CHAPTER 9

Nonmediated Governance

Contents

The previous chapter touched upon the issue of virtual worlds in the context of massive multiplayer online role-playing games. These games manage to provide an experience of informatized societies, as they are examples of societies in which the relations between their members are perfectly informatized. This perfect informatization has clear advantages—there are no conflicts in the relation between the subjects and the sovereign, no cases of administrative corruption, no courts to settle disputes between subjects, no law enforcement agencies, etc. That sounds pretty much like a perfect society, or does it?

The virtual worlds of online games are perfect *gardens of Eden*, paradises created by the "gods," who are the software developers and owners of the game. These "gods" created the environment in which the game takes place, they made the rules, and they roll out the updates whenever they please. All that is left for the subjects of the virtual worlds to do is enjoy the game and pray to the "gods" through online fora and helpdesk support. In these *gardens of Eden*, the constraints of all interactions are imposed top-down in an absolute way. The users of the system have little to zero influence on the extent or quality of the virtual jural relations with which they engage within the virtual world. The "gods" of the game may well permit users to design their own characters, influence the geography of the environment by adding virtual buildings, etc. Perhaps, the "gods" might even permit users to deliberate and vote on future features of the environments that might be implemented at a later stage. However, there is no other space for cocreation than that.

https://doi.org/10.1016/B978-0-12-816224-8.00009-1

Such online games are genuine informatized societies, with a massive economy driving their existence; a system of subjective public rights which determine one's status within the game; and a system of governance, which is based exclusively on governing by architecture—the *code* of the game. Even the elements *subject-rights-sovereign*, which the *social contract theory* provides to model society, are perfectly reflected in these virtual worlds. The subjects (the players' characters) engage in virtual *public-right* type of relationships with the technical system (the sovereign). The system can grant them upgrades of their Jellinekian *legal status* or downgrade it, which then determines their ability to possess certain goods (e.g., weapons, armor, and vehicles) or to assume otherwise unavailable abilities. All of these options remain part of the hard-coded rules of the system itself, provided and controlled by the "gods" who created the system and who administrate it.

In contrast to these *gardens of Eden* that are the virtual worlds, real-world societies are not based on a *god-like creator* who is able to autocratically impose rules. Instead, real-world societies tend to self-organize and self-manage their own concerns. The systems and conventions that govern real-world societies, such as law and morals, change as time goes on and fluidly morph to adapt to the opportunities and constraints of their respective era. Real societies will morph from one political system to another, networks of power will rise and fall, economic opportunities will appear and disappear, the sovereign will at times be embodied in a single person, at times in a family, at times in a clique, and at other times in a class of people, a subset of the members of a community, a subset of inhabitants of a logical domain, and so on.

Chapter 8 dealt with three "low-hanging fruit" ideas from informatics on how governance could be informatized:

(a) to engineer a network of semantic jural relations based on the scaffolding provided by Jellinek and Hohfeld
(b) to build a platform on top of which governance would perform
(c) to engineer an artificial language to build governance rules and provisions.

The first option (a semantic network) was dismissed, as such a network could not sustain future changes to the underlying semantics and the change to their jural implications. Hard-coding *explicit* relations is an ill-advised idea in general, as it is not realistic to keep all global network of relations synchronized. (Think of the broken links on the Web alone!) The conclusion was that the sought-after *infrastructure* (we may well call it a *platform*) must be indifferent to concrete semantic constraints, i.e., it must be *generic*.

The second option (the platform of services) was dismissed as platforms suffer from the issue of a *god system* and limit the available options. And we do not want a *garden of Eden* here, since we already know that humanity is simply not mature to adhere to *god's* will in the long run. The conclusion from this, however, is not to avoid the *platform* concept as such, but rather to avoid the super-entity that controls the rules and the functions that such a platform provides.

The third option (the artificial language) would be a conceptual merger of both the predefined semantics and the *garden of Eden*, and, with regard to their flaws, is likewise not a solution.

The primary objective in the search for a system/infrastructure/platform for informatizing governance is to yield a system that is *timeless* (in terms that it could serve for millennia) and independent of the addressed culture (so that it can serve *all* cultures), i.e., *generic*. This must not be misunderstood for the *instantiation* of a system that would perhaps survive centuries, but rather a timeless and generic *model* of such a system. Take the case of a wheel as a model of a system that consists of a circular component that rotates on an axle bearing. Known instantiations of this model date back thousands of years, and new instantiations of this model are in use today. The timelessness and nondeterministic nature (genericness) of the wheel allow it not only to survive through the known history of human civilization, but also to be used for a variety of purposes such as wheels on the carriage, the potter's wheel, ship's wheel, steering wheel, cogwheel, waterwheel, and flying wheel.

Aside from merely being *generic* and *timeless*, the sought-after model for governance informatization must be able to function without any human mediation whatsoever, i.e., it must be *noninterpreted* and *nonmediated*. These four requirements boil down to a system of rules which govern a society's subjective public rights through its architecture (this then makes it *nonmediated*), whereby it must be able to change these rules without human intermediary agents who would need to interpret and translate the changes, as the Wizards of LambdaMOO did (see Section 8.2.2). This system of rules must then be able to accept any rule whatsoever, without verifying or questioning it, for it to be *generic*, which in turn disqualifies the application of artificial intelligence to govern society.

This chapter is a search for such a *model* of a system which would feature these characteristics. Section 9.1 recounts the first real-world attempt to introduce such a system into a real society, and the lessons learned. Section 9.2 discusses how *eligibilities* (i.e., Jellinek's *legally relevant allowed behavior*) can be

determined rather than *described*, in order to address the issue with the explicit relations as dismissed in the context of semantic networks. Section 9.3 presents a toolset for describing and communicating the rules from Section 9.2.

9.1 ŠOFIŠ: PIONEERING NONMEDIATED GOVERNANCE

The first documented instance of a society that abided by the principles of nonmediated governance was established in Novo mesto, Slovenia, in April 2010. This was the *Student Union of the Faculty of Information Studies* (ŠOFIŠ), which we touched upon in Section 3.5.1, in the context of Liquid Democracy.

In Slovenia, the student unions are regulated by a lax law that gives high autonomy to student unions, as well as access to public funding that circumvents the state budget. As a result, established student unions are organizations with significant capital, which is, once in a while, subject to violent quarrels, during which students take sides either for the government of the student union or its opposition (Paulin, 2007). In order to prevent such violence from occurring at ŠOFIŠ, and in order to provide students with a novel platform for hands-on research, the organization established the separation of legal representation from disposal of capital and decision-making. Decision-making was limited to approving applications for funding of projects or changes in political appointments (whose existence was imposed by law). Deliberations were to take place outside of the information system and no decisions on the policy-level were possible.

The system of ŠOFIŠ was deliberately not about creating policies according to which the organization would work, but simply about regulating access to the treasury. To gain access to the treasury to fund a project, a member would have had to apply for the budget, providing a description of the project and the requested amount. The application would have been posted to a virtual billboard, in order for other members to vote on it using Liquid Democracy. Once an application had been accepted, the grantee would be granted access to make transfers from ŠOFIŠ' bank account up to the granted value of the project. The connection to the bank was engineered through an application programming interface (API) to the SWIFT banking network between the ŠOFIŠ information system and the German Commerzbank, which at that time was one of the rare European banks that provided this functionality to its customers. The entire transaction from the request for funding up to its use after democratic legitimization was thus routed through the information system, which enabled full transparency of actions.

Also prevention of misuse was deliberately not part of the system. If anyone had misused a granted project to embezzle funds, legal and moral prosecution would have to take place elsewhere. Thus, whom to trust and to what extent to trust was solely up to the society to decide by itself.

Each action taken would have been signed digitally using the qualified electronic signature. This included all actions of collaborative decision-making (voting), applying for a budget, applying for a political position or its recall, delegation of a vote within the Liquid Democracy system, etc. Any communication with the outside world, such as the tax return or the registration of the change of the legal representative, would have been conducted automatically by the system using templates. Furthermore, access to the e-mail account and digital signature of the organization itself would have been technicized in such way that at the very moment in which a change of the legal representative would have occurred, all access permissions would swap from the old to the new one.

ŠOFIŠ deliberately omitted any *nontechnicizable* features of government from its system, such as political culture, policies, or supervision. All these features would require a human interpretation of what is right, what is desired, or what is proper, which would then have potential for misuse of interpretative power. Only access to the most basic asset of the organization was regulated: money. Nontechnicizable features in relation to this asset could then still form and change over time. Ideas would have emerged about what is right and what is wrong, how money *should* be spent, and how this spending should be supervised, and so on. Policies on such matters within the organization would have fortified and changed over time. However, these should be of no concern to the *platform*, which should merely provide equal access to those who are eligible to it.

At the end of the day, ŠOFIŠ' information system informatized three core functions of the student union: the organization's budget distribution, its outbound representation (i.e., the presidency), and its internal decision-making processes. The system was largely constrained by requirements imposed from the outside, such as the requirement to have a representative at all, the technical link to the bank, and legal constraints with regard to scale and transformation. All of these contributed to the final design of the system, which was developed as an online platform that was hosted and managed by a *god-like* administrator.

Accordingly, though the governance of the student union was informatized as much as possible in the given context, the members of the organization were unable to access the underlying code in order to change it.

Members of ŠOFIŠ were restricted to collective decision-making about projects the student union would undertake and how it would use its resources. They could change the individuals in charge and the membership in the political bodies of the society. However, they could not change the system of collective decision-making or the set of political bodies of ŠOFIŠ. Their autonomy was constrained to controlling access to those resources they had from the start (e-mail account, bank account, organization's electronic signature) and had no option to add new informatized resources to this collection, such as access to the Web server or access to the office.

9.2 DETERMINING ELIGIBILITIES

Section 7.3 addressed the question: how can governance be informatized? On a conceptual level, the answer to this question was found in informatizing the jural relations and jural statuses into cyberspace, from where they could be controlled, changed, and so on. These jural relations contained information about the amount of Jellinekian *legally relevant allowed behaviors* that an individual could exercise in a given situation. A particular recipe of how to technically accomplish such informatization of governance has not been provided yet. The instinctive idea to go and explicitly describe legally relevant allowed behavior by means of semantic technologies was discussed in Chapter 8. However, any discussed options for explicitly storing jural relations were dismissed as technically unfeasible.

In order to informatize governance in ŠOFIŠ, a different approach was taken. Governance informatization was achieved by informatizing the seat of the president and other bodies of the student union, the communal budget, and access to the electronic signature. These informatized features of the organization allowed the members of ŠOFIŠ to govern access to them from within cyberspace. Instead of explicitly *describing* (in a technical way) eligibilities of individual members, for example, their right to access the communal budget and the organization's electronic signature, these eligibilities were *determined* from the informatized data ad hoc.

The method of *describing* eligibilities is about making statements such as "Paul is president; hence, he is allowed to command the community budget, and thus, he is allowed to pay the bill for the flyers." *Determining* eligibilities on the other hand is about asking questions such as "Is Paul eligible to pay a bill from the community budget?" Describing eligibilities implies explicitly regulating foreseeable situations in advance. Determining eligibilities on the other hand allows for reasoning in which the context cannot be

foreseen. On the atomic level, the challenge amounts to informatizing jural eligibilities, whereby each eligibility can be determined by answering the question "Is person P eligible to action A in context C_T?," where C_T is the constantly evolving environment (hence "T" for time) and A is the desired status change of someone's jural status (e.g., the desire to become a mayor). We shall call this question the *PAC_T question*.

The *PAC_T question* can be applied to many situations, such as: Is Ann eligible to enter a theater performance? Is Carl eligible to receive his unemployment benefit for the previous month? Is Franck, the foreigner, eligible to enter a country? Is Lea, the law enforcement agent, eligible to take Rob, the robber, into custody? Is Marty the mayor eligible to pay for a new school building using public funds? Is the citizen council eligible to appoint Marty for mayor?

In ŠOFIŠ, the question "Is the requester eligible to do the desired action?" was asked each time access to funds was desired or each time one required access to the community's digital signature. This same question is asked each time a character in an online role-playing game aims to do an action, even if they had tried to walk through a wall. However, the query for the available permission in these cases does not take C_T into consideration, simply for the reason that there is no context. Context in itself is a variable, though it is part of the predetermined architecture.[1] Following is an example of what switching the context in reality means.

9.2.1 Morphing Context: The Cruise Ship Example

Let us imagine ourselves on a cruise ship. The ship offers boarding, security services, and entertainment, all dependent on the booked travel class. The passengers on this ship are a finite community that is bound to a specific territory (the ship) and are governed by the crew, who are responsible for upholding order during the trip and to provide the passengers with the contractually agreed-upon services. It is not a democratic government which governs this community (thus, the passengers have no ability to change the

[1] In a computer game, the character will find themselves traversing different predefined contexts—they might find themselves in the context of a virtual city, gliding through air attached to a parachute, or swimming in water. These, naturally, are different contexts, and the computer game will take this into consideration. It will do so by switching the set of rules that apply to the physics of the computer character and its attributes; it will trigger countdowns to determine how long the character can stay under water, and the like. However, all possible contexts of the game are already known in advance, which is why it is not *the* context that is switched, but rather a subcontext of the context of the game.

crew democratically), but it is a government nonetheless—they govern the passengers based on their privileges given by law.

This setting provides us with several avenues to explore jural relations between the government of this ship and its subjects, the passengers. The relation between crew and passengers is similar to the relation between a government and its subjects. The "social contract" in this miniature society is explicit and comprehensible: the crew is obligated to provide services to passengers on the basis of the traded set of rights, i.e., the purchased travel category. This setup enables us to conveniently calculate eligibilities on board, which are manifested in granted/denied access to services to passengers.

The mobility of the ship through national and international waters allows us to comprehensibly understand a change of legal context, as the ship may traverse multiple national jurisdictions that influence individuals' eligibilities, while the jural relations between crew and passengers remain unaltered. A change of one's subjective legal context can occur for many reasons, such as physically moving into a different legal context (entering a new country), or that a legal context extends into an area where one acts (such as the Third Reich's extension into Yugoslavia), or that a legal context morphs (as happened as part of the socialist revolution in Yugoslavia after the war). The reason why a legal context changes thus does not really matter.

Let us now consider a family (a father, mother, and their 13-year-old daughter who will turn 14 in two days) traveling second class from Piran (Slovenia) to Kish (Iran). The ship is expected to enter Iranian territorial waters on the fifth day of the journey. The ship features a wellness center, which has a swimming pool and a sauna. Entry to the swimming pool is included in the second class ticket, but not to the sauna, which is free only to first-class travelers. Entry to the sauna is not permitted to children under the age of 14. In Iranian territorial waters, Islamic law applies, which allows only single-sex usage of the sauna and one must be aged 20 or above to enter or accompanied by a close relative of the same sex.

In this example, we have a fixed community of subjects (the passengers) and a fixed government structure (the crew), but we have to deal with many dimensions: every member of this society has a status based on several relevant personal attributes, namely sex, age, cruise travel category, and relation to other travelers. This status entitles passengers to receive services and use the facilities. One attribute of the passengers—namely, their age—is subject to time, which is relevant, as the child—let's name her Eve—will become 14 and will thus become entitled to enter the sauna on the third day of the voyage. When the ship will enter Iranian territorial waters, the legal frame

will change, which will also influence the passengers' legal situation, while their attributes will remain the same. Thus, on days 1–2, Eve must not enter the sauna, because she is to young; on days 3–4 she can go to the sauna, as she is now 14 already; from the fifth day on, she can go to the sauna only together with her mother, but not her father, due to the Iranian restrictions.

This example shows that the Hohfeldian *bundle of rights* or the Jellinekian *legally relevant allowed behavior* of each subject is determined by the context and the legal frame. If Eve tries to enter the sauna, then whoever controls this facility must grant or deny Eve access based on the available information about her age, family relations, and the information whether she has paid the entrance fee, as well as taking into consideration the then-valid legal context.

9.2.2 Constellation-Based Reasoning

The bundle of rights is not something that can be efficiently stored as a distinct piece of information, but must be interpreted every single time *based* on (i) the legal frame of the political community, (ii) data about the subject, and (iii) the context of the given situation. Let us define—inspired by Leibniz' appeal "*Calculemus!*"[2,3] the bundle of rights as B, the subject as S, the legal frame (L) of the political community P as L_P, and the legal context (C) of the particular request R (e.g., the request to enter the sauna) as C_R. We have data about each subject, d_S, and based on this data, we can calculate their legal status (ς) in the given legal frame:

$$\varsigma_S = \varsigma\left(L_P, d_S\right) \tag{9.1}$$

The legal status determines which bundle of rights somebody can have in a given legal frame, e.g., in a given country or other form of society. Thus, the bundle of rights of somebody in a foreign country is different from their bundle of rights in their home country. We can therefore say that both the subject's status (ς_S) and the legal frame (L_P) determine the subject's bundle of rights:

$$B_S = B\left(L_P, \varsigma_S\right) \tag{9.2}$$

[2] *"… quando orientur controversiae, non magis disputatione opus erit inter duos philosophos, quam inter duos computistas. Sufficiet enim calamos in manus sumere sedereque ad abacos, et sibi mutuo (accito si placet amico) dicere: c a l c u l e m u s"* (Gerhardt, 1890, p. 200).

[3] *"Wer kann was Dummes, wer was Kluges denken, das nicht die Vorwelt schon gedacht?"—"Who can think wise or stupid things at all that were not thought already in the past?"* (Goethe's Mephisto in: Jellinek, 1892, n. 18).

In order to determine if somebody is permitted to action R, we must first find the set of rights required to perform it. This set of rights or eligibilities (E) is determined by C—the context of the given request, which is dependent on the general legal frame (L_P). To calculate set E for a given action R, we perform:

$$E_R = E\left(C,R\right), \text{where } C \subset L_P \tag{9.3}$$

If we now want to find whether S has permission (Y) to a specific action R, then we must check whether the set of required rights/eligibilities to perform R is contained in its bundle of rights B:

$$\text{if } B_S \supset E_R \text{ then } Y_R \text{ is true, else false} \tag{9.4}$$

As we see, making governing decisions (based on finding Y_R) and thus governance as such depends on information available to the system (d_S). Thus, if the available information about Eve's age would be mistakenly stored as >20, then she could go to the sauna every day, despite the biological truth. Also, as her family travels second class, they must pay every time for their sauna visits, which they would not have to do if the stored information would be different.

A change of information regarding the legal status of a subject ς_S and data about the subject d_S available to the sovereign results in a different bundle of rights B_S. Therefore, in order to reach nonmediated governance, we need to be able to manipulate ς_S and d_S directly ourselves, or more precisely, we must be able to manipulate d_S, because the legal status (ς_S) is determined by the data, which is the only tangible variable independent of the legal frame (L_P).

In modern systems of governance, manipulation of d_S is performed by the bureaucratic machine. In order to change even the simplest data such as name, address, or marital status, we have to fill in forms and wait for applications to be processed.[4] The same is true if we want to receive child support, obtain permission to drive a car, or become owners of real estate. Bureaucratic decision-making (in terms of Weber's model), as well as digitalized decision-making in e-Gov, use a multiple-process-based approach to effectively determine Y_R. Through a series of partly autonomous processes (both customer-facing processes and internal business processes (cf. Leben and Vintar, 2003)), ς_S (e.g., adulthood) and d_S (e.g., name, date of birth,

[4]An attempt to tackle bureaucratic processes using semantic technologies was demonstrated, e.g., by Klischewski and Ukena (2010). As discussed in Section 8.1, however, resolving to semantic technologies would be unfeasible.

address of residency) are gathered and Y_R (e.g., the eligibility to change address/name/ownership of real estate) is determined.

In contrast to the traditional process-based approach, the method described above relies on states or *constellations* of data. This method deliberately rejects finding Y_R through a series of cascading processes and subprocesses, as each process takes valuable time and is vulnerable to errors. Instead, we propose the manipulation of d_S based on the ad hoc determination/calculation of Y_R—R being the permission to manipulate d_S—in one logical step.

Such *constellation-based reasoning* (CBR) functions like a key opening a pin-tumbler lock, where the key, due to its specific shape, moves the pins into the right constellation and allows the lock to be opened (Fig. 9.1). In the cruise-ship example above, the *lock* would be the specific constraints that govern the access to the sauna (age, sex, and whether or not the passenger has a valid ticket) in the given context; thus, Eve's *key* would be the constellation of the information available about her. In contrast to this, process-based determining of Y_R would be like a doorman in front of a nightclub who would decide about whom to let inside based on his own *interpretation* of the house rules.

In order to change the key, or the lock, without human translation, the model needs to deal with both read and write access to d_S (the collection of data available about the subject). To govern this access, we again can apply the *key:lock paradigm* of CBR, so that the stored constellations of data enable (or prevent) the access to reading or writing the data itself. The CBR's *key:lock paradigm* provides a closed-loop system in which the mechanism of rules (locks) used to govern access to the core data (d_S) is the same as the

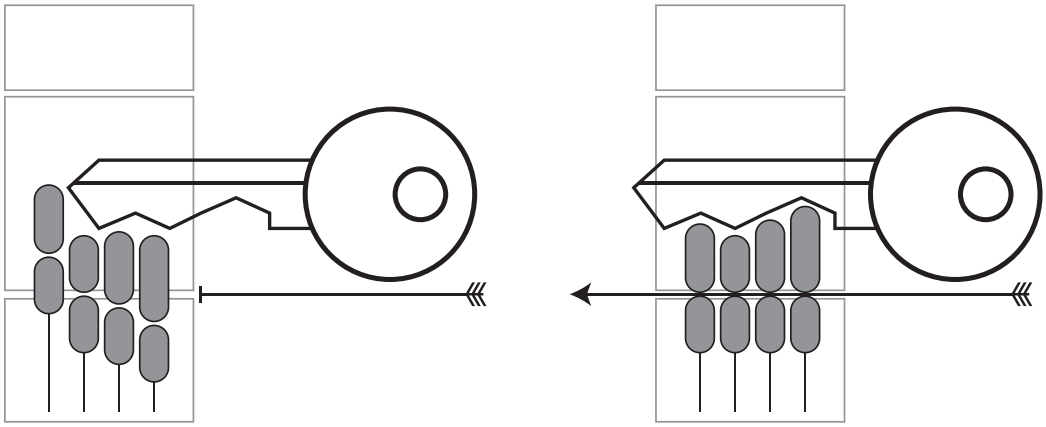

Fig. 9.1 ***Constellation-based reasoning is like a pin-tumbler lock.*** The pins are the conditions which the key (one's existing eligibilities) must satisfy in order to unlock the desired action (the arrow).

one which governs the defining of the rules. Accordingly, the rules can be reconfigured at runtime based on the then-valid rules, which in turn would change the access mechanism as such.

9.3 A TOOLSET FOR DESCRIBING RULES FOR CONSTELLATION-BASED REASONING

For describing systems of CBR rules we have developed a dedicated diagram technique, which provides the means to depict constellations of conditions/nonconditions that must be fulfilled in order to enable an eligibility.

Fig. 9.2 describes the CBR locks that regulate access to the sauna from the cruise-ship example in Section 9.2.1. The left part of the picture shows the CBR constellation that governs access to the sauna in Slovenia, where the only constraints are a valid ticket and age. The constraints imposed by the Iranian context are depicted on the right side of the picture.

This diagram technique can be used to visually describe/model rules in the form of constellations of data, which represent the pins of CBR's metaphorical "locks." These locks can be modeled by means of elements A–F, as depicted in Fig. 9.3. These elements are explained as follows.

[A] is an assertion about a subject in the form of context-relevant information, such as "this person has a valid job contract" or "this person has been born in 1984." Assertions such as these can be stored as raw data in a database, or they can be information that is the result of evaluating other CBR expressions. Contemporary examples of such raw data are the infor-

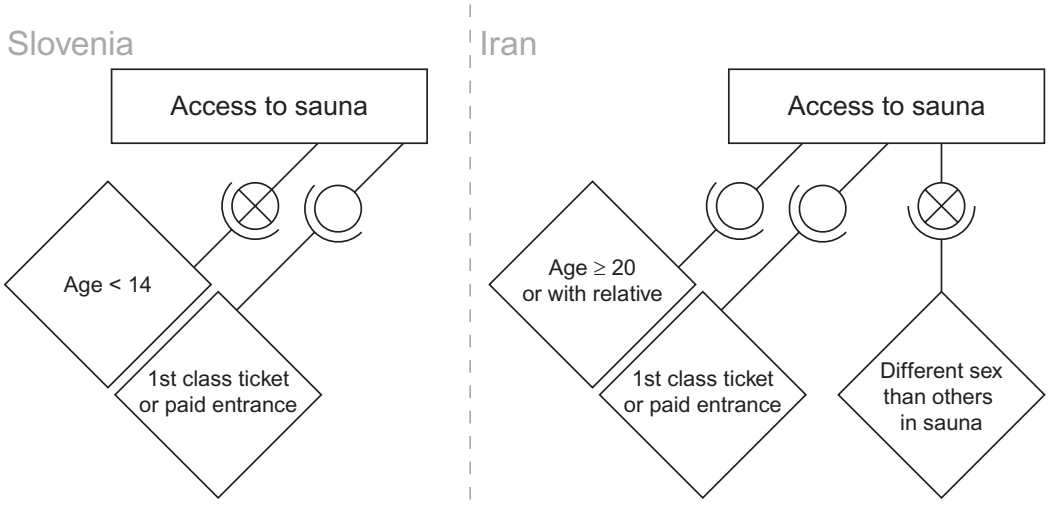

Fig. 9.2 ***Context-dependent CBR locks from the cruise-ship example in Section 9.2.1.*** *Left*: Slovenian CBR lock; *right*: Iranian CBR lock for the same eligibility, i.e., access to sauna.

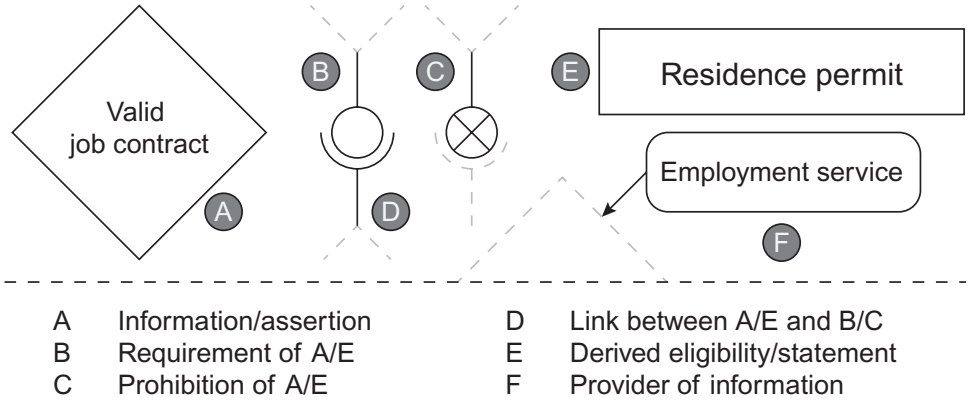

Fig. 9.3 Elements of the diagram technique to model constellation-based reasoning.

mation contained in the birth certificate or registration card. Examples of derived assertions are statements about one's employment status, the information whether or not a person has a criminal record, and so on, which again is based on other raw data. In practice, the raw data would be provided by agents that are legitimized to provide such data, for example, courts, registration offices, and parishes.

[B], **[C]**, and **[D]** are connecting elements, which make up the "pins" of the metaphorical CBR lock. As such, they define the conditions which need to be fulfilled by elements linked with [D] in order for the elements linked with [B] or [C] (assertions described by element [A] or constellations described by element [E]) to be valid. **[D]** is the neutral connector between an information [A] or [E] and an operator [B] or [C]. The operator **[B]** mandates that the south-bound element's condition must be *true*—e.g., mandates that a person must have been born in 1984. The operator **[C]** negates the condition—e.g., mandates that a person *must not* have been born in 1984.

[E] is the eligibility/statement that is the desired result of evaluating a CBR expression. In practice, this can take the form of a granted permit, granted access to a common resource, the affirmative determination of one's professional or political role in a given scenario, etc.

The labels in Fig. 9.3 are taken from the residence-permit scenario discussed in Section 1.3.4, in which an application for a residence permit took an unreasonably long time. Among others, the applicant in that scenario had to provide proof of a valid job contract—thus, a valid job contract was one of the elements of the constellation required in order to *unlock* the residence permit. While in the figure a *job contract* is depicted as an assertion, the job contract might as well be a *set* of tangible data. We may argue that a job contract is established once two subjects—the employer (usually its

representative) and the employee—agree on certain minimum terms, such as the pay, the date of beginning, the number of work hours per week, and a job description. While it is likely not feasible that the fourth condition could be informatized, the other three conditions can easily be modeled in a structure that would describe an informatized contract. This demonstrates that the granularity of data stored in the system is not determined by the system itself, but rather it is up to the evolution of the system to define the semantics of the collected data and their application in the context.

This diagram technique allows for an abstract description of eligibilities in informatized nonmediated governance. Policy makers, system architects, and other parties involved in designing rules and eligibilities thus gain a toolset for analysis and communication. Pioneers of governance informatization can use these to rethink and reengineer contemporary administrative procedures, which yield the assertion of eligibilities in the form of documents and decrees, to transform them into constellations of informatized CBR locks and keys. In the context of an already informatized governance system, this technique can be used to plan and communicate legislative changes, and to document and visually express existing laws. Further advanced tools can then be developed, and could translate such visual diagrams into executable code, which would represent the rules that can be directly applied in technical systems that enable nonmediated governance.

REFERENCES

Gerhardt, C.J. (Ed.), 1890. Die philosophischen Schriften von Gottfried Wilhelm Leibniz [The philosophic works of Gottfried W. Leibniz]. Weidmannsche Buchhandlung.

Jellinek, G., 1892. System der subjektiven öffentlichen Rechte, Elibron Classics series 2006. Akademische Verlagsbuchhandlung von J.C.B. Mohr, Freiburg.

Klischewski, R., Ukena, S., 2010. E-government goes semantic web: how administrations can transform their information processes. In: Semantic Technologies for E-Government. Springer, pp. 99–125.

Leben, A., Vintar, M., 2003. Life-event approach: comparison between countries. In: Traunmüller, R. (Ed.), Electronic Government. Springer, Berlin, Heidelberg, pp. 434–437.

Paulin, A., 2007. Izgredi ŠOUM 2007 [The 2007 Riots in the Student Union of the University of Maribor]. Dvojka 1, 14–19.