

INTELLIGENT ELECTRONIC INTER-SYSTEMIC CONTRACTING - ISSUES ON CONSENT AND CONTRACT FORMATION

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Abstract: Electronic contracting as an object of legal studies is getting more and more complex. Computers are currently being used not only as a way of searching and processing information, but also as communication tools, as automatic operators and already as a way of developing and accessing new forms of intelligent behaviour through the use of intelligent devices. New ways of electronic contracting have appeared each one with different specifications and ways of operating. The Brazilian legal doctrine has established a way of classifying electronic contracts according to the specific technical way of accomplishing each type of electronic communicating and contracting. For each category, there must be a different analysis relating to the main issue of the formation of contracts – mainly concerning the declaration of will, the expression of intent, the question of knowing whether a contract should be considered to be formed or completed. This issue is particularly problematic as far as Intelligent Electronic Inter-systemic contracting is concerned. The notions of digital signature and Interchange-Agreements may not be sufficient to grant validity to contracts formed not just through the machines, but indeed by the machines. So, it must be analyzed at least two main possibilities of considering the issue of the expression of consent in inter-systemic intelligent transactions: the possibility of considering the electronic devices as mere machines or tools, or the most daring possibility of considering the electronic devices as “legal persons”.

1 INTRODUCTION

Electronic contracting as an object of legal studies is getting more and more complex. Computers are currently being used not only as a way of searching and processing information, but also as communication tools, as automatic operators and already as a way of developing and accessing new forms of autonomous intelligent behaviour through the use of complex intelligent devices. “Computer systems are now emerging that can operate not just automatically but autonomously”¹ All this, featuring new ways of electronic contracting, each one with its different specifications and ways of operating, forcing us to think about the legal effects concerning each new way of contracting in order to adapt what

we might have considered once as well established legal principles to the new forms of declaring the contractual will in electronic environments. One of the main issues will certainly be the one related to the formation of contracts – mainly concerning the above mentioned declaration of will, and consequently the question of knowing whether a contract should be considered to be formed or completed. All these questions could be analysed using a classification of electronic ways of contracting, according to the specific way each one operates, in order to get, whenever possible, similar answers to similar situations.

2 ELECTRONIC CONTRACTS CLASSIFICATION

The Brazilian legal doctrine has established a way of classifying electronic contracts, according to the specific technical way of accomplishing each type of electronic communicating and contracting², distinguishing the possibilities of the parties interacting **through** computer devices – computers as mere communication means –, interacting **with** computer devices and electronic systems, and also, as a third possibility, the one of the **parties contracting without interacting at all**, leaving all the work to informatics and electronic systems which, in an **automatic** – and sometimes maybe **autonomous** way – according to software developed and put in use on behalf of the contracting parties, produce a sort of “**machine only interaction**”. This leading to the following classification of electronic contracts:

1 – **Interpersonal electronic contracting**: Computer is used as a mere communication tool. It only transmits and receives the messages processed by the parties themselves. However, in this group we can consider two different types – “Simultaneous interpersonal electronic contracting”, allowing contract celebration in real time as if the parties were in the presence of each other (like the popular “Chat” but also “video-conference”), and “ Non simultaneous interpersonal contracting”, when the declarations of will usually are neither immediate nor consecutive³ (as in electronic mail, but also in mobile phone written messages).

2 – **Interactive electronic contracting**: within this group of electronic contracts we have not a direct and immediate communication between the parties. The interaction is effected between a party and an informatics system of a party that may not even be aware that the system had been activated, as it usually happens when someone contracts through a World Wide Web site⁴. This way of contracting could be defined as a “**semi-automatic interactive electronic contract**” as there is a natural person interacting with a computer system that will normally be previously programmed to automatically “declare” the will of its owner. Yet, also in this group we can already foresee a development of a slightly different way of interacting, through the communication of a natural person with an “intelligent device” capable of autonomous acting, of learning from experience, of modifying the instructions of its programs, of taking decisions, of actively participating “in the trading process”⁵, all this without any human intervention on one of the sides in the communication process. This kind of contracting could thus configure a new

sub-type of this group that we could now call “**electronic interactive contracting with intelligent system**”.

3 – **Inter-systemic electronic contracting**: this is the most peculiar way of electronic contracting. The party’s informatics systems not only are interconnected but automatically interact without any human intervention! Natural persons limit their intervention to the preparing of the computational systems for communicating and operating⁶. From that moment on, the machines will act on their own, concluding contracts on behalf of the parties. Again in this group, we can include two important contracting sub-groups: “**automatic inter-systemic electronic contracting**” as the informatics systems on their own execute in an automatic way the instructions incorporated in its respective programs by the programmers – it’s the already classical case of contracting through EDI-Electronic Data Interchange; and “**intelligent inter-systemic electronic contracting**”, for situations of contracting through the only intervention and interaction of autonomous informatics intelligent systems, capable of acting, learning, modifying instructions and taking decisions⁷.

3 CONTRACTUAL ISSUES

Of course, inter-systemic electronic contracting is in itself a quite challenging way of contracting, in the sense that traditional legal principles have some difficulty to deal with the fact of computers contracting on their own. Will these contracts still be legally valid? Can computers express and declare an intention of will? Who will be the subjects of the rights and duties arising from these contracts? Should a contract under these circumstances be considered perfectly celebrated and thus binding the parties? Which parties ?

Actually, to speak about contracts there must be two or more declarations of will, containing a consensual agreement, consisting of an offer and of an acceptance. The essential elements of a contract⁸ under Portuguese law are:

- the capacity (and legitimacy) of the contracting parties

- the declaration (of will) as consent given by the parties -- “The declaration of will, as a way of exteriorization of the will, internal element, is designed to bring to the other party’s knowledge the intention of reaching a certain juridical effect”⁹

- the object of the contract must be licit.

One of the main issues relating to the inter-systemic contracts concerns the obvious fact that computers totally lack legal personality – under

Portuguese law, as well as under most of the western legal systems, personality is an attribute of natural persons (art. 66 of Civil Code) and legal persons – corporate bodies (art. 157° of Civil Code). And only those who have personality can have capacity, which means the possibility of being subjects of rights or obligations (art. 67 Civil Code), and thus get contractually engaged. Anyway, according to Portuguese law (Civil Code art. 217°) a contract may be celebrated by any means¹⁰, so it is not difficult to accept the validity of electronically concluded contracts, at least in what concerns interpersonal electronic contracting and, to some extent, also for interactive electronic contracting, as in these contractual types we can still think that normally we will have a minimum degree of human involvement – either direct on both sides, or at least by means of interaction of a natural person with a predisposed, pre-programmed device presenting the will of the other party, just as it happens in “adherence contracts”.

But, as we have referred above, inter-systemic contracting can be distinguished from other means of contracting by the degree of human involvement in the process of contract formation. In every conventional means of contracting, through conventional letters, fax, telex (and even in not so conventional ones, as electronic mail), the human intervention always appears at the beginning of every transaction.¹¹ However, in inter-systemic contractual relations the whole process of communication and contracting is “between applications” or “between agents” without any human intervention¹². As Tom Allen and Robin Widdison put it¹³, it is even “likely that human traders will have no direct knowledge of, or contact with, many of their trading partners”, the process of contracting being totally generated, processed and controlled by the computers themselves: the “declarations” are created in a computer’s application (sender) and automatically sent, and received by another computer’s application (receiver). It is no longer essential for a person to sit in front of the screen to create or receive the message; the machine will do it by itself! However, it is clear that the computer can not be the source of contractual obligations – it obviously lacks legal capacity! –; it just operates, automatically, following the decisions taken by persons with capacity to determine the range of action and the legal effects of the operation. So, is there still a manifestation of an expression of will? – considering just the communication between applications, could lead us to the absurd of denying any legal value to such transactions, because contracts can only be concluded by human beings (even corporate bodies must be represented by human individuals).¹⁴ But

now (human) users may well no longer be aware of the number of transactions, the content of such transactions or the time (or place) when (or where) the contracts take effect. As Jean François-Lerouge refers: “contracts can thus be formed without the parties who use them having any knowledge of their existence and terms.”¹⁵ Are these transactions still valid? The question is, is there still an authentic exchange of consents when the transactional messages are created, transmitted and processed by computer applications? Must individual will be identifiable for each contractual transaction (purchase order, acceptance, etc.), or is it sufficient that there is a manifestation of will when the system is initialized? Even if we could consider that true manifestations of will occur, at least the automation of the whole process accomplishes a split between the moment of the free declaration of will of the parties – whenever it does exist! -- and the moment when significant parts of the declarative process (such as the offer and acceptance) take place, which rises several questions with regard to the validity of such contracts.

4 EXPRESSION OF WILL AND CONSENT IN INTERSYSTEMIC CONTRACTING

As far as automatic inter-systemic electronic contracting is concerned, there are two main ways of facing the problem of consent:

--the requirement of an expression of will for each message (related to the question of the electronic or digital signature¹⁶, as a “method of authenticating the message while permitting the sender and the recipient to store it on their own computers”¹⁷); however, these transactions require a full automated process, which means that it would be completely useless if it was required a personally digitised digital signature for each message -- this obstacle would be overcome if the involved applications get configured to proceed, in an automatic way, to the encrypting and decrypting of the messages, using the respective “private key” and “public key” of the sender. This procedure could not be problematic in a bilateral relation, but could also be used in multilateral EDI with a huge number of parties involved, provided there was an assurance of the necessary secrecy of the “private keys”.

--a single expression of will displayed when the system is set up or initialized (related to the need of an Interchange Agreement)¹⁸ -- (“such an agreement is justified for reasons of both technical and legal security. The parties need to agree on a message

standard and set of rules which will govern the interchange of trade data. These rules will therefore create a degree of legal certainty, as well as enhancing enforceability, and since both parties are required to clarify such details in advance, the likelihood of disputes is reduced¹⁹). “The parties previously agree on a defined communication protocol and on its installation, and the interconnection of the systems by itself already reveals the full acceptance of the contents and effects of the legal transactions to be concluded by that mean, sparing human intervention in each transaction, letting such intervention take place only in the moment of preparing computational systems for communication²⁰). Thus being, the will of the parties to get bind through automatic operations, can be revealed through a previous contract, before the initialization of the system. A binding contract -- usually celebrated by traditional means, by express written declarations between the parties--that we could therefore call “Interchange Agreement”²¹. Interchange agreements can be bilateral or multilateral, and in this case, they can bind a multitude of different kinds of users or only users in a defined sector of activity; in only one national state or in different national states. Regardless of its wider or narrower range of application, an interchange agreement binds the parties; in it, they confirm their intention of automatically communicating and contracting; after signing the interchange agreement, the parties can not claim ignorance of the prescribed rules of behaviour or of the effects of automatic contracting. The interchange agreement is the true manifestation of will of the parties, thus becoming the real source of the binding force of automatic inter-systemic electronic contracts. From the moment of the acceptance by the parties of the “Interchange Agreement” (acceptation usually expressly manifested and even in written form – in paper or electronically), the parties get legally bound to accept the production of all and every legal effects resulting from the automatic activity of their interconnected informatics applications. And it can also be said that for each electronic contract this way celebrated there will be two “declarations of will” expressly exteriorized by the machines – which obviously lack legal personality and legal capacity – that must be understood as a tacit manifestation of the will of the parties, as resulting from an “indirect manifestation of will based in a conclusive behaviour of the declarer²²”. The behaviour of the parties, keeping the automatic electronic system of data interchange functioning – especially if this functioning of the system follows and derives from an Interchange Agreement – is totally conclusive about the will of the parties of contracting and getting legally engaged by that mean.²³ ()

Yet, as far as Intelligent Electronic Inter-systemic Contracting is concerned we must keep in mind that the used devices can act in such an autonomous way that it may have severe implications in the process of contract formation as we know it. Because intelligent artefacts will not only act according to its in-built knowledge and rules²⁴ but they also will be able to learn from experience, modify its own behaviour, according to cognitive, reactive and pro-active processes quite similar to human acting²⁵. So, as Emily Weitzenboeck puts it, “agreements will therefore no longer be generated through machines but by them, without any intervention or supervision of an individual”²⁶. In this way, it may be difficult to consider the conclusion of contracts in the same way as we do when we have in mind other ways of electronic contracting: we cannot speak anymore of a consent expressed through the electronic devices (interpersonal electronic devices or interactive electronic devices) neither of a “programmed consent”²⁷ (previously programmed) as it happens with automatic inter-systemic contracting based upon Interchange Agreements. Actually, in automatic transactions, as Allen and Widdison refer “the computer acts upon pre-programmed instructions which can only be altered by the human trader. For example, the computer could be programmed to accept any offer to buy widgets at or above a certain price, but not to modify the price. Here we could argue that the computer’s stored program embodies the trader’s intentions”. “However, they could not do the same with agreements generated by an autonomous computer... an autonomous computer is capable of altering its stored program and developing new instructions in response to information it acquires in the course of trading. Since the program changes overtime, without any human intervention, it would be very difficult to characterize it as the embodiment or expression of human intention”²⁸. This leads us to an imperious need of analysing the question of expression of consent in inter-systemic intelligent transactions in a different way. And two main possibilities have been analyzed: the possibility of considering the electronic devices as mere machines or tools, used by its owner and the daring possibility of considering the electronic device as a legal person. The first perspective would be simpler to adopt and it seems in accordance with legislation already enacted in the United States and Canada: US Uniform Electronic Transactions Act (UETA) and Uniform Computer Information Transactions Act (UCITA) and Canada’s Uniform Electronic Commerce Act, which already expressly recognize that a contract may be formed by the Interaction of electronic agents. The second possibility, although

presenting some practical difficulties, may appear quite fascinating and must be considered. A third possibility that has been also frequently mentioned is the application of the rules of agency to electronic transactions – “when a principal uses a computer in the same manner that it uses a human agent, then the law should treat the computer in the same manner that it treats the human agent”²⁹. However, we will not develop this idea because it seems obvious that the application of the “agency paradigm” would only be possible if we could first solve the issue of legal personhood for the electronic agents. Indeed, it would be difficult to consider a principal-agent relationship without the consent of both parties. And “In a principal-computer agent relationship, the concept of the computer consenting is absurd”³⁰. So the agency paradigm does not solve our problems. We must go back to the previously enounced possibilities:

5 COMPUTER INTELLIGENT AGENT AS MACHINE OR TOOL

One of the possible solutions for the question of consent would then be to consider the whole transaction process as indeed performed by a human. It would be like establishing a legal presumption -- Allen and Widdison call it a “legal fiction”³¹ -- that “all transactions entered into by the computer would be treated as transactions entered into by the human trader”, thus putting the intention and the whole risk for the transactions “on the person best able to control them – those who program and control the computer”³². This fiction -- based in a presumption that a person assents to a contract, even though he may not be aware that a contract was celebrated, as he may also be totally unaware of the precise terms of the contract³³ -- would perfectly comply, for instance, with the USA’s UCITA regime (and intention), as it was pointed out by its creators, according to Jean-François Lerouge: “if a party create a situation in which an electronic agent is to act on his behalf, then a party is bound by the actions of the “agents””³⁴. In this regard, Weitzenboeck speaks of attribution: “the operations of an intelligent agent are attributed to the human who uses the agent”³⁵. That is to say that this theory recognizing that the only valid and relevant consent must be the one of the person on whose behalf the agent acts³⁶, a connection must thus be established between the action (non-human) and the intention (human), in a similar way to what we had referred on the conclusive behaviour of the declarer for automatic inter-systemic electronic transactions: “by initiating the electronic agent, the user is deemed

to have accepted that contracts concluded by the agent will be binding on such user. The assent of the electronic agent will be inferred to be the assent of the (human) user of the agent”³⁷. The acceptance of this theory would have an obvious impact – the risk of transactions would entirely be put “on the persons who program, control or otherwise use an electronic agent”³⁸ and these would eventually be assigned a sort of liability regime similar to the one relating to the use of cars or machines by the owner. “A party may be liable for a damage caused by an object”³⁹. It is a well known principle of Civil Law’s liability regime that “a person to whose sphere machines can be assigned to is supposed to be liable for them. Thus, the one shall bear the risk that has the right and ability to control the machine and receives a (financial) benefit from its use”⁴⁰. And though the damages to be caused by agents would most surely not be of a physical order, but only financial, the truth is that the financial loss could become quite burdening. Having this in mind, can we make such an assertion of intention and liability when we are not speaking of machines that one can control, but of most sophisticated engines whose behaviour can not be totally predicted? Wouldn’t it be a terrible burden to put on programmers and users – who surely would not be “in such a condition to anticipate the contractual behaviour of the agent in all possible circumstances” and so would not be in position of “wanting” each and every “contract which the agent will conclude”?⁴¹

Although this theory of considering electronic agents as a mere machine or tool used by an owner is the most well accepted by legal authors, and besides it was contemplated by the only legislation enacted until now – in the US and in Canada -- the truth is that some authors have been looking for some other possible solutions, and it seems not totally absurd to think about the possibility of recognizing, in the future, the “electronic agents” as legal persons.

6 ELECTRONIC AGENTS AS LEGAL PERSONS

Law has long been recognizing that besides natural persons, the ones who physically are born and die, other entities socially engaged within the community, must also be subject of rights and obligations. Portuguese law, for instance, recognizes what it calls “Collective Persons” as having legal personality and capacity for every right and obligation needed or convenient to the prosecution of its social goals (Portuguese Civil Code, article 160°). And although these corporate bodies are

constituted by human affiliates, partners or members, law recognizes that the “Collective Persons” constitute a totally different and autonomous person – a person who acts on his own, and for that reason its own acts are accorded a “legal meaning within the legal system”⁴². If an action of the entity causes damages, the claimers can sue the “entity” and not necessarily its members. But can we foresee the attribution of such a regime to “electronic agents”? That attribution would have at least two clear advantages: First, by the recognition of an autonomous consent – which is not a fiction at all -- it would solve the question of consent and of the validity of contracts concluded by electronic agents without affecting too much the legal theories about contractual freedom, consent and conclusion of contracts⁴³. Secondly, and also quite important, it would “reassure the owners-users of agents”, because, by considering the eventual “agents” liability, it could at least limit their own (human) responsibility for the “agents” behaviour⁴⁴. This solution might look rather convenient in all aspects. But, nevertheless, its adoption will not be without difficulties. One of the difficulties relates to the identification of the agents? We would need technical answers to some questions. What constitutes the agent? The hardware? The software? Both? And “what if the hardware and software are dispersed over several sites and maintained by different individuals?”⁴⁵. Besides that, agents may have the capability of dividing themselves “into the modules they include” or multiplying themselves “into undistinguished copies”⁴⁶. That would inevitably put a tremendous problem relating to the domicile of the electronic agent. In order to be a legal person, the agent must have a residence or domicile. But mobile agents “do not have an established physical location”⁴⁷.

Another relevant question concerning the legal personhood of electronic agents is that of its “patrimonial duties”. In order to exist, a legal person must have, or at least be capable of having a patrimony. But does it make any sense to attribute a patrimony to an electronic device? Can we imagine a situation of these electronic devices having “patrimonial rights and also be subject to liability for negligent acts or omissions, just as natural persons would?”⁴⁸

7 CONCLUSION

Of course these difficulties are possible to overcome. But laws would have to be prepared and approved accordingly. A non natural legal person surely must be object of a constitution / declaration

act and eventually of registration⁴⁹. Through that registration procedure it could be attributed a physical location to the agent, and also the creators / owners of the device should be legally compelled to make a banking deposit, functioning as sort of an agents patrimony, “a capital or a certain amount of assets”⁵⁰ of the new legal person, in order to ensure that it could fulfil its financial obligations. As Giovanni Sartor refers⁵¹ “this fund would represent a warranty for the counterparties, who would need to know its amount before finalising a contract with the agent”. A minimum amount of “capital” should be established, similarly to what happens to commercial corporations. Besides that, maybe the law should establish also a compulsory Insurance regime for Intelligent Agent’s activities.

Although exciting all this may seem, the truth is that we are not yet there. For the moment it is not possible to consider the “electronic agents” as legal persons. And yet, they exist and become more and more available for autonomous work in the electronic trading. Should we accept the fiction of considering them as mere tools the humans are using, even knowing humans may not be able to control them? Or is there another solution? For the moment, and considering that European jurisdictions have not yet decided what regime to adopt concerning electronic agents, I would just like to finish with the optimistic suggestion of Giovanni Sartor:

“An easier and less risky way for the agent to make contracts... and to limit the liability of the user (at least, to some extent) is available. This consists in creating companies for on-line trading, which would use agents in doing their business. Such agents would act in the name of a company, their will would count as the will of the company, their legally relevant location would be the company’s domicile, creditors could sue the company for obligations contracted by those agents. The counterparties of an agent could then be warranted by the capital of the company and by the legal remedies available towards defaulting commercial companies”.

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- ² Barbagalo, Erica Brandini “Contratos Eletrônicos”, pages 48-58.
- ³ Barbagalo, Erica op. cited, pages 53 and 54.
- ⁴ Barbagalo, Erica op. cited page 55 and 56.
- ⁵ Allen, Tom / Widdison, Robin op. cited, page 26.

⁶ Barbagalo, Erica op. cited, pages 51-52 and also 87.
⁷ Allen, Tom / Widdison, Robin op. cited
⁸ Pinto, Carlos Alberto da Mota “Teoria Geral do Direito Civil”, page 263 and Andrade, Manuel Domingues de “Teoria Geral da Relação Jurídica”, vol. II page 34.
⁹ Barbagalo, Erica op. Cited, page 60
¹⁰ Lima, Fernando Andrade Pires de and Varela, João de Matos Antunes “Código Civil Anotado”, volume 1
¹¹ Interpersonal electronic contracting is characterized by a personal / direct intervention of the parties, although eventually declaring both their will by means of electronic communication. But the parties still totally control the process of contract formation. In interactive electronic contracting, one of the parties still declares or acts in a way to let it clear as to the real sense of his will. Although one of the parties is not actually “present” at the moment the contract is performed, it is usually intended that that party acts through the so called “proposal to the public” – a firm and clear proposal having all the required essential contractual elements and clauses: for instance, the proposals of contracts through Web pages, the web visitor having nothing else to do than to accept or reject the proposal. We may be facing the so-called “adherence contracts”. The contractual clauses are pre-disposed by one of the parties and the other party, after accessing the web site and reading the terms of the contract is free to accept or not the offered contract. Cfr. Almeida, Carlos Ferreira de “Contratos”, page 62, Gentili, Aurelio “L’inefficacia del contratto telematico”,pág. 753 and Thoumyre, Lionel “L’échange des consentements dans ls commerce électronique”
¹² Elias, Lieve and Gerard, Jacques “Formation of the contract by Electronic Data Interchange”, pages 2-3.
¹³ Op. cited, page 28.
¹⁴ In France, according to Alain Bensoussan, such contracts “are legally valid provided that they can be kept under the control of human beings”. Cfr.. Bensoussan, Alain “L’échange de données informatisé et le droit”, page 67.
¹⁵ Lerouge, Jean-François “The use of electronic agents questioned under contractual law. Suggested solutions on a European and American level”, page 5
¹⁶ Reed, Chris “Computer Law”, page 268.
¹⁷ idem.
¹⁸ in “EDI and the Law: an introduction” Ian Walden, page 35
¹⁹ idem
²⁰ Barbagalo, Erica op. cited, page 51.
²¹ Barbagalo, Erica idem, page 51; Viterbo Matos Santolim in “Formação e eficácia probatória dos contratos por computador”, referred by Erica Brandini Barbagalo

²² Hörster, Heinrich Ewald “A parte geral do Código Civil Português – Teoria Geral do Direito Civil”
²³ It must also be referred that, even in the case that the parties don’t formalize a written Interchange Agreement, but anyway, they actually install, interconnect and initialize the informatics applications for the automatic interchange of messages, they will also get legally bound by the contracts deriving of the activity of such machines, considering the above said about tacit declarations and conclusive behaviours
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²⁵ Allen, Tom / Widdison, Robin op. cited, page 27 and Weitzenboeck, Emily op. cited, page 2
²⁶ Weitzenboeck, Emily op. cited, page 6
²⁷ Felli, Silvia “Intelligent Agents and Consumer Protection”, note 17
²⁸ Allen, Tom / Widdison, Robin op. cited, pages 48 and 49
²⁹ Fischer, John “Computers as Agents: a proposed approach to revised U.C.C. Article 2” , page 557
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³² Allen, Tom / Widdison, Robin op. cited, pages 46 and 49
³³ Lerouge, Jean-François ,op. cited, page 31
³⁴ Lerouge, Jean-François op. cited, page 27
³⁵ Weitzenboeck, Emily op. cited, page 10
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³⁷ Weitzenboeck, Emily op. cited, page 17
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³⁹ Lerouge, Jean-François op.cited, page 28
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⁴¹ Sartor, Giovanni “Agents in Cyberlaw”, point 3
⁴² Allen, Tom / Widdison, Robin op. cited, page 38
⁴³ in the same sense cfr. Felli, Silvia op. cited, note 17
⁴⁴ cfr. Sartor, Giovanni op. cited point 4
⁴⁵ Allen, Tom / Widdison, Robin op. cited, page 42
⁴⁶ Sartor, Giovanni op. cited, point 4
⁴⁷ Sartor, Giovanni op.cited, point 4
⁴⁸ Weitzenboeck, Emily op. cited, page 9
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