STANDARDS FOR CONTRACTS REPRESENTATION

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Paper prepared for the work-shop "Standardizing Information and E-Commerce", University of Haburg, October 21, 2000.

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PART I: INTRODUCTION

1. CD-F AS METHODOLOGY

1.1 Objectives

Contractual Digital Floor ("CD-F") is firstly a methodology seeking to:

a) introduce specific standards in representing:
   - contract structure and
   - contract dynamics, i.e. communication about the contract development,

b) contribute to better understanding of the frontier between the "legal" and economic analyses of contracts.

In pursuing the objectives, CD-F strictly differentiates between an act (e.g., transfer of goods, services, cash, etc) and an obligation (a promise) to perform the act.

1.2 Economics and law

1.2.1 Acts and obligations

It is suggested here that:

- economics primarily deals with an exchange of acts (and their valuation),
- "law" primarily deals with an exchange of obligations to act (and their enforceability).

First confusions, then, arise whenever the obligation under study rests in delivering some other obligations, "rights" or even contracts.[1]

1.2.2 This paper

"Legal" fundaments of the present paper bring up the notion of a contract, where:

[1] A contracting party may have an obligation z^* to transfer an obligation z^{**} to "a third person".

- its structure primarily consists in obligations, i.e. in sets of promises exchanged by the contracting parties,
- its dynamics (development) is mainly given by transitions in the above obligations,
- acts are treated as mere conditions upon which the above transitions may happen.

Economic extension of the analysis will seek to value obligations rather than the respective acts. For example: Within contracts for the sale and purchase, we thus analyze the (positive or negative) values of the respective promises to deliver (the respective goods) in the agreed upon quantity, to a specific place and at a specific time.[2]

2. CD-F AS A BUSINESS UNDERTAKING

2.1 History

This paper extends on the author's experience with the real-world, already implemented electronic ("digital") representations of contracts, as they were introduced by:

- Voucher Privatization[3],
- Center for Securities[4] and
- RM-S[5].

2.2 Present development

The methodology is being currently implemented by the CD-F, a.s.[6], in the field of insurance contracts, their electronic representation and administration.

In the near future, the above corporation seeks to become a genuine exchange of insurance policies – with the objective to provide its electronic floor to multiple insurers and their clients.

3. BIBLIOGRAPHY

It is beyond the author's capacity to produce a convincing list of references. His suspicion is, that the research in the field has been, so far, rather disperse and hard to unify.

3.1 Law

In the area of law, as a branch of research, various monographs have been considered, e.g.:

- Klayman, E.I., Bagby, J.W., Ellis, N.S. 1994. Business Law: Concepts, analysis, perspectives. Richard D. Irwin.
- Black, K., Skipper, D.H. 1994. Life Insurance. Prencice-Hall, Inc.

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[2] In economics, "place" and "time" have been long recognized as inherent components of goods.

[3] By *VOUCHER PRIVATIZATION* some two thousand companies were privatized in the years 1992-5, so that their shares were offered simultaneously to millions of citizens and hundreds of investment funds.

[4] The *CENTER* serves in the Czech Republic as the Central Electronic Register of "de-certificated" securities.

[5] RM-S is a fully electronic real-time trading system based on a direct access to its "floor".

[6] *CDF, a.s.* is a company established in 1998 as a joint-venture of the Česká pojišťovna, a.s (the dominant insures in the Czech Republic) and the FSP, a.s. (the authors of the methodology).

3.2 Institutional economics

Economics of information and the so-called institutional economics can be illustrated by such contributions as[7]:

- Azariadis, C. 1975. Implicit contracts and underemployment equilibria. Journal of Political Economy 83, 1183 – 1202.
- Crawford, V. 1986. Long-term relationships governed by short-term contracts. Princeton University.
- Green, J.R. and Kahn, C. 1983. Wage employment contracts. Quarterly Journal of Economics 98, 173 – 188.
- Grossman, S. and Hart, O. 1983. Implicit contracts under asymmetric information. Quarterly Journal of Economics 71, 123 – 157.
- Hart, O. and Holmstrom, B. 1987. The theory of contracts. In Advances in Economic Theory, Fifth World Congress, ed. T. Bewley, Cambridge: Cambridge University Press.
- Rothschild, M. and Stiglitz, J.E. 1976. Equilibrium in competitive insurance markets: an essay on the economics of imperfect information. Quarterly Journal of Economics 90, 629 – 649.
- Shavell, S. 1980. Damage measures for breach of contract. Bell Journal of Economics 11 (2), Autumn, 466 – 490.

3.3 Microeconomic analysis

Originally, the author himself wrote on issues such as:

- 1989. Consumer under Supply Constraint. European Journal of Political Economy 5.
- 1990. Bargaining and Search in Imperfect Markets. In Optimal Decisions in Markets and Planned Economies, eds. R. E. Quandt and D. Tříska. Westview Press.

In the 80s, Hal Varian's Microeconomic Analysis (1978, W. W. Norton and Company) inspired the author to write his own Introduction to microeconomics (1991, Charles University, Prague).

PART II: GENERAL PRINCIPLES

4. CONTRACT COMPONENTS

4.1 Definition

In what follows, a contract CON is viewed as consisting of two components:

CON = (CP, CC)

where:

CP is the „horizontal" component of CON, that represents the contract in the narrow sense (the „contractual product", „c-product"),

CC is the „vertical" component of CON, that represents the communication about the c-

[7] Mostly quoted after "Allocation, Information and Markets" 1989, ed. Eatwell, J., Milgate, M. Newman, P. The Macmillan Press.

product (the „contractual communication", „c-communication).

The purpose of the c-communication is to bring up transitions in the CP. It is depicted in Fig. 1, where:

- AG^L is the party on the left-hand-side of the CP,
- AG^R is the party on the right-hand-side of the CP.

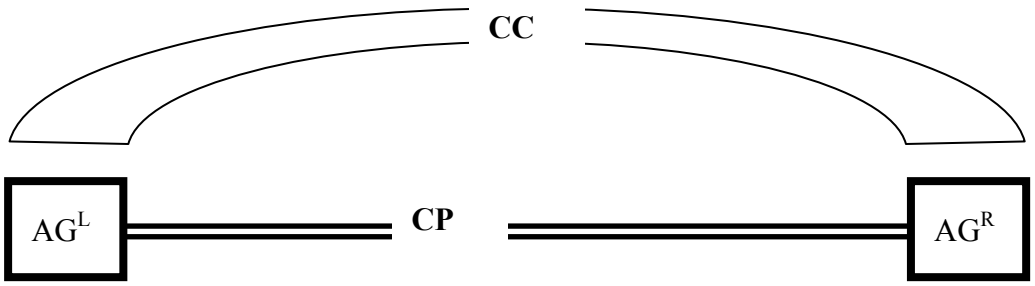

Fig. 1

4.2 Examples

4.2.1 Example 1

In the case of a contract for the sale and purchase:

a) CP contains the mutual obligations of the seller and buyer to deliver the goods and pay the price.

b) CC rests in such communication acts (so-called "ORDERS") as:
   - an offer (made by the seller or buyer) to enter into the contract,
   - seller's claim that the payment is due,
   - buyer's complaint that nonconforming goods has been delivered.

4.2.2 Example 2

Within insurance contracts:

a) CP is the so-called insurance product (insurance policy); it consist namely in the obligations:
   - of a client to pay the premium, when it is due,
   - of the insurer to pay the benefit, when the peril (as a cause of loss) occurs.

b) CC can be illustrated by:
   - an offer (made by the insurer or client) to enter into the contract,
   - client's claim that the bonus should be paid.

5. C-PRODUCT

5.1 Constitutional variables

5.1.1 Definition

Three types of constitutional variables („CV") are introduced as to define CP:

"AG" represents contracting parties of the CP,

"z" represents obligations, or duties of the agent AG,

"π" represents conditions of enforceability of the obligations z.

All other notions traditionally used in legal documents (such as "beneficiary", "rights", "duties", …) are always interpreted as to fit one of the above categories.

5.1.2 Examples

Variables AG and z are self-explanatory. Variable π can be best illustrated on an insurance contract, where:

- the occurrence of the peril is a condition upon which the client AG may claim fulfillment of the respective obligation z of the insurer,
- a lapse of time is often a condition for discharging the above insurer from his obligation z.

5.1.3 Classifications

The above CVs can be grouped as follows:

Classification A:

- variables AG and z represent the structure of the CP,
- variable π represents dynamics of the CP.

Classification B:

- z and π form the contents of the CP - the „rights and duties" of the parties AG,
- AG is the bearer of the contents, of the respective „rights and duties" (as a creditor or debtor).

5.2 States and parameters

5.2.1 Definition

Every constitutional variable, be it AG, z or π, will be put as

Cv = [s(CV), P(CV)]

where:

s represents the state of the CV (its „qualitative descriptor"),

P represents the parameter(s) of the CV (its „quantitative descriptor").

State s is a scalar, while P is introduced as a vector

$P = (P_1.CV, P_2.CV, \ldots, P_n.CV)$

where $P_i.CV$ is a particular quantitative characteritic. Developments in the CV are represented by specific values attached to both s and P.

5.2.2 Examples

For an obligation z, it will be further assumed that:

- its meaningful states s are, e.g., inscribed, activated, fulfilled and breached,
- its parameters P indicate what, where and when is to be delivered (performed).

6. C-COMMUNICATION

The contracting parties c-communicate so that to:

- form a contract,
- bring up its further transitions.

6.1 Contract transitions

6.1.1 Definition

By ΔCP we denote a transition in the c-product and define it as a transition in at least one of its variables CV. Transition in a constitutional variable CV will be denoted as

$\Delta Cv = [\Delta s(CV), \Delta P(CV)]$

and defined as a change in its state s, Δs(CV), and-or parameter P, ΔP(CV).

When appropriate, ΔCV will be put as

$\Delta CV = CV^o \rightarrow CV^*$

where

$CV^o = (s^o, P^o)$ is the initial formula of the variable, i.e. the initial evaluation of its state and parameter,

$CV^* = (s^*, P^*)$ is the target formula of the variable

In addition, an actual formula CV^{act} will be introduced when necessary.

Correspondingly, the formulas CP^o, CP^* and CP^{act} are introduced here for a c-product as a whole.

6.1.2 Examples

For illustrative purposes:

a) novation of the contract[8] may be presented as $\Delta P_i.AG = P_i.AG^o \rightarrow P_i.AG^*$, where:
   - the initial value of the variable $P_i.AG^o$ stands for "Mr. X",
   - the target value of the variable $P_i.AG^*$ stands for the incoming contracting party - "Mrs. Y".

b) amendment of the contract9 may be illustrated by a change in the currency of the payment, i.e. by $\Delta P_j.z = P_j.z^o \rightarrow P_j.z^*$, where:
   - the initial value of the variable $P_j.z^o$ stands for "U$",
   - the target value of the variable $P_j.z^*$ stands for "DM", as the new currency of the prospective obligation to pay.

c) formation of the contract will be discussed later as a simultaneous inscription of all CVs of the CP.

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[8] Novation means that a third party is substituted for one of the original parties.

[9] *Amendment* means that some terms of the original contract are changed or new terms are supplied.

6.2 An ORDER

6.2.1 Definition

C-communication is an exchange of information:

- that proceeds between the counter-parties AG^L and AG^R of the CP (see Fig. 1),
- the objective of which is ΔCP,
- the medium of which is a so-called ORDER.

An ORDER is an irrevocable[10] revelation of the submitter's intend to achieve the transition ΔCP. Within c-communication, the parties AG^L and AG^R exchange ORDERS – thus taking the roles of a submitter and addressee.

6.2.2 Examples

For illustrative purposes:

- Text-books of law are strongly focused on ORDERS referred to as an offer (to enter into a contract) and its respective acceptance.
- At stock exchanges, the so-called sell- and buy-ORDERS mediate the mutual intentions to form a contract for the sale and purchase of securities.

6.3 Market organizer

6.3.1 Definition

The fundamental methodological problem of a c-communication rests in the inter-face ("INFA") between the submitter and adDreSsee. The solution presented here introduces a specific, formally defined intermediary – the so-called market organizer („MO"), see Fig. 2.

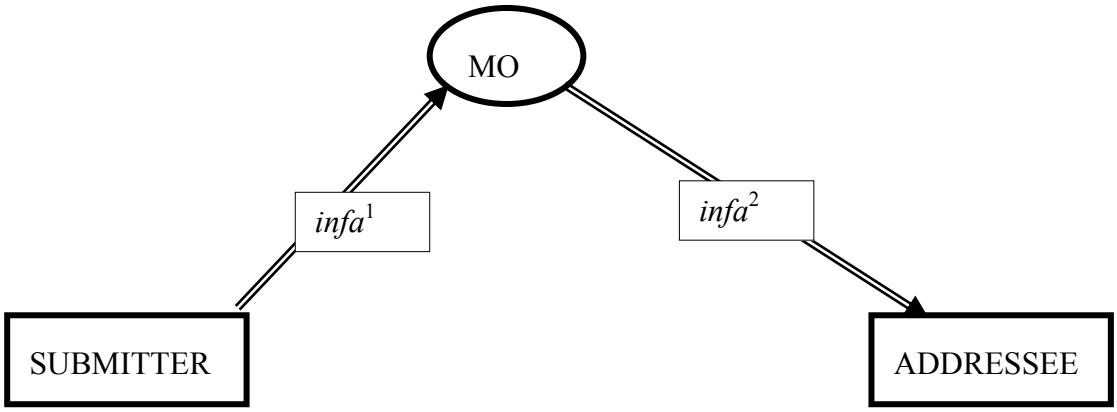

Fig. 2

The original inter-face INFA has thus been replaced by:

- $infa^1$ between the Submitter and MO,
- $infa^2$ between the ADDRESSEE and MO.

Advantages of this representation should be seen later.

[10] Revocable ORDERS, as not-binding acts, are of no interest to this paper.

6.3.2 Examples

An obvious example of MO is a stock exchange, which constitutes an inter-face between the market participants. As already mentioned, it is the floor of the stock exchange, where:

- sellers submit their sell-ORDERS (addressed to buyers),
- buyers submit their buy- ORDERS (addressed to sellers).

A stock exchange receives the ORDERS and provides their further "routing", e.g., their validation, comparison, matching, etc.

6.3.3 Implied markets

In many organizational settings, the role of MO is not expressly institutionalized. It is often played by one of the contracting parties. An example here is an insurance company that, typically:

- acts not only as an insurer (in the narrow sense) but also
- executes the role of MO, i.e. "takes care" (as an insurer in the broader sense) of the c-communication, of its and the client's ORDERS.

It is the present thesis that MO is always present, express or implied. Regardless of the organizational setting, whoever does the ORDER-routing, takes up the role of MO.

6.4 Registration contract

6.4.1 Definition

We assume that MO executes his role in the form of communication services provided as a fulfillment of his specific obligations.[11] These obligations are inscribed in a specific, express or implied, registration contract („CON^{REG}"), where:

a) contracting parties are:
   - market organizer MO on the one side (as the provider of the communication services) and
   - market participant on the other side (as the "registered" user of the communication services),

b) contract contents rest in the „rules" that the MO must obey in providing the services (further referred to as „rules of the market").

For simplicity, we may assume that the role of the market participant sub a) bb) is executed by the same person as the role of AG^L or AG^R. This is depicted in Fig. 3.

[11] As a general rule, service that would be "voluntary" is of no interest to this paper.

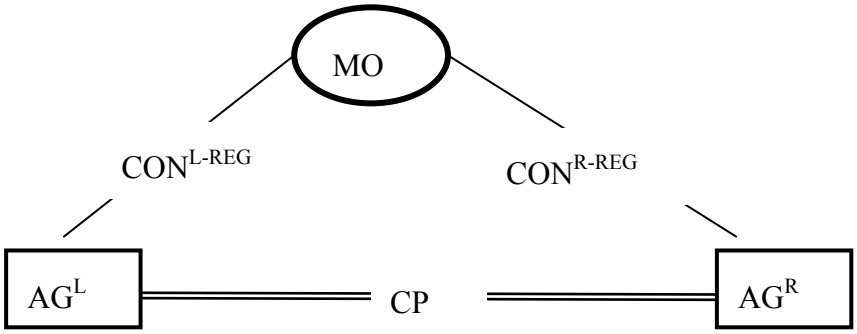

Fig. 3

where:

$CON^{L\text{-}REG}$ is the registration contract between MO and AG^L,

$CON^{R\text{-}REG}$ is the registration contract between MO and AG^R.

6.4.2 Examples

At stock exchanges, CON^{REG} is generally formed so that:

- express trading rules12 are published by the exchange and
- formally accepted by the sellers and buyers as they become members of the exchange and-or registered market participants[13].

Implied (as opposed to express) registration contracts are formed whenever implied MO is involved.

PART III: CONSTITUTIONAL VARIABLES

7. CONTRACTING PARTY

7.1 Bi-lateral contracts

In what follows:

AG^L the agent on the left-hand-side of the CP is:

- an insurer in an insurance contract,
- a seller in a contract for the sale and purchase.

AG^R the agent on the right-hand-side of the CP is a client in an insurance contract, and a buyer in a contract for the sale and purchase.

The present methodology deals with c-products for which just two parties are defined. Consequently, as a result of this bi-laterality assumption:

- any "multi-lateral" contract is transformed into a set of bi-lateral ones,
- a third party of a contract is re-interpreted as a party in some other, bi-lateral, contract.

Extensive applications of these procedures have been implemented for insurance contracts.

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[12] E.g., NASDAQ rules, NYSE rules, *TRADING RULES* of the RM-S.

[13] E.g. the RM-S securities exchange has no members, only registered participants, so-called customers.

Reasonable presentation of them, however, is beyond the scope of this paper.

7.2 Transitions

7.2.1 Definition

Transitions in the contracting parties of the CP can be put as:

$\Delta AG^L = [\Delta s(AG^L), \Delta P(AG^L)]$

$\Delta AG^R = [\Delta s(AG^R), \Delta P(AG^R)]$

The parties may change both in their states and parameters during the „life“ of a contract.

7.2.2 Examples

Transitions $\Delta s(AG^L)$ and $\Delta s(AG^R)$ will further represent the parties' entry into the contract, i.e. their inscription as it is brought up by the contract formation.

Transition $\Delta P(AG^R)$ was already illustrated by the novation of a contract. Less dramatic example of $\Delta P(AG^R)$ is a mere change in the client's address, bank account, surname, etc.

8. OBLIGATION

8.1 Obligation relationship

8.1.1 Definition

Every obligation z is associated with two agents referred to as:

- obligor (promisor, "debtor") and
- obligee (promisee, "creditor").

As a rule, CP consists in multiple obligations: With respect to some of them the party AG is an obligor, while the rest of them make him an obligee. Obligations z can thus be divided in sub-sets $\{z^L\}$ and $\{z^R\}$, where:

$\{z^L\}$ represents a package of obligations to which the party AG^L is the debtor, while AG^R is the creditor,

$\{z^R\}$ represents a package of obligations to which the party AG^R is the debtor, while AG^L is the creditor.

8.1.2 Examples

8.1.2.1 Example 1

In the case of a contract for the sale and purchase:

- the seller AG^L is a debtor with respect to the goods delivery,
- the buyer AG^R is a debtor with respect to the purchasing price.

8.1.2.2 Example 2

In the case of a insurance contract:

- the insurer AG^L is a debtor as to the benefit,
- the client AG^R is a debtor as to the premium.

8.2 Transitions

For obligations z^L a z^R, transitions can be formally put as:

$\Delta z^L = [\Delta s(z^L), \Delta P(z^L)]$

$\Delta z^R = [\Delta s(z^R), \Delta P(z^R)]$

Obligations may change both in their state and parameter(s) during the „life“ of the contract. Examples are provided throughout this paper.

9. CONDITIONS

9.1 Enforceability

9.1.1 Definition

Condition $\pi(\Delta CP)$ represents the dynamic aspects of the CP.[14]. Its fulfillment enables one or both of the parties of the CP to enforce uni-laterally the transition CP.

Put otherwise, if $\pi(\Delta CP)$ is fulfilled and the respective party asks for it, the transition will be, as a rule, realized, even though the other party is silent or even expressly disagrees.

9.1.2 Examples

From among all possible transitions ΔCP, and their respective $\pi(\Delta CP)$, analyses (without much reason) typically focus on $\pi(\Delta s(z))$, i.e. conditions upon which states of obligations may change. Much less attention is, then, devoted to other enforceable transitions.

In addition, amongst $\pi(\Delta s(z))$, the activating condition is usually of the prime interest. For example:

- In an insurance contract: the key activating condition is the occurrence of the peril; its fulfillment enables the client to claim the benefit, or to activate the respective insurer's obligation zL.
- In a contract for the sale on credit: the activating condition for the buyer's obligation zR rests in the seller's „perfect tender delivery“. Put otherwise, the buyer is discharged from zR, if the goods are delivered late, to the incorrect address and-or in a lesser than required quantity.

9.2 Non-enforceability

9.2.1 Definition

Transitions ΔCP, for which no condition $\pi(\Delta CP)$ has been inscribed, cannot be enforced uni-laterally. Hence it may be realized only by an agreement (consensus) of the two parties AG^L and AG^R.

This consensual, bi-lateral c-communication is an „exchange“ of L- and R-ORDERS, where:

- L- and R-ORDERS are submitted by AG^L and AG^R, respectively,
- L- and R-ORDERS are submitted as a free decision of their SUBMITTERS,
- L- and R-ORDERS are mirror images of each other – they require the same ΔCP.

The agreement-consensus is reached if the L- and R-ORDERS are „compared and matched“.[15]

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[14] Textbooks usually define it as an act or event:
- that must occur before the performance of the obligor is required by the obligee, or
- the occurrence of which causes a discharge of further performance of the obligor.

[15] More advanced markets introduce rules of matching, e.g., sell- and buy-ORDERS which differ as to, e.g.,

9.2.2 Examples

In principle, for every imaginable transition ΔCP there can be a condition inscribed in the contract. However, some transitions seem to be non-enforceable by their nature. agreement (consensus) is thus usually required for, e.g., the:

- formation of a contract,
- novation of a contract,
- changes in the substantial terms of a contract.

9.3 Systems of contracts

9.3.1 Internal and external events

9.3.1.1 Definition

Among conditions $\pi(\Delta CP)$ we shall differentiate according to, whether:

a) enforceability arises on an „internal event", i.e. on a transition in the very CP („internal condition"),

b) Enforceability is given by some other, i.e. external event („external condition").

9.3.1.2 Examples

We may illustrate as follows:

- in a contract for the sale on credit it is an internal condition that buyer's obligation z^R may be activated only after delivery,
- in an insurance contract, the peril is an external condition.

9.3.2 Relationships amongst contracts

Let us have two separate contracts, CON_+ and CON_{++} and their respective c-products, CP_+ and CP_{++}.

Of special interest then are situations when an actual formula CP_+^{act} affects the "subordinated" c-product CP_{++}. Put otherwise, an occurrence of CP_+^{act} may be inscribed in the CP_{++} as $\pi(\Delta CP_{++})$.

For example:

- let CP_+^{act} includes a liability z_+ of an agent AG_+,
- let CP_{++}^{act} represent an insurance contract upon which the liability z_+ is insured by the insurer $AG^L{}_{++}$.

Systems of contracts are thus defined and analyzed throughout the applications of the present methodology.

10. CONTRACT DEFINED

10.1 Introduction

Referring to Fig 3, the contract under study CON can be summarized as

$CON = (CP, (CON^{L\text{-}REG}, CON^{R\text{-}REG}))$

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volume and price. Complementary rules, then, indicate when these differences exclude mathing, while one of the ORDERS is regarded as an offere and the other is a counter-offer beginning a new round of bargaining.

where:

CP	represents the c-product (and its variables CV)
$CON^{L\text{-}REG}$	represents the registration contract, or the rules upon which MO provides its communication services to the agent on the left-hand-side of the CP - the agent AG^{L}
$CON^{R\text{-}REG}$	represents the registration contract, or the rules upon which MO provides its communication services to the agent on the right-hand-side of the CP - the agent AG^{R}

Fig 3 illustrates the above terminology, where:

CP	was the horizontal component of CON
$CP^{L\text{-}REG}$ a $CP^{R\text{-}REG}$	were the vertical components of CON

10.2 Methodology generalized

As already mentioned, for $CON^{L\text{-}REG}$ a $CON^{R\text{-}REG}$ applies the same analysis as for CON, i.e.:

- both registration contracts $CON^{L\text{-}REG}$ a $CON^{R\text{-}REG}$ have their (super-) horizontal and (super-) vertical components,
- transitions in the respective (super-) horizontal components are realized on the basis of the respective (super-) ORDERS.

10.3 Super-vertical components

10.3.1 Recursion

It follows from the previous analysis that every registration contract CON^{REG} has three components, i.e.:

$CON^{REG} = (CP^{REG}, (CON^{L\text{-}REGreg}, CON^{R\text{-}REGreg}))$

where:

CP^{REG}	represents the c-product of the registration contract and its constitutional variables CV^{REG}, i.e. AG^{REG}, z^{REG} a π^{REG}
$CON^{L\text{-}REGreg}$ and	
$CON^{R\text{-}REGreg}$	represent the registration contracts “for registration contracts”, i.e. the rules for the communication about registration contracts

The communication services for the registration contract are provided by the market organizer MO^{REG}, on the basis of $CON^{L\text{-}REGreg}$ and $CON^{R\text{-}REGreg}$. In sum:

a) MO provides communication services for horizontal ORDERS, i.e. the ORDERS requiring ΔCP,

b) MO^{REG} provides communication services vertical ORDERS, i.e. the ORDERS requiring transitions in ΔCP^{REG}.

In principle, for every MO there should be defined MO^{REG} as shown in Fig. 4.

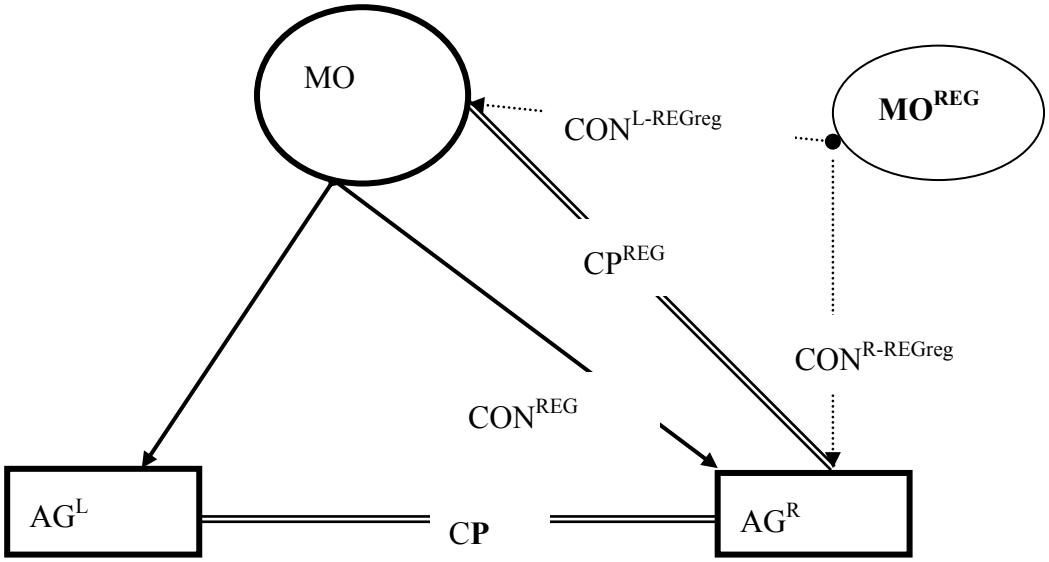

Fig. 4

10.3.2 Solution to the problem

The infinite recursion, in principle, cannot be avoided: For every MO we shall always need a market organizer of a higher "degree" who will provide services for the c-communication about the underlying c-communication.

Only a specific technical and organizational setting of the MO may give way for an extensive simplification of the MO^{REG}. Only under these circumstances, the registration contracts CON^{REG} can be approximated by its respective c-products, i.e. CP^{REG}.

Further discussion of this, highly non-trivial problem did not find room in this paper. By definition, we, therefore, abstract from the above "communication-about-communication" problem. As a formal consequence of this abstraction, CON^{REG} will be further substituted by their respective c-products CP^{REG}.

10.4 Standardization

10.4.1 Standardization I

The representation of a contract has been so far standardized in the following way:

1) a contract consists in c-products an only them,

2) c-product consists in agents, obligations and conditions and only them.

In detail, it is shown in the table attached:

contract CON	c-products	Constitutional variables		
	CP	AG	z	$\pi(\Delta CV)$
	$CP^{L\text{-}REG}$	$AG^{L\text{-}REG}$	$z^{L\text{-}REG}$	$\pi^{L\text{-}REG}$
	$CP^{R\text{-}REG}$	$AG^{R\text{-}REG}$	$z^{R\text{-}REG}$	$\pi^{R\text{-}REG}$

where (see Fig.5):

CP represents the c-product of CON and its constitutional variables CV: AG (i.e. AG^L and AG^R), z and $\pi(\Delta CV)$

$CP^{L\text{-}REG}$ represents the c-product of the registration contract between:

- MO as the party $AG^{L(L\text{-}REG)}$ on the left-hand-side of the $CP^{L\text{-}REG}$ and
- AG^{L} as the party $AG^{R(L\text{-}REG)}$ on the right-hand-side of the $CP^{L(L\text{-}REG)}$

$CP^{R\text{-}REG}$ represents the c-product of the registration contract between:

- MO as the party $AG^{L(R\text{-}REG)}$ on the left-hand-side of the $CP^{R\text{-}REG}$ and
- AG^{R} as the party $AG^{R(R\text{-}REG)}$ on the right-hand-side of the $CP^{R\text{-}REG}$

Given the already mentioned terminology, CP is the horizontal c-product, while $CP^{L\text{-}REG}$ and $CP^{R\text{-}REG}$ are the vertical c-products.

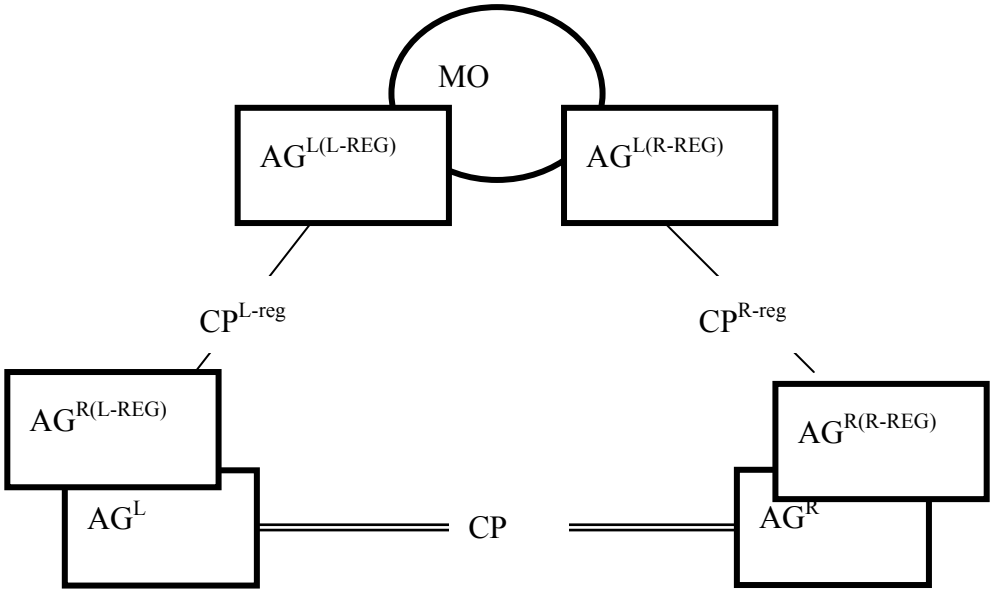

Fig. 5

10.4.2 Standardization II

"Standardization II" is concerned with the obligations as mo^{i}, i = 1, 2, …n, of MO as they are inscribed in the respective vertical c-products. In what follows, they will be standardized so as to represent four standard phases of the ORDER-routing.

PART IV: ORDER-ROUTING

11. TRANSITIONS IN STATES AND PARAMETERS

11.1 Introduction

11.1.1 Product formulas

Transition ΔCP has been denoted as

$\Delta CP = CP^{o} \rightarrow CP^{*}$

where

CP^{o} is the initial formula, or the initial evaluation of the states and parameters of the product's constitutional variables AG, z and π(ΔCV),

CP^* is the target formula, or the required „outcome“ of the transition

By CP^{act} we have denoted the actual formula of the c-product.

11.1.2 Enforceability

As already explained, the transition $\Delta CP = CP^o \rightarrow CP^*$ may be associated with an enforceability condition π:

a) if $\pi(CP^o \rightarrow CP^*)$) is inscribed in the CP, the transition CP may be realized, given MO verifies the condition's fulfillment,

b) if $\pi(CP^o \rightarrow CP^*)$) is not inscribed in the CP, the transition CP may be realized, given MO verifies that a consensual counter-ORDER has been submitted by the other party.

11.1.3 Feasible evaluation

In what follows, we discuss what values may the individual variables acquire. In particular, a finite number of states, CV(i), i = 0, 1, 2, …, k, are ascribed to every CV.

11.2 Contracting party

11.2.1 States of an agent

11.2.1.1 Definition

For any AG, we assume, that only two states {AG(0), AG(+1)} have a meaning:

AG(0) represents a conceptualized state of an agent

AG(+1) represents an inscribed state of an agent

11.2.1.2 Examples

A conceptualized agent AG(0) may be defined for an insurance contract as follows:

- $AG^L(0)$, i.e. the conceptualized state of an insurer may-be given by law as a "list of licensed insurers", who are the only ones permitted to enter into the contract on its left-hand-side,
- $AG^R(0)$, i.e. the conceptualized state of a client may-be defined by a pre-printed form of the insurance policy as, e.g., "natural person, male, aged 50 or less, non-smoker".

An inscribed insurer $AG^L(+1)$ is the one selected from the above list of licensed insurers as the actual contract is formed.

11.2.2 Contract formation

11.2.2.1 Definition

Transition $AG(0) \rightarrow AG(+1)$ is a part of a contract formation.

As a rule, simultaneously with the inscription $AG(0) \rightarrow AG(+1)$, there are also inscribed all other CVs of the CP, i.e.:

- the other party,
- the obligations z and conditions $\pi(\Delta CV)$.

11.2.2.2 Examples

Formation of a contract for the sale on credit can be illustrated as follows:

$AG^L(0)$ and $AG^R(0)$ are defined by the Statutory Law as "anybody who has a legal capacity", i.e., anybody who is not "minor", or "insane" and-or

	"intoxicated", etc.
$AG^L(0) \rightarrow AG^L(+1)$	is an inscription of a concrete seller,
$AG^R(0) \rightarrow AG^R(+1)$	is an inscription of a concrete buyer,
$z^L(0) \rightarrow z^L(+1)$	is an inscription of the seller's obligation to deliver (the inscribed goods, in the inscribed amount, to the inscribed place-warehouse and at the inscribed time)
$z^R(0) \rightarrow z^R(+1)$	is an inscription of the buyer's obligation to pay the price,
$\square(z^R(0) \rightarrow z^R(+1))$	is an inscription of the credit, i.e. that the buyer pays only after the "perfect tender" delivery.

11.3 Obligation

11.3.1 Definition

For any obligation z, we assume, that only the states {z(0), z(+1), z(-1); z(+2), z(-2); z(+3), z(-3)} have a meaning, where:

z(0) represents a conceptualized obligation

z(+1) represents an inscribed obligation

z(-1) represents a deleted obligation

z(+2) represents an activated obligation

z(-2) represents a de-activated obligation

z(+3) represents a fulfilled obligation

z(-3) represents a breached obligation

As the somewhat "un-natural" states z(-1) and z(-2) are discussed elsewhere, the „natural trajectory" of an obligation can be put as shown in fig 6:

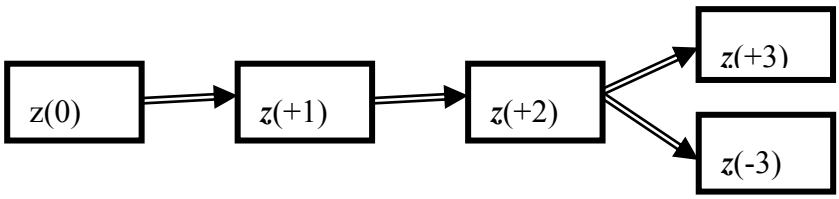

Fig. 6

11.3.2 Examples

In an insurance contract, the obligation z^L of the insurer, may have the following history:

- The state $z^L(0)$ is defined in a pre-printed form of the insurance policy so that the benefit will be in US-dollars and can be negotiated in the range <U$ 20 000, U$ 900 000>, subject to the premium paid, bonity of the client, and actual loss.
- The state $z^L(+1)$ means that, the client and the insurer formed a contract where they agreed on the benefit to be <U$ 50 000, U$ 300 000>.
- The state $z^L(+2)$ indicates that the peril occurred and client submitted his claim. The actual outcome is U$ 158 000 and other parameters of the obligation $z^L(+2)$ are pre-determined in

the pre-printed form of the policy.

- The state $z^L(-3)$, as a complement to $z^L(+3)$, shows that the insurer either did not pay at all, or was delayed with his payment, paid less and-or paid to somebody else.

11.3.3 Efficiency of the proposal

Admittedly, other authors may suggest alternative ways how to describe the obligation dynamics.

The only test of our proposal may be the comfort with which the transitions foreseen by law can be re-interpreted so as to fit the scheme. CD-F, a.s. has passed the test in the field of insurance contracts.

11.4 Conditions

11.4.1 States

For a condition π, we assume, that only the states $\{\pi(0), \pi(+1), \pi(+3), \pi(-3)\}$ have a meaning, where

$\pi(0)$ is a conceptualized condition

$\pi(+1)$ is an inscribed condition

$\pi(+3)$ is a fulfilled condition

$\pi(-3)$ is a not-fulfilled condition

The trajectory of the condition can be put as shown in fig 7:

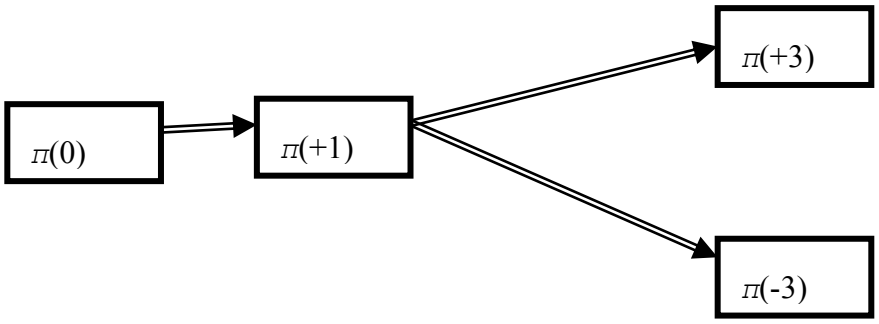

Fig. 7

The state (+1) can be often interpreted as so-far-not-fulfilled, (may be fulfilled later on). By comparison, the state (-3) means that the condition is can no longer be fulfilled.

11.4.2 Examples

A peril has been introduced as an activating condition $\pi(z^L(+1) \rightarrow z^R(+2))$ of the obligation z^L of the insurer. Before the transition $z^L(+1) \rightarrow z^R(+2)$ may be realized:

- client must claim the peril π,
- MO must verify that $\pi(+1) \rightarrow \pi(+3)$.

As the same person often acts as both AG^L and MO, it is the insurer who verifies whether his own obligation should be activated. (The perversity of this arrangement cannot be exaggerated.)

11.5 Transition in parameters

11.5.1 Contracting party

Quantitative characteristics of AG, its parameters P(AG), can be put as

$P(AG) = (P_1.AG, P_2.AG, P_3.AG, \ldots)$

where the components $P_i.AG$ can be illustrated as follows:

$P_1.AG$ represents an identification number (such as „birth number“, „social security number“, …),

$P_2.AG$ represents the name,

$P_3.AG$ represents the address,

$P_4.AG$ represents the role in the contract,

$P_5.AG$ etc.

As already mentioned, in early 90s the authors of the present methodology created Center for Securities where databases of the respective agents (issuers and security holders) were implemented.

11.5.2 Obligation

11.5.2.1 Definition

Quantitative characteristics of z, its parameters P(z) can be put as

P(z) = (A.z, B.z, C.z, D.z)

where the components are defined as follows:

A.z represents the kind of the „goods“ to be delivered

B.z represents the amount of what is to be delivered,

C.z represents the place of delivery,

D.z represents the time of delivery.

11.5.2.2 Examples

1) Upon inscription, the seller's obligation z^L in a contract for the sale and purchase may read as follows:

$A.z^L(+1)$ are „apples of a specific, individual kind“,

$B.z^L(+1)$ indicates that the apples $A.z^L(+1)$ are to be delivered (may be applied for) in the amount of <kg 500, kg 800>,

$C.z^L(+1)$ is the list of the buyer's addresses,

$D.z^L(+1)$ indicates the delivery date as „T + 3 days“ (“T” is the day of the buyer's application).

2) Upon activation, the seller's obligation z^L may change as follows:

$A.z^L(+2)$ are the same, above defined apples, $A.z^L(+2) = A.z^L(+1)$,

$B.z^L(+2)$ indicates that the buyer chose to activate 600 kg of the apples,

$C.z^L(+2)$ is the concrete warehouse selected by the buyer from the inscribed list of addresses $C.z^L(+1)$,

$D.z^L(+2)$ is the above „T + 3 days“, $D.z^L(+2) = D.z^L(+1)$,.

3) The seller's obligation z^L may be fulfilled in the following values of the parameters:

$A.z^L(+3)$ are the apples, $A.z^L(+3) = A.z^L(+2) = A.z^L(+1)$,

$B.z^L(+3)$ indicates that the seller delivered 559,- kg, or a little less that the buyer applied for, $B.z^L(+3) < B.z^L(+2)$

$C.z^L(+3)$ is the required ware-house, $C.z^L(+3) = C.z^L(+2)$,

$D.z^L(+3)$ represents the second day after the day T.

It may be noteworthy, that the above "part delivery", $B.z^L(+3) < B.z^L(+2)$, did not cause a breach of the contract.

12. COMMUNICATION SERVICES

12.1 Standardization II

"Standardization I" of a contract Con brought up the notions of c-products (horizontal and vertical) and their variables AG, z and π. "Standardization II" is concerned with the vertical obligations of the MO, hereafter referred to as mo^i, i = 1, 2, …n.

12.1.1 Standardized phases

Referring to the routines of the most advanced stock exchanges, the structure of the communication service can be put as a sequence of the obligations

$\{mo^1, mo^2, mo^3, mo^4,\}$

where each individual obligation mo^i, i = 1, 2, …, 4, corresponds to the respective phase of the so-called ORDER routing:

Phase 1: obligation mo^1; ORDER validation,

Phase 2: obligation mo^2; ORDER enforcement,

Phase 3: obligation mo^3; ORDER delivery,

Phase 4: obligation mo^4; ORDER comparison and matching.

12.1.2 Verification procedures

Every phase has a meaning of a verification of the respective vertical condition α^i, where:

α^1 is the condition of validity,

α^2 is the condition of enforceability,

α^3 is the condition of deliverability,

α^4 is the condition of comparability.

It is apparent that the vertical condition α^2 is identical with the above discussed enforceability condition $\pi(\Delta CP)$.

12.2 State of an ORDER

12.2.1 General analysis

For mo^i, i = 0, 1, …, 4, the same analysis applies as for any other obligation. For example:

- inscription, $mo^i(0) \rightarrow mo^i(+1)$, is an outcome of the registration contract formation, e.g., by the acceptance of the Exchange's trading rules,

- activation, $mo^i(+1) \rightarrow mo^i(+2)$, represents the fact that the SUBMITTER applied for the i-th communication service,
- fulfillment, $mo^i(+2) \rightarrow mo^i(+3)$, denotes that MO provided the i-th service in perfect tender.

12.2.2 Outcomes

The state $mo^i(+3)$ represents the completion of the i-th Phase of the ORDER-routing. To this state of the obligation correspond the parameters A, B, C a D, whose values indicate "how exactly" the obligation was fulfilled. As an abbreviation, the parameters may be integrated into a simple statement about the state of the verified condition α_i and-or the ORDER processed:

- $\alpha^i(+3)$ condition fulfilled, ORDER satisfied,
- $\alpha^i(-3)$ condition not-fulfilled, ORDER neglected, refused,
- $\alpha^i(+1)$ condition so-far-not-fulfilled.

As an outcome of the i-th Phase, the ORDER may, then, be refused as not-valid ("void"), not-enforceable, not-deliverable, not-comparable.

12.3 Differentiated services

The above standard structure of the communication services is universal, however diverse may be the actual execution of the individual phases. Though, every Exchange, e.g., validates ORDERS (Phase 1), each of them applies its specific validation rules.

The same ORDER may be satisfied at one Exchange and refused as not-valid (void) somewhere else.

Still more, a single MO may differentiate his service accordion to:

- the type of the CP and-or its transition ΔCP,
- a bonity of the submitter,
- etc.

Put otherwise, the "Standardization II" says little about the actual parameters A, B, C and D of the individual obligations $\{mo^1, mo^2, mo^3, mo^4\}$.

12.4 Consideration

With respect to mo^i, i = 0, 1, …, 4, the submitter is a creditor. The consideration principle suggests that within CP^{REG} the submitter (i.e., AG^{REG}, as a user of the communication services) is to compensate for the services consumed. (See the above discussion on the so-called transaction costs.)

As an example, a fee may be inscribed in CP^{REG} for every "transaction" provided, or every ORDER processed. Naturally, then, ORDERS will differ as to how expensive they will be for the submitter.

13. EXAMPLE: ORDER VALIDATION

Of the four phases of an ORDER-routing introduced above, only a brief sketch the first one will find room in this paper. Hopefully, this will illustrate the logic of the already implemented electronic procedures.

13.1 Introduction

As a revelation of an intend of its submitter, an ORDER carries certain (express and implied) data that should enable MO to recognize the required transition ($Cp^{o} \rightarrow CP^{*}$), or, put differently, to "understand" what is required and by whom.

Cases, when the order processed is incomprehensible to MO may be classified as follows:

a) data omitted (e.g., the submitteR forgets to fill out his name),

b) data inconsistent (e.g., the submitteR gives two conflicting accounts at which the payment should be made),

c) data unlawful (e.g., the submitteR offers to sell heroin, or he offers an insurance policy without the respective license of an insurer).

By definition, incomprehensible order is in-valid, void. (Unlawful data are, thus, conceived of here as incomprehensible information.) In other words, an ORDER is valid, if the MO may identify who applies for what.[16]

MO verifies order validity as fulfillment of his obligation mo^{1}. We shall divide the procedure into the following three steps.

13.2 Step 1 - interpretation

13.2.1 Language of the submitter

The data in the ORDER are in the language of the submitter, who may, e.g., express the required transition ($Cp^{o} \rightarrow CP^{*}$) in Arabic, or in a secret coding.

Less dramatic aspect of the problem comes from the general complexity of the formulas ($Cp^{o} \rightarrow CP^{*}$) which, by itself, necessitates the usage of "abbreviations" and symbols. For example:

a) Diverse insurance policies are often "distributed" under specific commercial names – e.g., unit linked - GAMA 5 ("ULγ5"). Detailed wording of the policy is at length published in the respective pre-printed form of the product. For clients wishing to buy the policy, it suffice to fill out only "ULγ5".

b) On a stock exchange, any "buy-ORDER" is read by the MO so that its submitter wants to enter, as AG^{R}, a contract for the sale and purchase. Most of the detailed terms of the contract are given in the by-laws of the Exchange.

c) ISIN[17] of a 10-year-bond, stands for what the respective prospectus has as a rich structure of the issuer's obligations.

d) An identification number of a contract is often used in the ORDER, so as to refer the data contained in the actual formula of the respective CP.

13.2.2 Language of the MO

Step 1 consists in translating the ORDER into the language of the MO. Words, symbols and codes used in the ORDER are transformed into a standardized structure of the variables AG, z and $\pi(\Delta CP)$.

The outcome of Step 1 can be put as transition ($Cp^{oo} \rightarrow CP^{**}$). Put otherwise, having translated the ORDER from "Arabic" into "English", the MO can express what is required as

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[16] This definition is surprisingly close to the traditional legal approach to what a *void* or *voidable* communication and-or contract is.

[17] *International Securities Identification Number*.

($Cp^{oo} \rightarrow CP^{**}$).

Whether this is comprehensible to the MO will be found by comparing ($Cp^{oo} \rightarrow CP^{**}$) with the transitions in the database of the MO.

13.3 Step 2 - comparison

13.3.1 Database of the MO

Transitions held in the database of the MO may be classified as follows:

Classification A:

- enforceable transitions (as defined by the actual formula Cp^{act}),
- non-enforceable, consensual transitions (all other technically feasible transitions).

Classification B:

- lawful transitions,
- unlawful transitions.

A problem then arises, if the transition ($Cp^{oo} \rightarrow CP^{**}$), as read by the MO after Step 1, does not conform the above list of the lawful transitions.

13.4 Step 3 – re-interpretation

13.4.1 Step 3A

Suppose that within ($Cp^{oo} \rightarrow CP^{**}$), it is the particular variable CV, whose transition ($CV^{oo} \rightarrow CV^{**}$), namely the target formula CV^{**} is the cause of a problem.

For example, let "CV^{**}" be a "bank account in an Libyan bank". In a country that prohibits business relations with Libya, the required transition ($CV^{oo} \rightarrow CV^{**}$), as read by the MO after Step 1, is illegal. Technically speaking – it be on the above list of unlawful transitions.

Having found this, MO may proceed as follows:

a) the ORDER as a whole is refused as void,

b) only ($CV^{oo} \rightarrow CV^{**}$) is refused as void: MO proceeds, as if ($CV^{oo} \rightarrow CV^{**}$) was never filled out by the submitter.

The outcome b) is the first case of what we refer to as re-interpretation of an ORDER. The transition ($Cp^{oo} \rightarrow CP^{**}$), as it was read after Step 1, has been reformulated into ($Cp^{ooo} \rightarrow CP^{***}$), where the variable CV is omitted.

If ($Cp^{ooo} \rightarrow CP^{***}$) is comprehensible to MO, the ORDER will be further processed as partly valid/void.

13.4.2 Step 3B

Transition ($Cp^{ooo} \rightarrow CP^{***}$) may be incomprehensible to MO for two reasons mentioned above: data omitted (e.g., the variable CV refused), or data inconsistent.

Re-interpretation of an order then means that

- MO "supplies" the so-called "gap-fillers" for the data omitted,
- MO refuses some of the inconsistent data.

If the ORDER may not be saved by the above re-interpretation, it is refused as void.

13.5 Comments

Comment 1: A more detailed description of the above Phase 1 ("order validation") would most probably amount to a presentation of the actual software solution of its electronic representation.

Comment 2: Of the remaining three phases of the order-routing, the last one (comparison and matching) should be of the prime interest to the economists - namely, the cases when offers to enter into a contract are compared (or even matched) with acceptances which are not mirror images of the offers. (The authors of RM-S chose to call the electronic solution to this problem "simulated bargaining".)

PART V: SUMMARY AND CONCLUSIONS

The present paper has two objectives:

- specifically, is seeks to introduce a standard language into the analysis of a contract, so as to open ways for its more profound electronic (digital) representation,
- generally, it attempts to contribute to a deeper understanding of the relationship between economics and "law".

14. STANDARDIZATION

As to the specific objective of the paper:

a) any contract CON consists in c-products CP, an only them (see the figure attached),

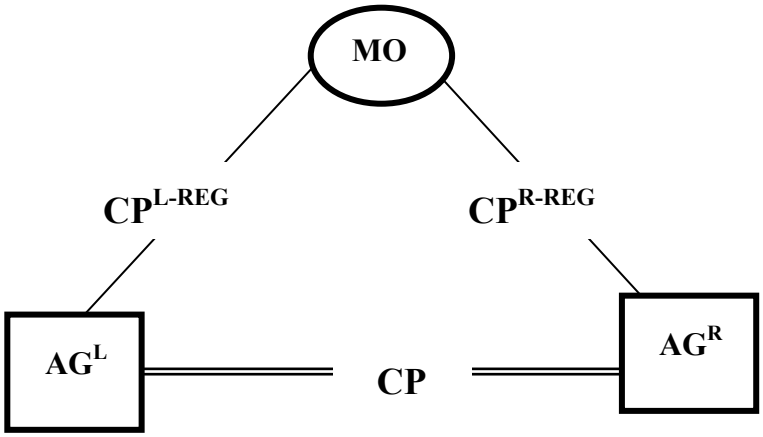

Fig. 8

b) any c-product consists (see the table attached) in three types of constitutional variables - agents, obligations and conditions, and only them.

contract CON	c-products	Constitutional variables		
	CP	AG,	z	$\pi(\Delta CV)$
	$CP^{L\text{-}REG}$	$AG^{L\text{-}REG}$	$z^{L\text{-}REG}$	$\pi^{L\text{-}REG}$
	$CP^{R\text{-}REG}$	$AG^{R\text{-}REG}$	$z^{R\text{-}REG}$	$\pi^{R\text{-}REG}$

15. ECONOMIC EXTENSIONS

As to the general objective of the paper, only a few comments will be added on some key notions of the economic analysis.

15.1 Costs and benefits

Let us recall that a creditor may "dispose of" with the obligation z, as if it were in his "ownership". On the contrary, a debtor has only limited means how to affect the creditor's behavior. Consequently:

- the role of a creditor has a positive value – in the economic sense,
- the role of a debtor has a negative value.

Put alternatively, an accountant should includ the obligation z into the debtor's costs (liabilities) and creditor's benefits (assets).

15.2 Value of an obligation

15.2.1 Introduction

Both the creditor and debtor assign the obligation z a subjective value V(z). The outcome is likely to depend on:

a) a state s, at which z finds itself, z(i), and the probability with which the state may change, or the condition $\pi(\Delta z(i))$ fulfilled,

b) parameters P of the obligation in the above state.

15.2.2 Example

As an example, let us consider an obligation z^L of an insurer (to pay the benefit to the client in the case of the peril). Let the inscribed "face of the policy" be:

$B.z^L(+1)$ = U$ 300 000

Given the probability of the peril, the insurer makes a valuation

$V(B.z^L(+1))$ = U$ 17 000

If activated and fulfilled, the obligation obtains the value V(z(+3)) = U$ 300 000.

Summarizing then, for the insurer the liability of U$ 17 000 developed into "real" costs of U$ 300 000.[18]

15.3 Transaction costs

It has been shown that a person appearing in the contract CON takes up two roles:

- in the role of AG it has obligations towards the other part of the CP,
- in the role of AG^{REG} it has obligations towards MO, i.e. towards the other party of the vertical product CP^{REG}.

15.3.1 Horizontal, netto costs

CP consists in two sub-sets of obligations – $\{z^L\}$ and $\{z^R\}$. As the product CP represents the "contract in the narrow sense", we may write that:

$V(\{z^L\})$ are the "pure", netto costs of the party AG^L,

[18] A relationship between the "contract development" and its representation in "accounting books" is another aspect *e-commerce* that did not find room in this paper.

$V(\{z^R\})$ are the netto costs of the party AG^R.

For example, in an insurance contract the so-called "risk premium" represents the netto costs of the client; it covers the genuine protection provided by the insurer. Everything above it is paid for other services.

15.3.2 Vertical, transaction costs

Let us confine to, e.g., the person X on the right-hand-side of the CP. Apart of the role AG^R, the person X also appears in the vertical product. $CP^{R\text{-}REG}$, where:

- obligations {mo} represent the communication services,
- obligations $\{z^{R\text{-}REG}\}$ represent the „price", that X pays for the services.

Valuation $V^X(\{z^{R\text{-}REG}\})$ represents the "extra-costs" that X has to cover in addition to the above netto costs $V(\{z^R\})$.

Generally speaking, $V^X(\{z^{R\text{-}REG}\})$ is brought up by the fact that "the World is not Walras-perfect", that information is costly. This is why we suggest that $V^X(\{z^{R\text{-}REG}\})$ is a reasonable definition of the so-called transaction costs.

If the person X is in the role of MO, it provides communication services to himself. Formally, he, then, pays no-one for the services, however bears the transaction costs anyway.

15.3.3 Classification

More detailed analysis of the communication services will show that:

1) when an offer to enter into a contract (or its acceptance) is processed, the order-routing has the meaning of:
   - a search for a counter-party willing to enter into the contract,
   - a bargaining over the contract contents,
2) when other orders are processed, the order-routing has the meaning of the enforcement of the contract contents, i.e., the inscribed transitions.

Transaction costs thus cover the necessary "search", "bargaining" and "enforcement".

15.4 Value of a contract

15.4.1 Introduction

It may-be surprising that lawyers approach rarely ask about the incentive of the contracting party (as long as it is lawful). In this respect the law, in general, confines its interest to the consideration and its sufficiency[19].

At the same time, lawyers have long recognized that a contract is a piece of property[20], in which each of the contracting parties has its respective share.

15.4.2 Share in a contract

Within a given CP, it is apparent that the bigger is the share of the obligations z^R, that AG^L may acquire, the bigger will be his benefit (asset). The overall value of his share in the actual formula of the CP can then be put as

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[19] In text-books, consideration is defined as "… one of the ingredients of a contract. It involves a benefit to a promisor or a detriment to a promisee bargained for and given over in exchange".

[20] Textbooks in law take it as "personal property" (as opposed to real property) and a property "chosen in action" (as opposed to that chosen in possession).

$V^L(CP^{act}) = V^L(\{z^R\}) - V^L(\{z^L\})$

Let us stress, that the valuation $V^L(CP)$ of this left-hand share comprises all the obligations of the CP and that it is subjective – made by the agent AG^L. Therefore, it should differ from the same valuation but by the other party of the CP:

$V^R(CP^{act}) = V^R(\{z^L\}) - V^R(\{z^R\})$

15.4.3 Change in the value

If the actual formula CP^{act} is changed, i.e. some transition $CP^{act} \rightarrow CP^*$ is realized, the valuations of the respective shares will change, too. Put otherwise, the initial value of the share in the CP (e.g. that associated with the contract formation) may change substantially, as the contract develops. Generally, the value of the CP will depend on:

- what set of transition that there remains to be realized in the CP,
- what probabilities are ascribed to the above "residual" transitions, i.e. with what probabilities their respective conditions may fulfil.

15.4.4 Examples

For illustration:

1) Upon delivery, a seller's share in a contract for the sale and purchase increases its value - namely, if the "residual CP" consists of only the buyer's obligations to pay the purchasing price.
2) As the probability to win the jack-pot is low, Mr. X's share in an already paid lottery ticket[21] has very small value, even though the "residual CP" consists in only the other party's (the lottery company's) obligation.
3) A holder's share in a fully paid 10-year bond[22] has the value given, primarily, by the "face" of the bond and the probability that the issuer will remain solvent.
4) A client's share in a property insurance contract increases dramatically, once the casualty actually occurs.
5) Once the obligations are all fulfilled or breached, the contract is "fully consumed" and has no value to anybody.

15.4.5 Trading in shares

The above examples suggest that a share in the CP may be transferred to a third agent or even sold to him. Elsewhere, we discuss cases when the client's shares in an insurance policy may be transferred as gifts or sold for cash.[23]

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[21] The ticket represent Mr. X's share in a contract between him and the lottery company.

[22] The bond represents a contract between the holder and the issuer. As a security, the bond represents a share in the contract.

[23] The so called *absolute assignment* is defined as an "irrevocable transfer to another person by the existing policy-owner of all his rights in the policy". In the case of a gift, the assighnment is a voluntary property transfer involving no price to be paid. (In the USA, gifts of life insurance policies are frequently made among family members.) A policy is sold, e.g., in cases when it is owned by a corporation on the life of a key employee and is sold to him for an amount equal to its cash value upon his employment termination.

15.5 Demand and supply

15.5.1 Economic approach

Referring to mostly contracts for the sale and purchase, economists describe the inter-action between AG^L and AG^R as:

- supply of the goods by the seller,
- demand for the goods by the buyer.

This terminology, most probably, assumes that the seller's position in the market is weaker than that of the buyer. Otherwise, the convention is could be in the opposite: buyers would supply their purchasing power, while seller would demand for cash.[24]

15.5.2 Legal approach

Lawyers describe the inter-actions of AG^L and AG^R differently - namely by their notions of an offer and acceptance. Also this is asymmetric, as the offeror is, perhaps, assumed to be the one more initiative, may-be more interested in the contract.

Let it be, e.g., AG^L whose initiative was revealed by an offer to enter into a contract . By this order, AG^L as an offeror:

- supplies a package of his obligations $\{z^L\}$ and
- demands for a set of obligations $\{z^R\}$ of the prospective counter-party AG^R.

Lawyers easily recognize that even the mere submission of the offer may have a (positive or negative) value to AG^L, AG^R or both. That is why the law is concerned with a so-called irrevocability of an offer, and, indeed, of any other ORDERS.[25]

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[24] For students of "supply-constrained" economies, the latter convention might be more appropriate.

[25] A transfer of an already submitted ORDER, then, becomes a natural extension of the previous analysis.