acts. Some users will need, e.g., to acquire the platform administrator role to complete administrative and organizational tasks. Furthermore, the developer will set up some constraints outlining the platform architecture based on the roles and features being made available to the users (Scuderi 2015). Creating groups, pages, specific issues, and managing their availability to other users are examples of administrative-social acts that can be precluded to low privileged users.

While selecting the pool of users to whom attribute social acts, the programmer will be able to create a hierarchy of privileges inside the platform. In order to do that, s/he will have to model the platform's structure by changing the virtual environment in which social acts are performable. Within this paradigm, the social platform will inherit all the characteristics that

3 Minecraft Multiplayer Server - <https://www.minecraft.net/en-us/download/server/>.

4 Griefing is an act explicitly intended to irritate a person or a community in a virtual world through vandalism, destruction, theft of resources, or in the most subtle cases of using social hacking.

5 One player can play with different avatars.

6 Minotti 2020.

Znamierowski attributes to the physical environment for carrying out social acts: it transmits the activity of one person to another, models and diversifies its activities, making them irreducible to mere manifestations of the intent of the individual agent, thus allowing long-term activity, keeping track of the acts performed within it (Krämer and Conrad 2017). Digital platforms are now innumerable. They are differently classifiable, e.g., by type of service (social, e-commerce, institutional) or by the interaction style (unidirectional, collective). Among the real digital environments, we can list the cloud-based peer-to-peer software platforms used for teleconferencing, telecommunications, distance education, and social relationships.

In the near future, the possibility of consolidating these features to virtual environments through Virtual Reality (VR) and Augmented Reality (AR) technologies (Schroeder 1996), for example, VRChat (over 50,000 communities) offers an endless collection of social VR experiences by giving the power of creation to the users.

A hierarchy of roles and competencies characterizes both fictional and real digital environments. A set of commonly accepted rules make social interaction in the digital environment accessible and not frustrating.

Some of these rules create institutional figures that can perform administrative acts and sanction users for creating a disturbance in the digital environment (Bakioglu 2009) (ultimately to prevent cybercrimes).

Both fictional and real digital environments are therefore generally populated (but not exclusively) by these types of figures: (i) the *administrators* who are generally responsible for the management and configuration of the available resources, either because they are the owners or because they have acquired “jurisdiction” on the platform, (ii) the *operators* who generally assist the administrators in the operations of placing the resources on-site or moderating them through various forms of control made available by the same platform, and obviously (iii) the *users*, the agents that actively participate in community activities (e.g. the players of a video game, the readers of a blog or newspaper, the participants in a videoconference) (Bertino and Matei 2014).

4. Digital Organigrams

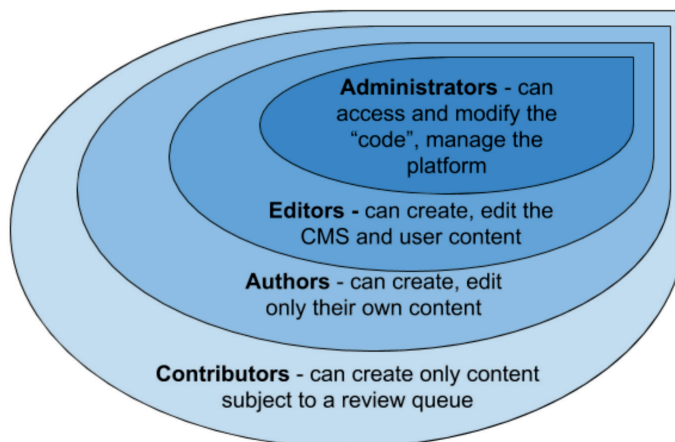


Figure 1.

The organization chart of the most popular Content Management System (CMS), WordPress.

Above the platform users, there are operative and managerial roles. In WordPress, roles overlap, inheriting or restricting the capabilities.

These organizational hierarchies develop in three steps: (i) in *the design phase*, in which, following the analysis of the requirements of the platform, are established roles and operating procedures of the administrative sector; (ii) *during the platform life*, where inadequacies or physiological imperfections of the preliminarily established hierarchies emerge, and therefore the need to modify the availability of features or roles and management modes according to the new experiences of use; (iii) *following the spontaneous emergence of intrinsic hierarchies*, dictated by the physiological, communicative, social and attitudinal characteristics of the actors, which stabilize without particular structural impositions on the platform.

5. Other-Direction and Perceptibility of the Social Act: the Impact of an AI

Social acts, according to Reinach, are “other-directed” (*fremdpersonal*) acts that need to be perceived (*vernehmungsbedürftig*) by an addressee.

AI is an instrument that could help the addressee’s perception. For instance, when the AI makes more visible certain information than others in accordance with the addressee profile, it is facilitating the social act of communication.

AI can affect the performance of social acts under these two different profiles; in particular, a well-structured AI could:

- i. Determine the recipient of a particular social act, or automatically direct a social act towards the most suitable recipients for its acquisition
- ii. facilitate the perception of a social act by being able to discern a speech with imperative language by one with a more proactive or descriptive language, e.g., thanks, to the identification of a different vocabulary.

5.1. The Impact of AI in Determining the Recipients of Social Acts

In an environment with defined hierarchies, AI plays a crucial role. AI “delivers” contents and resources through planning, labeling, categorizing. These operations have direct consequences on the perception of social acts and their direction between the nodes of the hierarchy or of the organizational structure of the social group that operates in a digital environment. The benefits of a supportive approach are obvious. Without a search engine, even if trivial, it would be impossible to allow users of a platform to select the topics of their interest, thus directing the social act (in this case of the communication (*Mitteilung*)) in a precise manner. This possibility would allow not only a new paradigm in the manifestation of social acts but also their classification.

5.2. AI and the Perception of Social Acts

Perception (*Vernehmung*) in the Reinachian lexicon is not reducible to the merely sensory sphere but implies a full understanding of the social meaning of that act. The recipient of the social act must understand the nature of the social act addressed to him (a promise, a command, a communication).

Social dynamics require extremely heterogeneous skills from a communicative, relational, cognitive point of view and are still too vast and complex for AI to simply transpose a digital representation of it (McCarthy 2007).

However, AI is proving itself capable of managing increasingly superhuman abilities, increasingly complex tasks linked to action and strategies in controlled contexts, which sometimes even require great abstraction skills (Baum, Goertzel, Goertzel 2011).

In particular, nowadays, artificial intelligence is focused on narrow tasks (Artificial Narrow Intelligence, ANI)⁷. According to Searle, ANI “would be useful for testing hypotheses about minds, but would not actually be minds” (Searle 1980). On the contrary, strong AI is defined as

⁷ Io9.com mentions narrow AI. See Dvorsky 2014.

a machine with the ability to apply intelligence to any problem, rather than just one specific problem, considered to require consciousness, sentience, and mind.

AI is a valid and essential tool in the field of the categorization of texts and the understanding of natural language. This is possible through algorithms that in general, perform the following operations:

- i. translation of documents into entities that can be represented within a multidimensional vector space. This operation is possible by simplifying the document representation in order to reduce the computational burden for their treatment through a preprocessing phase (Uysal and Gunal 2014) thus, e.g., eliminating poorly informative terms, speech particles, prepositions and pronouns (stop wording) and eliminating endings and declination, reducing the terms to their root (stemming) (Riloff 2014).
- ii. building a representation of a set of documents belonging to the same class, then reducing the categories of interest to models of meta documents (Yang and Pedersen 1997).
- iii. classification of new incoming documents in one or more of the selected/trained categories, possibly with confidence scores (Sebastiani 2002).

Generally, these algorithms are based on statistical analysis (Yang 1999) of the occurrence characteristics of terms within documents and classes. However, these techniques are also expanded in a semantic sense by using tools and networks that relate lemmas with the abstract concept to which they refer (Miller, Beckwith, Fellbaum, Gross and Miller 1991), or with additional algorithms that automatically process these relationships. These *semantic engines*, more sophisticated (Cai and Hofmann 2003), are used by the largest stakeholders in the digital world. The most advanced search engines can interpret concepts expressed with syntactically unrelated and sometimes semantically ambiguous terms, decoupling the search tasks both from the very presence of the words searched and subsequently even extrapolating the concepts hidden in the search query, not only by related terms (for example, “*movie about a kid being left at home*”).

With these assumptions, the analysis in determining the form and quality of a social act seems to be plausible and will be investigated in future research.

From the discussion above, it is clear that, in today’s society, social acts must necessarily deal with digital environments.

The relationship between the social act and the virtual environment is not one-sided but bi-univocal. The environment contributes to defining the social act that takes place in it and, symmetrically the social acts (fictitious or real) contribute to defining the nature of the digital environment where they are typically performed.

Moreover, the developer often intervenes by registering *ex-post* new rules in the digital environment to regulate acts that have become customary.

The hierarchical division of users is fundamental to define the role of social acts in virtual environments. Organization charts tend to be a common trait shared more or less explicitly in different digital environments. The presence of a hierarchical structure has a mainly technical-functional purpose, granting controlled interaction between users who share the same interests.

These hierarchies impose specific possibilities of action to the users based on privileges and flexibility of the digital environment, which differs from the traditional social environment (Letaifa, Edvardsson and Tronvoll 2016).

Digital environments are channels of online social interaction that could contribute to identity-based oppression and hierarchy. Compared to traditional social environments, this

6. Conclusions

conditioning is more easily found (thanks to the user experience and affordance techniques), more restrictive (imposed by structural constraints, not by violable rules) (Lorini and Moroni 2020), and almost immediately modifiable by the platform operator (given the very nature of the virtual environments). These structural constraints can be understood as the product of the “onticisation” of originary deontic entities: in other words, rules that in other conditions could be violable (and possibly sanctioned) are transformed into patterns of action that the user cannot bypass, except by hacking the system or changing its structure.

It is not difficult to imagine that political control could take over the technical-functional purpose. This aim cannot be reduced to the set of rules that determine the design of the digital architecture; it has a meta-institutional nature (Lorini 2014).

In other words, to understand the nature of the social acts and that of the digital environment within which they take place, it is necessary to put oneself in the perspective of the person who *designs* the system of rules in terms of a game, an instrument of social interaction or an instrument of social control.

In this sense, the distinction proposed in this essay between fictitious digital environment, real digital environment and extra-digital social reality represents a theoretical distinction that does not preclude the transformation of an originally fictitious digital environment into a real digital environment capable of producing consequences in the extra-digital reality.

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