RADBRUCH IN CYBERSPACE: ABOUT LAW-SYSTEM QUALITY AND ICT INNOVATION

by

AERNOUT SCHMIDT[*]

ICT-services are only interesting to ICT and law research insofar they support law systems, or are law systems themselves. One of the tasks of ICT and law research is providing knowledge on what the quality of law systems is and how addition or removal of a rule will influence a law system's quality. In this paper the quality of a law system is related to its rules, to the willingness to participate in it and to the values it delivers to its participants. Willingness to participate is compound of several variables that can be observed and counted, leading to the suggestion that there may be a general 'Radbruch'-function that relates willingness to participate in a law system to its quality.

It is impossible to find a general public-choice function for rationally deciding on one singular set of values, that represent the optimal collective value for a law system, as these values are only observable as opinions, relative to whom holds them in context. It nevertheless seems obvious that individual willingness to participate to a specific law system at a specific time is motivated by a set of individual values, and that the quality of a law system thus indirectly depends on them.

Analysis of an estimated dataset with variables for willingness to participate in, and for values returned by three ICT services with law-system character leads to at least one etiologic hypothesis:

High welfare combined with low fairness in an ICT-mediated law system support inside revolt and outside opposition and thus low quality. An ICT-supported law system has low quality due to inside revolt and outside opposition because high welfare combined with low fairness are there.

[*] Aernout Schmidt is professor of Law and Computer Science at eLaw@Leiden, Centre for Law in the Information Society at Leiden University. The paper is an elaboration of a presentation held at the Cyberspace 2008 conference, on November 29 in Brno.
E-mail: a.h.j.schmidt@law.leidenuniv.nl

This hypothesis does not help in the face of an actual law system turning towards bad quality. Appropriate knowledge might, though. The hypothesis may thus help to focus some of our research. We may observe the variables of willingness to participate and relate them to grouped opinions on value held, of law systems turning bad, or good, in history. And try and hope to harvest some relevant knowledge that way. For instance concerning the mechanisms fuelling enduring conflict (as in the KaZaA situation) and how to recognize and prevent them through our law-system designs. If we would succeed, we would have additional scientific legal arguments available to bring to the fore in political, legislative debate.

The paper is a report on exploratory work in progress. It explores one out of many possible approaches for research on law-system quality, facing ICT innovation.

KEYWORDS
Law-system quality, law science, ICT and law

1. INTRODUCTION
The Dutch health care system is being steered towards a competitive market for some years now – that is: towards a competitive market for health care insurances. In this process, an exhaustive list (36.000 items long) of diagnosis-treatment combinations (DTCs) and their remunerations has been promulgated. No DTC, no pay. The medical profession must use ICT-services for accountability reasons. Thus the practice of Dutch medical professionals has been brought under ICT-mediated surveillance. On November 12th, 2008, the Dutch minister responsible for the health care system announced his intention to halve, by decree, the amount practitioners get paid for prescription renewals. Now let us assume for a moment that the Dutch health care system is a law system. Will the new rule together with the implementation of the ICT-supported 'service' mentioned increase or decrease the quality of this system? We simply do not know.

1.1. MOTIVATION
In ICT and law, we face the problem of how to provide well-founded, rational advise on the design and enforcement of rule-systems and rule-system adaptations, due because ICT-services become ubiquitous *in* and *around* our legal arrangements. Unfortunately, we must do so without adequate legal theory in place. The problem of scientific foundation is an old problem for 'law science,' that on the one hand has largely lost appeal to current legal theory (where law-system quality is hardly dis-

cussed any more)[1] while it on the other hand gets more and more attention in 'outsider' sciences like economics[2] and political theory.

Not being an economist and neither inclined to take part in discussions of legal theory *per se*, I opt for an approach in the vein of conjectures and refutations.[3] I accept that some regularities and risks may be characteristic to *any* political process addressing regulation of social systems through rules. In other words, I assume that how legal rules influence behavior *in* and behavior *of* social systems at least partly depends on their relation to 'natural' rules of law-system efficacy.[4] Consequently, I contend that the domain of law science needs at least two sub domains: one with man-designed, normative rules (promulgated by local political processes and interpreted by the local judiciary) and another with more generic natural rules of law-system formation and efficacy (which are in principle open to empirical research and description).

In this contribution, law is not understood as "a formal system or as inert matter, but as a goal-directed activity designed to resolve or alleviate problems of group life."[5] Following the leads of Radbruch[6] and Fuller,[7] it attempts a mixed approach, combining secular natural law and valid material law, considering such an approach a necessary requirement for rational discussing and investigating the dynamics of law-system qualities. It also claims that such research is appropriate for our information society, as ICT-mediated services *are* forms of group life that do create and/or encounter problems, related to law-system design. It even suggests how we may tackle some of the questions involved.

---

[1]   Notwithstanding work like: Radbruch, G. 1946, 'Statutory Lawlessness and Supra-Statutory Law,' Oxford Journal of Legal Studies, vol. 26, No. 1 (2006), pp 1-11; Fuller, L.L. (1978), 'The forms and limits of adjudication', Harvard Law Review, Vol. 92, pp. 353-409. Calabresi, G. & Bobbitt, P. 1978, 'Tragic Choices', W.W. Norton & Company, New York; Teubner, G. 1993, 'Law as an Autopoietic System', Blackwells, London; Tamanaha, B.Z. 2004, 'On the Rule of Law: History, Politics, Theory', Cambridge University Press, Cambridge.

[2]   E.g., Roger B. Myerson, R.B. 2006, 'Fundamental theory of institutions: A lecture in honor of Leo Hurwicz,' The Hurwicz Lecture, (http://home.uchicago.edu/~rmyerson/research/hurwicz.pdf), presented at the North American Meetings of the Econometric Society, at the University of Minnesota, on June 22, 2006. It is my contention that the urgency for researching the foundations of law-system quality gets lost in stable legal systems, and that it surges for issues in development or otherwise causing turmoil. It seems quite natural that where *legal* theory focuses on stable local systems, other disciplines (*e.g.*, physics and epidemiology, economy, ecology, anthropology, computer science) focus from within on normative problems concerning the risks to our social systems, related to the application of their proper inventions and/or results (*e.g.*, proliferation of means of mass destruction, the global division of wealth, global heating, mass migration, digital surveillance and malware).

[3]   Popper, K. 1963, 'Conjectures and Refutations', Routledge & Kegan Paul, 1963.

[4]   Not unlike Fuller's 'implicit law,' see Postema, G.J. 1994, 'Implicit Law', Law and Philosophy, vol. 13, no. 3, pp. 361-387.

[5]   Summers, R.S. 1978, 'Professor Fuller's jurisprudence and America's dominant philosophy of law,' Harvard Law Review, vol. 92, pp. 433-499: 435.

[6]   Paulson, S.L. 1994, 'Lon L. Fuller, Gustav Radbruch, and the "positivist" theses,' Law and Philosophy, vol. 13, no 3, 1994, pp. 313-359.

[7]   Fuller, L.L. 1953, 'American Legal Philosophy at Mid-Century', Journal of Legal Education, vol. 6, pp. 457-485,

1.2. POINT OF DEPARTURE

Assuming the following observations to be true

- the emerging ubiquity of ICT-services leads to governance dreams about digital enforceability and the revival of governmental beliefs in policy constructability;

- digital enforceability requires, and beliefs in policy constructability induce digital surveillance services;

- design for and deployment of digital surveillance services are specialist jobs, leading to differentiation and agency, to specialist governance proxies, and thus to additional knowledge asymmetries in political decision making;

- political decision making thrives on the framing of security threats,

  my point of departure becomes this:

  The framing of security threats directs beliefs in policy constructability towards designing additional digital enforceability regulations, creating public order exceptions for digital surveillance services, in a political decision making process, characterized by additional knowledge asymmetries.[8]

1.3. HYPOTHESES UNDER INVESTIGATION

The propositions I state and try to repudiate in this contribution are:

1. legal systems are institutions (are law systems), and function to provide valuable structure to group life;

2. law-system quality can be expressed empirically;

3. law-system quality is, or rather should be, in the domain of scientific law studies.

   I won't succeed in repudiating any one of them.

1.4. APPROACH

In the approach chosen I do not look for knowledge akin to 'laws of nature' of the

$$e=mc^2$$

---

[8] I have elaborated on the meaning of this rather long and complex proposition elsewhere, instantiating it with some recent developments in the operational context of the Dutch judiciary (Schmidt, A.H.J. 2007, 'IT and the judiciary in the Netherlands - A state of affairs', Computer law & security report, vol. 23, no. 5, pp. 453-460. Attention to the risks involved in economic exchanges has (among many) been paid by: Akerlof, G.A, 1970, 'The Market for 'Lemons': Quality Uncertainty and the Market Mechanism,' Quarterly Journal of Economics, vol. 84, no. 3, pp. 488–500 and Myerson, R.B. 1999, 'Nash Equilibrium and the History of Economic Theory,' Journal of Economic Literature, vol, XXXVII, pp.1067-1082: 1075.

type, rather for knowledge like the models of price-forming mechanisms and of market-failure effects of economists and models of survival of the fittest mechanisms of biologists. Perhaps I can sketch the gist of my mixed approach by borrowing the opening example from Ruth Garrett Millikan[9] (and adapt its interpretation for my purposes here):

> **Situation 1.** *Imagine that the eye doctor is trying to put drops in your eye but you keep blinking. You insist that you don't mean to blink but that no matter how hard you try, when the eyedropper comes too close, your eye just closes. Perhaps unconsciously you don't want that medicine in your eye? What could your underlying motive be?*

In this situation we see a 'natural,' individual, rather hard-wired rule of behavior (close your eyes for protection against outside stuff) clash with a rational, individual man-made rule of behavior (open your eye to the medicine of the doctor, this is for your own good) in a social encounter. We tend to frame such clashes in a normative, *ought-to* perspective. And from a legal point of view they are assumptions about material laws, context, autonomy and purpose that help us understand and adjudicate the results of the situation – were the treatment blocked by continued blinking and the patient to refuse payment for unsuccessful treatment, for instance. Thus, at the individual level the example shows what we knew all along, that our behavior is influenced by natural rules and by rational rules that may have opposed direction, and that understanding and adjudicating the results from the clash depend on material rules, on context (we see a difference between an encounter with a physician and an encounter with an experimenting quack), on the autonomous powers of the patient to keep his eye open, against the natural impulses to close them *and* on the purpose of the social encounter (for instance if the eye doctor has *de facto* no medical, only financial reason for administering the drops). Situation 1 thus lands us in mainstream legal reasoning.

But I want to go one step further. The example illustrates the mainstream law science approach, focusing on pre-existing material rules, context, autonomous capabilities and intentions in the adjudication of individual cases. What I will discuss embraces the idea that we can understand the legislative behavior of social systems (of law systems and institutions alike) with exactly the same framework of concepts: purpose, natural rules, intentions, material rules, context and autonomy.

---

9   Millikan R. G. 2004, 'Varieties of Meaning, the 2002 Jean Nicod lectures,' MIT Press.

> *Situation 2. Consider, as a thought experiment, the situation where a new rule is proposed for your own legal system that commands not to blink when eye doctors decide to put drops in eyes. Can we rationally discuss the question how such an additional rule would influence the quality of your law system?*

Again, the question of Situation 2 is the reflection of an old idea[10] that currently enjoys more attention in economics and the social sciences than in law science. Consequently I base what follows on ideas, harvested from several insider and outsider[11] disciplines, most important from Coase,[12] Radbruch (o.c.), Fuller (o.c.), Douglas,[13] Wright,[14] Frey,[15] Lessig,[16] Olson,[17] Williamson[18] and Greif.[19]

I only recently came across the work of Myerson (o.c., 1999, 2006), Hodgson[20] and Kahan[21] – in time to realize the relevance here, but too late to digest it. This paper is a report on explorative work in progress. It explores one out of many possible approaches for research on law-system quality, facing ICT innovation.

Law systems have function by definition. So have ICT services. ICT services are only interesting to law science in so far as they have function in law systems or are law systems themselves. ICT is not interesting to law science *per se*. The legal theory required is generalist, its application specialist (ICT and law). Consequently, Section 2 and the beginning of Section 3 are not specific to ICT and law.

---

[10] Durkheim, E., 1895, 'Rules of Sociological Method,' The Free Press 1982; Douglas, M. 1986, 'How Institutions Think,' Syracuse University Press.

[11] From the legal-theory perspective.

[12] Coase, R.H. 1937, 'The Nature of the Firm,' Economica, vol. 4, no. 16, pp. 386-405.

[13] Douglas, M. 1966, 'Purity and Danger: an Analysis of the Concept of Pollution and Taboo,' Routledge (Classics 2002).

[14] Wright, I. 1973, 'Functions,' Philosophical Review, vol. 82, pp. 139-168.

[15] Frey, B.S. 1997, 'Not Just For the Money: an Economic Theory of Motivation,' Edward Elgar.

[16] Lessig, L. 1999, 'Code and Other Laws in Cyberspace', Basic Books.

[17] Olson, M. 2000, 'Power and Prosperity,' Basic Books.

[18] Oliver E. Williamson, O.E., 2005, 'The Economics of Governance,' American Economic Review, pp. 1-35.

[19] Greif, A. 2006, 'Institutions and the Path to the Modern Economy: Lessons from Medieval Trade,' Cambridge University Press.

[20] E.g., Hodgson, G.M. 2006, 'What are Institutions', Journal of Economic Issues, Vol. XL No. 1. Hodgson is addressing the issue of the evolution of institutions in many publications.

[21] Kahan, D.M. 2003, 'The logic of reciprocity: Trust, Collective Action, and Law,' Michigan Law Review, 102: 71.

2. LEGAL SYSTEMS ARE INSTITUTIONS (ARE LAW SYSTEMS)

Institutions have (i) identity, (ii) claimed sovereignty over (iii) a domain, (iv) shared beliefs, (v) function, (vi) rules (or laws),[22] (vii) policies, (viii) norms, (ix) elites, (x) work forces, (xi) publics, (xii) feedback and communication channels, and they have and are part of (xiii) hierarchically organized institutional structure. 'Institution' is a family concept; it is hard to define, because institutions differ in many significant ways. Nevertheless I contend that it makes sense to consider anything showing the thirteen mentioned characteristics to be an institution. Thus, I consider *e.g.* the following kaleidoscopic collection of social systems to be institutions: the Dutch health care system, nation states, soccer world championships, families, parishes, pop groups, the UN, the EU, Mogadishu factions, firms, Super Bowls, schools, the Camorra, markets, games and most Internet-mediated services (Google, open source projects, Freenet, Wikipedia, Hyves, YouTube, Second Life, etc.), even Internet itself (with its IETF).

From a law-science perspective, the most striking characteristic of an institution is its having rules.[23] That is why I sometimes tend to call institutions 'legal systems' (when referring to nation states or treaty organizations) or 'law systems' (as synonymous to institutions in general).

2.1. NATURAL LAW-SYSTEMS

For my purposes, however, the most important issue in characterizing law systems this way is in the almost universal *de facto* concurrency of the whole set of characteristics – and in the hypothesis it suggests that institutions have natural structure, that laws (man-promulgated general rules) naturally come with institutional identity, sovereignty, domains, beliefs, function, policies, norms, elites, work forces, publics etc.[24] Apparently, organization *per se* nurses these characteristics towards law system-hood. Analytically, we touch upon the reciprocal structure of etiologic, functional argument here.[25] In biology, it may be used for the explanation of the long neck of the giraffe, founded on the value-free mechanism called 'survival of the fittest:' out of the set of random adaptations the instance that proves to be most fit to survive survives. In Wright's (*o.c.*) functional terms:

---

[22] Rules or laws are considered to have gained local-institutional legitimacy. This is a relativistic interpretation of the 'law' concept which is rather outlandish from mainstream jurisprudential eyes and is – as far as I know - first embraced by Fuller, L.L. 1969, 'The Morality of Law: revised edition', Yale University Press.

[23] Also, from an economic perspective, see North, D. 1990, 'Institutions, Institutional Change and Economic Performance,' Cambridge University Press.

[24] Which would not only account for the considerable attention for institutional analysis paid in economics and in the other social sciences, but which would also suggest that the results of such attention might be useful when reasoning about law-system quality.

[25] Wright, *o.c.*

> ***Etiologic argument 1***. *A long neck supports reaching tree leaves; Giraffes can reach tree leaves as a consequence of their long necks being there.*

A similar functional process may be at work for the etiology of institutions.

2.2. NATURAL LAW-SYSTEM FUNCTION

We tend to loathe this idea. Coase's *Nature of the Firm*,[26] for instance, took a very long time (roughly: from 1937 until the 1980s) to gain the respect of the *forum* of leading economists. Making a long story short, I consider Coase's analysis (for my purpose here) to unveil a 'survival of the better value' mechanism for organizing economic exchanges: the transaction costs of *ad hoc* economic activity (information gathering, *per exchange*, on availability, quality, price, ownership, trustworthiness etc.) may outgrow the costs of organized activity (transaction cost handling by specialization, policy making, agency, risk assessment, long-term contract etc.) – thus showing that there *are* equilibrium(s) where (partial) organization has equal value to reciprocal inroads into individual freedom of choice or into autonomy. I use 'better value' instead of 'better efficiency,' because I accept this interpretation of Coase's analysis to be valid also for non-commercial exchanges. Consequently, the idea of 'natural organization' implies natural equilibrium(s), involving both loss of values, and other values gained. Consequently, a basic requirement for law-system quality might be that for all[27] participants the values gained outsize the values lost.

2.3. MIXING THE NATURAL AND THE RATIONAL

One major distinction between the 'natural' mechanisms of *survival of the fittest* and *survival of the better value* must be stressed: the latter is not founded on random mutation processes, but on human capabilities for rational intervention, design and judgment under conditions of incomplete information. Survival of the better value is thus to be understood as a natural-rational mixed bag (see also below), perhaps not unlike the mechanism involved in accepting new words in a living language.

---

[26] Coase, *o.c.*
[27] Assuming, for the moment, that individuals who evaluate otherwise are free to relinquish membership.

2.4. NATURAL VALUES (TENTATIVELY)

The concept of law-system quality introduces incredible complicated questions amongst which the first and foremost are whether we can (1) identify 'natural' values that (2) are commensurable and (3) can be exchanged. Researching, let alone answering these questions is way beyond the scope of the current discussion.

One of the difficulties lies in the consideration that value is a subjective predicate. To indicate what this implies, I generate a purely hypothetical typology of values by combining two orthogonal three-point scales that help qualify subjectivity of valuation: one dividing the world of values in egoist, reciprocal and altruist and another dividing it in individual, institutional (private law systems) and institutional (public law systems).[28] We thus create nine different 'natural' value slots on transactions. One of the ways to check whether this ordering relates to 'natural symbols' is to find out if different wordings are readily available in the language. In the table below, I have filled each of the slots with three wording examples, since each transaction may occur between homo- and hetero-logical organization types.[29]

Thus 'acts of ideology' are considered altruist transactions between individuals, 'acts of loyalty' are considered altruist transactions from individual to private institutions and 'acts of solidarity' are considered altruistic transactions from individual to public institutions. Of course the resulting table (Table 1) is debatable and by no means final, or exhaustively filled in – I merely use it to show that by looking at the concepts in a specific slot, one might develop an idea about what values lay behind them.

Exchanges	Individual	Institutional (private)	Institutional (public)
Altruist	acts of ideology acts of loyalty acts of solidarity	acts of recognition donations gifts to public domain	social security subsidy aid
Reciprocal	contracts work acts of citizenship	Employment, sales agreement mandates	public order enforcement infrastructure provision treaties
Egoist	Usury free riding tax fraud	rent seeking price agreements tax evasion	acts of power abuse acts of corruption acts of power politics

Table 1: context and the interchange concept

---

[28] For private law systems it is assumed that entering or leaving it is a matter of agreement. Membership of public law systems is involuntary. Public law systems often coincide with legal systems or religious systems.

[29] Only the horizontal relationships in Figure 1 are explored here for reasons of transparency.

The idea is that one can test an analytical conceptualization of 'natural' issues by finding appropriate natural language wordings and by subsequently re-analyzing these for underlying values. Doing so tentatively, I come up with six 'natural' values

Values	**Individual**	**Institutional (private)**	**Institutional (public)**
Altruist	Freedom (fr)	Autonomy (a)	(Social) security (se)
Reciprocal	Fairness (fa)	Welfare (w)	Legitimacy (l)
Egoist	Freedom (fr)	Autonomy (a)	(Public-order) security (se)

Table 2: Context-sensitive values of interchanges

where:

Freedom is a natural value applicable to acts of altruism or egoism where at least one individual is involved. We distinguish freedom to behave egoist and freedom to behave altruist. Both freedoms have their value (innovation, testing the seams of fairness) and their limits. The limits are supposed to be expressed in public-order exceptions to freedom excesses: animal-protection freedom does not include the freedom to bomb a laboratory and free-riding freedom does not include the freedom to plagiarize.

Fairness is the natural value applicable to acts of reciprocity where at least one individual is involved. Although it is extremely difficult to define it as a predicate, it appears to be natural and easy to notice when acts of reciprocity are unfair. Unfair exchanges may motivate to freedom excesses.

Autonomy is a natural value applicable to acts of altruism or egoism where at least one private law system is involved. We distinguish the autonomy to behave egoist and the autonomy to behave altruist. Both autonomies have their value (innovation, testing the seams of welfare) and their limits. The limits are supposed to be expressed in public-order exceptions to autonomy excesses: religious autonomy does not include the autonomy to bomb an embassy, and rent-seeking freedom does not include the autonomy to instantiate and exploit market failures.

Welfare is the natural value applicable to acts of reciprocity where at least one private law system is involved. Although it is extremely difficult to define, it is considered to be a natural corollary of reciprocal exchange in markets without market failures, or of reciprocal exchange in markets operated as pure price-discriminating monopolies. Markets that do not generate welfare may motivate autonomy excesses.

> ***Security***, *to be distinguished in social and public-order security. Social security is the natural value applicable to acts of altruism in which at least one public law system is involved. Public-order security is the natural value applicable to acts of egoism in which at least one public law system is involved. Both are related to the design and enforcement of public-order exceptions. The levels of social and public-order security required in a public law system are (in principle rational) matters of public choice.*

> ***Legitimacy*** *is the natural value applicable to acts of reciprocity in which at least one public law system is involved. If the elites of a public law system need taxes, they may enforce them if there is a rule that allows them to do so. The level of legitimacy required in a public law system is most importantly related to the leeway in legitimating rules and thus a (in principle rational) matter of public choice.*

2.5. COMMENSURABILITY AND PUBLIC CHOICE

It seems impossible to link scales to these six context-related values to make them commensurable in order to support models for reciprocal exchange. As a result we seem to need appropriate rational processes for public choice. Let us assume we can model the value balances (V_i) of a legal system as experienced by participant i, considering a new rule to be added to the rule set of the system, in a list of valuations for freedom (fr), fairness (fa), autonomy (a), welfare (w), security (se) and legitimacy (l):

$V_i = [fr_i, fa_i, a_i, w_i, se_i, l_i]$

We can catch the value balances for all participants (1, …, n) in matrix V as follows:

$V = [V_{1, …,} V_n]$

Now let us also assume we can subject this matrix to a function (*PC* for Public Choice) which will result in a single vector of values, that transforms law system S, into the configuration of S that has best group value, and thus optimal quality (V_S):

$V_S = PC(V,S)$

However, in our mixed approach[30] we concede that appropriate processes for public choice cannot be modeled as rational processes either. In

---

[30]   Notice for instance how legitimacy, as a natural value, depends on positive law being there as a result of a (necessarily natural) function for establishing public choice.

this, we may first follow (*mutatis mutandis*) the lead of the economists, as aptly described by Myerson,[31] and assume individuals to be rational, and thus, that if we find something lacking in a system, we do not have to worry about explanations diverging into psychology. Subsequently, however, economists[32] have been investigating impossibility theorems for *rational* public choice. Their results urge us to accept that our practical arrangements for public choices are natural, or at best partially rational. In other words we may individually be ready to make opinion-based choices between different value-profiles for law-system configurations (one may, after all, individually prefer to legitimate dictatorship over democratic governance, or the Camorra over the Italian legal system), but it is not possible to always rationally identify the best policy out of the complete set with policy preferences of all participants in a law system. We have to look elsewhere when looking for a more general approach.[33]

2.6. RATIONAL LAW-SYSTEM FUNCTION AND QUALITY

Where things are constructible by man we cannot leave our analysis at natural reasons, there are additional forces at work.

> *Etiologic argument 2*. *A window provides light and fresh air in the room; light and fresh air in the room are consequences of a window being there. A room provides privacy; privacy is the consequence a room being there. A house provides shelter against the elements; shelter against the elements is the consequence of a house being there.*

The concept of function mentioned earlier thus supports discussion about multi-level value constructs, and how they may be served, not only by accident, but also by design. When we are considering non-natural, physical constructs we don't grow them, but build them to a purpose. We *design* the construct and rationally measure its quality using the design and its purpose as the yardstick.

What about the quality of the design itself? We measure the quality of the design by the natural survival-of-the-better-value mechanism, discussed earlier.

But when we consider social constructs like law systems, there is an additional complication. The quality of a law system is not only related to its

---

[31] Myerson (*o.c.*, 1999: 1069-1070).

[32] e.g. Arrow, K.J. 1950, 'A Difficulty in the Concept of Social Welfare', Journal of Political Economy, vol. 58, no. 4, pp. 328-346; Sen, A. 1979, Personal Utilities and Public Judgments: Or What's Wrong With Welfare Economics', The Economic Journal, vol. 89, pp. 537-588.

[33] Of course, accepting that we will not be able to find a general solution for rationally deciding on value preference collectively does not imply that we cannot effectively research for grouped value-preference profiles.

success in fulfilling the requirements of the design and the design's competitive edge, it is also related to its capacity to attract people, interested to manage, to work and to take part in it. Without this capacity the law system fades from existence. So an additional and existential measure for law-system quality is the capacity to attract and sustain 'membership,' in its capacity to generate willingness to participate. Etiologically this brings the following intriguing argument to the fore.

> ***Etiologic argument 3****. Law systems provide structure to and support values in our lives if we want to. Our lives have structure and supporting values as a consequence of law systems and our willingness to participate being there. Public order exceptions foster law-system security as a supporting value if we want to. We have law-system security as a supporting value as a consequence of public order exceptions and our willingness to accept them being there.*

Consequently we can summarize our quest for rational understanding what the quality of law systems is in one sentence: *law-system quality is a function of our willingness to participate in it and our willingness to participate is an individual function of interchange values.* Is willingness to participate in a law system something we can model and express empirically?

3. LAW-SYSTEM QUALITY CAN BE EXPRESSED EMPIRICALLY

As hinted earlier, there have been times when the quality of legal systems was heavily debated between legal theorists. One of them, Gustav Radbruch, had intimate empirical knowledge of the German legal system in its different appearances before, during and after Nazism. He started out as a positivist (also the current mainstream position in legal theory), that is: accepting all law to be valid that was promulgated in accordance with valid rules and procedures. He felt unable to uphold this position in the face of what happened during and after Nazism, because during Nazism its laws were carefully based on valid rules in the sense of the positive-law position and some immediate post-Nazism rules were retroactive. Thus Radbruch started his search for criteria that might overrule the validity of formally valid rules, meanwhile shifting from a positive-law to a more natural-law position. In summary, Radbruch came up with a material, value-related functional analysis of law, distinguishing three main functions, supporting (1) justice, (2) purposiveness[34] and (3) certainty (*a predictable public order*) and presented them in the given order of importance. Like myself, when

---

[34] This translation of 'Zweckmässigkeit' is argued for by Paulson, translator of Radbruch (1946, *o.c.*)

presenting and discussing the six values in Table 2, Radbruch encountered the problem of making explicit what justice means and when the lack of it is of such measure, that it may invalidate positive law.

My earlier analysis – which is indebted to Radbruch's – takes a somewhat different turn, after realizing that natural-value based analysis will fail to objectively and consistently model a law system's material validity, because natural values are both context- and beholder-dependent, and it may be impossible to transform the individual valuation sets into a rational, single evaluation of the system as a whole. Natural values, opinions, may give reason to *consider* a law invalid; they do not *make* it invalid.

Perhaps our customary preoccupation with *ought-to* questions creates and maintains the seemingly impossibility of deciding rationally on the natural-law validity of laws. And lets face it, *ought-to* answers to *ought-to* questions may be of very little value in the face of law systems, that actually take a positivist turn for serious bad quality. In my reading, Radbruch's problem is not so much how to invalidate bad material law through theory, but to theorize about how individual and collective behavior in law systems relates to law-system quality. This rephrasing of the problem includes the other frightful possibility into the discussion, of what good positive law may mean in the case of related natural law taking a turn towards real badness. Let us drop the *ought-to* reasoning for a moment and focus on actual, observable behavior.

If a legislator creates a law system's rules, individuals participating in the law system have the following behavioral options:

(1)   to use (u),
(2)   to comply (c),
(3)   to evade (e),
(4)   to try and leave the law system (l),
(5)   to revolt (r),

and those outside the system have the following options:

(6)   to try and join the law system (m),
(7)   to try and team up with the system (t)
(8)   to try and fight the law system (f).

We can in principle count the amounts of individuals that during a certain period, say a year, have at least once opted for behavior (5) - (1), in that order, while avoiding counting an individual more than once. We can also count (6), (7) and (8). We can also count total membership (n). Total membership is equal to the sum of the results of counts (5) – (1).

Assuming for the moment that these counting results are transformed into percentages (counts times 100 divided by n) and referred to as u, c, e, l, r, j, t, and f respectively, I contend that the *de facto* willingness to participate (W) of a law system can be expressed as the list with u, c, e, l, r, j, t and f.

W = [u,c,e,l,r,j,t,f]

The quality of a law system is a function of W. I choose Q (for Quality) and *R* (for *Radbruch*) to denote the function. In formula:

$Q \leftarrow R(W)^{35}$

Which looks all very nice and precise, but has no meaning unless we have an acceptable model for the *Radbruch* function. I address this issue in an exploratory manner by discussing the qualities of three ICT supported services that have law-system character.

4. *RADBRUCH* IN CYBERSPACE

These services are (1) Wikipedia, (2) the Dutch health care administration service mentioned in the Introduction and (3) a file-sharing law system (KaZaA). Since I have no actual data, I will use estimates for instantiating the respective W-lists and quality. What follows is a speculative preliminary analysis in order to get a feeling for what the Radbruch function might look like and what the resulting operational concept of law-system quality may mean. I give these estimates in Table 3:

Services	u	c	e	l	r	j	t	f	Q	fr	fa	a	w	se	le
Wikipedia	92	5	0	2	1	10	2	5	8	4	4	4	4	2	5
DHCAS	17	40	40	2	1	0	5	5	5	-3	-1	-3	0	3	5
KaZaA	58	1	1	10	30	2	1	50	4	4	-2	4	-1	-3	5

Table 3: Estimated observables and valuations for three ICT-services

---

[35] At this point the reader may wonder how counting individual behavior regarding law systems will help solve Radbruch's problem. Let me reiterate that I have rephrased the Radbruch problem after mentioning that solving it by theory is neither feasible nor effective. What we *can* do is look for the substance of evading, revolutionary and relinquishing behavior of participants, and look for opposing behavior from outside institutions. With these variables it does not seem impossible to find a function that will come up with an appropriate quality estimate for *e.g.* Nazism as a law system. And yes, it must be conceded that when a very bad system is praised, through actual behavior, by all participants and outside institutions *that have the capability to revolt*, it will be considered of high quality in the approach sketched. ('Capability' in the sense of Sen, A. 1979. 'The equality of what?', The Tanner Lecture on Human Values, delivered at Stanford University, May 22). As many have pointed out, and practiced, an important function here resides in education (*e.g.*, Snow, C.P. 1964, 'The Two Cultures: And a Second Look: An Expanded Version of The Two Cultures and the Scientific Revolution', Cambridge University Press, and: Naipaul, V.S. 1998, 'Beyond Belief', Knopf).

I added my assessment of general law-system quality for each service in the range 1-10 in column Q. The assessment is based on consideration of estimated valuations for freedom, fairness, autonomy, welfare, security and legitimacy, grading these values intuitively from -5 to 5, where a negative value indicates a negative balance. Below we relate them (as dependencies) to the percentage estimates of observable behavior in Table 3 (use, comply, evade, leave, revolt, join, team up, fight). What can we do with these estimates?

4.1. WIKIPEDIA
Participants are users, authors and elites. Most users just use (do not contribute as authors), I estimate 92 per cent of them. Users that also contribute as authors (write, correct, discuss) form a minority (complying, 5 per cent). A small percentage finds the service not rewarding and stop being participants (2 per cent). There are more people joining the service than leaving. Several outside services are linking to Wikipedia. There is a substantive 'outsider' movement (five per cent) fighting the service, mainly school teachers and academics, because they consider Wikipedia inadmissible as a knowledge source which can be referred to.

I estimate the quality of Wikipedia as a law system with an 8, out of a possible 10, mainly, as stated above, because there are issues about the quality of the information and, related, usability for the intended audience (students). These issues show themselves in the 'outsiders' that fight the use of Wikipedia in schools and universities. In the value department Wikipedia scores generally very high, with the exception of security. The very openness of the system makes it vulnerable, at least in theory, to mass vandalism attacks. It may be a result of the exceptional high valuations in the other slots that provide (at least for the moment, so it seems) adequate protection in practice through the scrutiny of vigilant author-participants. There are no legitimacy problems, as the system is a private-law system, operating well within public-order exceptions.[36]

4.2. DHCAS
Participants are medical professionals, health care insurance companies and the government. Insurance companies and a substantial part of the professionals comply, and just use the service. I expect that practitioners who experience financial problems (a substantial part of them) due to the reduction in renewal prescription remuneration[37] will look for ways to evade the new regulation. It may be expected that there are possibilities to do so, for in-

---

[36] Legitimacy thus represents the value of positive-law promulgating procedure.
[37] See the first paragraph.

stance by changing the practice of providing renewal prescriptions automatically with requiring control visits more often. Some professionals leave the health care system, entering the commercial health care market, most often in the psychological specialisms. Their stated motivation concerns privacy, since the ICT-service involved requires the disclosure of patient identity to health care insurers. The privacy issue is also raised, because the DHCAS is linked to a variety of external administrative systems.

I estimate the quality of DHCAS as a law system with a 5, out of a possible 10. Mainly, because it invites a substantial part of the participants to evade the system rules (see above). Looking at values, I consider the reduced freedoms of autonomies, for both professionals and insurance companies, a negative burden on their willingness to participate – while this burden does not find compensation in added welfare value: practitioners have to spend a substantial amount of time with the DHCAS system they would rather spend with patients. The values for leaving and joining the system are not very meaningful, as we have a public-law system. There is, however a strong security value related to the system: as a consequence of uncontrollable public expenditure in health care, the whole system is expected to collapse in the next few years without better monitoring and governance.

There are no legitimacy problems, as the system is an administrative-law system, promulgated in compliance with positive-law procedure.

4.3. KAZAA

KaZaA is a well-known system, supporting peer-to-peer exchange of files. It is used mainly to exchange copies of music files – most often without permission of the intellectual property right holder. A substantial part (58 per cent) of its user base only uses the system to download. However, a serious amount of participants employs (30 per cent) it in a manner that revolts against the rules: they make copyrighted music files available (by uploading them). I consider these acts to revolt against the system, requiring these users to pay more for a worse logistic service then necessary, as KaZaA shows by its mere existence. And indeed, the failure of the music industry, for eight years now, to commercially provide a competitive service, providing additional value over the rather effective peer-to-peer services that have been freely available since 2000 may incense critical minds. A very small percentage uses the system in accordance with its rules (*e.g.*, only upload licensed material). The music industry and its lobby have put up a strong fight against inappropriate peer-to-peer use, gaining the support of many

non-participants. There is serious opposition to KaZaA as a law system. Perhaps because of this opposition and its expression in law suits, participation in KaZaA is waning.

I estimate the quality of KaZaA as a law system with a 4, out of a possible 10. Mainly, because it has an excessive large user base revolting against the rules, thus leaving it rather unstable, and because from outside the system a serious fight is going on to end it. Looking at values, freedom, welfare[38] and autonomy have healthy balances, but fairness and security do not. Although there are no legitimacy problems, as the system is a private-law system, operating (as a system, the problems are in principle caused by the users) well within public-order exceptions, the system is below par as a law system in practice, due to its fairness problems[39] and its controversial use, resulting in revolt and fight.

4.4 ANALYSIS

By only looking at the elements of the willingness to participate vector we can induce a few hypotheses relevant to *R*:

1. Fewer participants leaving (l) than joining (j) may be a positive indicator for system quality; more participants leaving than joining may be a negative indicator;
2. Dispersion over using (u) and complying (c) does not seem to relate to quality;
3. More participants that evade (e) seems to relate to lower quality;
4. More participants that revolt (r), in combination with more outsiders that fight (f) the system may be related to lower quality.

Of these hypotheses the last one is most interesting as it directly relates to the quandary Radbruch and Fuller are focusing on: when a law system results in substantial revolt (internal) and fight (outside) its quality is seriously in doubt.

When looking at the (non-observable) value vectors, related to the observable willingness to participate vectors, we might hypothesize a functional relationship[40] as follows:

---

[38] As the whole KaZaA system is controversial, considering it to have high welfare value will be controversial too. I have opted for a high welfare value, because this is how peer-to-peer systems for music-file sharing are presumably valued by its participants. Welfare, here, is a value, internal to the system.

[39] KaZaA has internal fairness problems because it does not support copyright remuneration for copyright holders, while in practice being used for the exchange of copyrighted works.

[40] Actually, I think that there may be additional interesting functional relationships buried in Table 3, especially on the differences between qualities of private and public law systems. However, since I am running out of space and time here while further research is planned, I leave it at the most obvious and valuable functional relationship as represented in argument 4.

> ***Etiologic argument 4***. *High welfare combined with low fairness in a law*
> *system support inside revolt and outside opposition and thus low quality. A*
> *law system has low quality due to inside revolt and outside opposition be-*
> *cause high welfare combined with low fairness are there.*

Besides looking rather obvious and self-evident,[41] this argument does not
help us any further, so it may seem *prima facie*. However, I consider its being
self-evident a virtue in the light of the cursory research it is based on. And
in the concluding remarks I will argue that the argument may indeed help
to bring additional focus to ICT and Law research.

5. CONCLUDING REMARKS

One of the tasks of ICT and law research is providing knowledge on what
the quality of law systems is and how addition or removal of a rule will in-
fluence a law system's quality. ICT-services are only interesting to ICT and
law research insofar they support law systems, or are law systems them-
selves. The quality of a law system is related to its rules, to the willingness
to participate (W) and to the values (V) it delivers to its participants. Will-
ingness to participate is compound of several variables that can be observed
and counted, leading to the suggestion that there may be (this needs further
research) a general Radbruch-function R that can relate W_I (of law system I),
to I's quality QI: $QI \leftarrow R(WI)$.

It is impossible to find a general public-choice function for rationally de-
ciding on one singular set of values, that represent the optimal collective
value for a law system, as these values are only observable as opinions, rel-
ative to whom holds them in context. It nevertheless seems obvious that in-
dividual willingness to participate to a specific law system at a specific time
is motivated by a set of individual values, and that the quality of a law sys-
tem thus indirectly depends on V.

Analysis of an estimated dataset with variables for W and V, for three
ICT services with law-system character leads to at least one hypothesis:

> *High welfare combined with low fairness in an ICT-mediated law system*
> *support inside revolt and outside opposition and thus low quality. An ICT-*
> *supported law system has low quality due to inside revolt and outside op-*
> *position because high welfare combined with low fairness are there.*

This hypothesis does not help in the face of an actual law system turning to-
wards bad quality. Appropriate knowledge might, though. The hypothesis

---

[41] Perhaps not so self evident after all, considering Amy Chua's extensive argument of a
closely related hypothesis in her 'World on Fire: How Exporting Free Market Democracy
Breeds Hatred and Global Instability,' Arrow Books, 2003.

may thus help to focus some of our research. We may observe the variables of willingness to participate and relate them to grouped opinions on value held,[42] of law systems turning bad, or good, in history. And try and hope to harvest some relevant knowledge that way. For instance concerning the mechanisms fuelling enduring conflict (as in the KaZaA situation) and how to recognize and prevent them through our law-system designs. If we would succeed, we would have additional scientific legal arguments available to bring to the fore in political, legislative debate.

Aiming for such knowledge on how addition or removal of a rule (or code, *memento* Lessig, *o.c.*) will influence a law system's quality seems rather urgent, when facing the regulatory power, already there and to be exerted by developments towards 'ubiquitous computing,' 'nanotechnology' and 'the singularity point.'[43]

6. AFTERTHOUGHT AND ACKNOWLEDGEMENT

I gladly acknowledge the kind, unknown reviewer ("extremely interesting theory, definitely worth publishing as it is") who also showed a concern that needs serious attention because I find it reflected in almost all of the informal discussions I have had with peers on the subject. The reviewer formulated it in the following manner

> *'However, we are a bit concerned as to the almost purely subjective focus of the method, while the quality of the system is calculated (or implied) almost directly out of values resulting from individual attitudes. The problem we see here is in the fact that many objective (or objectively good) qualities of law are not mirrored by subjective preferences or abilities of individuals. If we count individual preferences as crucially important in the resulting function, we in fact admit our insufficiencies as to considering the ideal nature and ideal existence of law and its values […]'*

thus introducing a direct legal-essentialist perspective I have been trying to cope with indirectly, and in a multi-level manner, employing etiologic reasoning.

As I see it, etiologic argument rests on a very special reasoning framework to be found in both Smith's[44] and Darwin's[45] seminal analyses.[46] Smith postulates 'the wealth of nations' as an emergent quality, as a dependency

---

on individual exchange behaviour under the price mechanism (the invisible hand) and Darwin – inspired by and following Smith's lead here – postulates 'the preservation of favoured races' as an emergent quality, as a dependency on individual (random) adaptations under the struggle for life within the environment as a mechanism. I have merely been trying to investigate where the postulate of 'the quality of law systems' leads to, when considering it as an emergent quality, as a dependency on individual evaluations under the mechanism I have coined 'survival of the better value.' In doing so, I have thus far failed to address the two issues raised by the reviewer, issues that have (*mutatis mutandis*) also been raised against the etiologic arguments of both Smith and Darwin. The issues are: (1) `the fact that many objective (or objectively good) qualities of law are not mirrored by subjective preferences or abilities of individuals' and (2) 'if we count individual preferences as crucially important in the resulting function, we in fact admit our insufficiencies as to considering the ideal nature and ideal existence of law and its values.' I will address both as an afterthought, framing (1) as the 'emergency problem' and (2) as the 'incompleteness problem,' employing analogous reasoning mainly.

6.1. THE EMERGENCY PROBLEM

The fact that in the theory proposed many objective (or objectively good) qualities of law are not mirrored by subjective preferences or abilities of individuals is true. But is it a decisive objection? Lets try the argument on Smith. Would 'the fact that in Smith's theory many objective (or objectively good) qualities of economies are not mirrored by subjective preferences or abilities of individual exchanges' be a decisive objection against the price-mechanism theory? I do not think so. Would 'the fact that in Darwin's theory many objective (or objectively good) qualities of surviving species are not mirrored by subjective preferences or abilities of individual specimen' be a decisive objection against his evolution theory? I don't think so either. Rather the other way around. My guess is that in both theories (Smith's and Darwin's) subjective preferences and/or abilities are crucial for the explanation of higher-level phenomena, like the wealth of nations or the survival of species. Both theories accept that we can but partially *plan* for wealth or survival, *that these fundamentally emerge as the side effects of changes in individual*

---

[45] Darwin, C. R. 1859, On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life, London.

[46] See also: Hodgson, G.M. 2004, 'Darwinism, causality and the social sciences,' Journal of Economic Methodology 11:2, p. 175-194.

preferences and abilities. I propose to accept a similar *laisser-faire* related mechanism for law-system quality. The first concern is true but not – at least not yet, in my opinion – decisive.

6.2 THE INCOMPLETENESS PROBLEM

The second concern is a different cup of tea. It reads: 'If we count individual preferences as crucially important in the resulting function, we in fact admit our insufficiencies as to considering the ideal nature and ideal existence of law and its values.' Again this is true. And again we might consider substitution and try to understand what could be meant by phrasings like 'the ideal nature and ideal existence of economies' or 'the ideal nature and ideal existence of species.' Somehow the substitution exercise makes me wonder whether "the ideal nature and the ideal existence of law" has or deserves any meaning at all while it makes me concurrently wish to claim that the proposed theory has been doing exactly that (describing the ideal nature and the ideal existence of law). Thus the second concern raised by the reviewer is really disturbing and I am not sure I see a way out, as I do not seem to sufficiently understand it in a coherent manner.

There is a wonderful parable by Oliver Wendell Holmes Jr. (before 1920)[47] that may relate to the heart of the matter at hand. It is made available by Jones.[48]

> *"I do not pin my dreams for the future to my country or even to my race […] I think it not improbable that man, like the grub that prepares a chamber for the winged thing it never has seen but is to be – that man may have cosmic destinies that he does not understand. And so beyond the vision of battling races and an impoverished earth I catch a dreaming glimpse of peace."*

In this citation, cosmic destinies and down-to-earth, biological abilities and constraints are combined in a form that does not fail to touch the soul.[49] And I feel a beginning of understanding for the notion of 'the ideal nature and the ideal existence of law,'[50] when it would refer to a function *man does not fully understand*, guiding us towards a 'cosmic destiny' *we do not fully un-*

---

[47] I do not have access to the source reported by Jones: Oliver Wendell Holmes Jr., Collected Legal Papers, 1920.

[48] Jones, H. W., 'Law and the Idea of Mankind,' Columbia Law Review, Vol. 62, No 5, p. 753-774, 1962. Jones selected it as a closing word to soften his rather pessimist analysis of what human destiny we may expect in a context where we only have international law to curb the immense risks of the nuclear age.

[49] The citation is popular. I found it in Jones (o.c.) and at the climax of Philip Bobbitt's 'Constitutional Fate' (1984). I have at least referred to it twice myself.

[50] The phrase evokes formidable authors like Plato and Kelsen for me, as well as almost all religious laws. My brand of natural-law theory, however, is secular and non-Platonic.

derstand either. If this interpretation of the second concern makes sense, the theory presented here claims to provide an instrument to nibble a few small extra pieces off from the unknown, not to solve it all. In this reading the second concern is valid, but only decisive for who is willing to trade partial progress for dreams of complete solutions.

REFERENCES

[1] AKERLOF, G.A, 1970, "The Market for "Lemons": Quality Uncertainty and the Market Mechanism," Quarterly Journal of Economics, vol. 84, no. 3, pp. 488–500.

[2] ARROW, K.J. 1950, A Difficulty in the Concept of Social Welfare", Journal of Political Economy, vol. 58, no. 4, pp. 328-346.

[3] CALABRESI, G. & BOBBITT, P. 1978, "Tragic Choices", W.W. Norton & Company, New York.

[4] CHUA, A. 2003, "World on Fire: How Exporting Free Market Democracy Breeds Hatred and Global Instability," Arrow Books.

[5] COASE, R.H. 1937, "The Nature of the Firm," Economica, vol. 4, no. 16, pp. 386-405.

[6] DARWIN, C. R. 1859, "On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life," London.

[7] DOUGLAS, M. 1966, "Purity and Danger: an Analysis of the Concept of Pollution and Taboo," Routledge (Classics 2002).

[8] DOUGLAS, M. 1986, "How Institutions Think," Syracuse University Press.

[9] DURKHEIM, E., 1895, "Rules of Sociological Method," The Free Press 1982.

[10] FULLER, L.L. 1953, "American Legal Philosophy at Mid-Century", Journal of Legal Education, vol. 6, pp. 457-485.

[11] FULLER, L.L. 1969, "The Morality of Law: revised edition", Yale University Press.

[12] FULLER, L.L. 1978, "The forms and limits of adjudication", Harvard Law Review, Vol. 92, pp. 353-409.

[13] GREIF, A. 2006, "Institutions and the Path to the Modern Economy: Lessons from Medieval Trade," Cambridge University Press.

[14] HODGSON, G.M. 2004, "Darwinism, causality and the social sciences," Journal of Economic Methodology 11:2, p. 175-194.

[15] HODGSON, G.M. 2006, "What are Institutions", Journal of Economic , Vol. XL No. 1.

[16] JONES, H. W. 1962, "Law and the Idea of Mankind," Columbia Law Review, Vol. 62, No 5, p. 753-774.

[17] KAHAN, D.M. 2003, "The logic of reciprocity: Trust, Collective Action, and Law," Michigan Law Review, 102: 71.

[18] LESSIG, L. 1999, "Code and Other Laws in Cyberspace", Basic Books.

[19] MILLIKAN R. G. 2004, "Varieties of Meaning, the 2002 Jean Nicod lectures," MIT Press.

[20] MYERSON, R.B. 1999, "Nash Equilibrium and the History of Economic Theory," Journal of Economic Literature, vol, XXXVII, pp.1067-1082.

[21] MYERSON, R.B. 2006, "Fundamental theory of institutions: A lecture in honor of Leo Hurwicz," The Hurwicz Lecture presented at the North American Meetings of the Econometric Society, at the University of Minnesota, on June 22, 2006.

[22] NAIPAUL, V.S. 1998, "Beyond Belief", Knopf

[23] NORTH, D. 1990, "Institutions, Institutional Change and Economic Performance," Cambridge University Press.

[24] OLSON, M. 2000, Power and Prosperity, Basic Books.

[25] PAULSON, S.L. 1994, "Lon L. Fuller, Gustav Radbruch, and the "positivist" theses," Law and Philosophy, vol. 13, no 3, 1994, pp. 313-359.

[26] POPPER, K. 1963, "Conjectures and Refutations", Routledge & Kegan Paul, 1963.

[27] POSTEMA, G.J. 1994, "Implicit Law", Law and Philosophy, vol. 13, no. 3, pp. 361-387.

[28] RADBRUCH, G. 1946, "Statutory Lawlessness and Supra-Statutory Law," Oxford Journal of Legal Studies, vol. 26, No. 1 (2006), pp 1-11.

[29] SCHMIDT, A.H.J. 2007, "IT and the judiciary in the Netherlands - A state of affairs", Computer law & security report, vol. 23, no. 5, pp. 453-460.

[30] SCHMIDT, A.H.J. 2009, "E-JUSTICE: No ground for optimism", in: Österreichische Computer Gesellschaft, *eeeGov Days 2009*, OCG (ISBN 978-3-85403-255-7), p.52-60.

[31] SEN, A. 1979, Personal Utilities and Public Judgments: Or What"s Wrong With Welfare Economics", The Economic Journal, vol. 89, pp. 537-588.

[32] SEN, A. 1979. "The equality of what?" The Tanner Lecture on Human Values, delivered at Stanford University, May 22.

[33] SMITH, A. 1776, "An Inquiry into the Nature and Causes of the Wealth of Nations," full text available at .

[34] SNOW, C.P. 1964, "The Two Cultures: And a Second Look: An Expanded Version of The Two Cultures and the Scientific Revolution", Cambridge University Press.

[35] SUMMERS, R.S. 1978, "Professor Fuller"s jurisprudence and America"s dominant philosophy of law," Harvard Law Review, vol. 92, pp. 433-499.

[36] TAMANAHA, B.Z. 2004, "On the Rule of Law: History, Politics, Theory", Cambridge University Press, Cambridge.

[37] TEUBNER, G. 1993, "Law as an Autopoietic System", Blackwells, London.

[38] WILLIAMSON, O.E., 2005, "The Economics of Governance," American Economic Review, pp. 1-35.

[39] WRIGHT, I. 1973, "Functions," Philosophical Review, vol. 82, pp. 139-168.