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Clausen, Lars

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# Luhmann's book and the Books of Man

Lars Clausen,

Europa-University Flensburg (Germany)

UCL University College (Denmark)

[lacl@ucl.dk](mailto:lacl@ucl.dk)

*When the two Franciscan friars Cotrugli and Pacioli wrote their treatises on the new form of double-entry bookkeeping more than 500 years ago, they set in motion a worldwide expansion of production of numbers in sums. The history of accounting challenges an important structural argument in Niklas Luhmann's theory of the advent of our contemporary functionally differentiated society. By recurring to the history of dissemination media and accountings early ecclesiastical application, the design deficiency in the construction of 'semantics' in Luhmann's research program is uncovered. The rise of numerical accounting challenges contemporary forms of political communication on a global scale. It poses a challenge not only to politics, but to the strongest theory of society, science has yet developed.*

## **Letters and numbers**

Modern day politics and political communication reflects itself in a twofold tradition. Political scientists and philosophers have throughout the centuries developed the tradition of written, literary accounts of their arguments on the subject of political communication. They have continuously revolved on themes such as: What are its ends, obligations and means? What powers and limits it has in society; and not the least - how it should guard the city (Plato 2006), civic virtues (Cicero 1986), Christian Ordo (Salisbury 1990, Dante 2007), its people (Hobbes 2008), the law (Kant 1997) and as of lately – itself (Luhmann 2000). The tradition of the 'political philosophy' has had a lasting and important

impact on the formation of contemporary political forms and semantics and continues to influence both evolutions and revolutions in Politics (Brunkhorst 2014: 454ff).

The second tradition evolved from early means of 'giving account' of the strengths and resources of parts of the political entity – be it cities, principalities, churches, tradesmen, banks, monasteries, orders armies, empires or states. Especially after the 2<sup>nd</sup> world war, the development of the GDP symmetricized states across a circular globe and firmly fixed 'national economy' as a subject of study, research and most of all: politics. It was the creation of the IMF and World Bank in the aftermath of war – through which the Marshall-assistance to Europe was channeled, that "accounting became an essential component of national and international government" (Gleeson-White 2013: 187)

At the same time, the grown computational capacities of electric and electronic communication gave rise to quantitative assessments not only of available resources, but of possible voting outcomes with the use of opinion polls.

### **Accounting of sins**

Modern political communication thus communicates both in letters and numbers on subjects as diverse as growth of national income, taxation, ideology and the best positioning of sweets in supermarkets. For anyone accepting the premise of a prehistory to modernity with a radically different form of social 'organization', differentiation, communication practices and self-descriptions, it should not come as a surprise, that the modern tradition of accounting in letters and accounting in numbers has a common heritage, growing from the rabbinic reflections on ruins of the Temple in Jerusalem<sup>1</sup>. The 'accounting' of one's deeds and ethos as being a 'good man' in relation to God was not thought of as contrasting living a virtuous life as a good mother, husband and part of society. A similar obligation is demanded by muslim doctrine in the Shariah (Joannides &

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<sup>1</sup> For an overview of judaic references in the Torah to accounting practices, see (Joannides & Berland 2010: 9, Footnote 9)

Berland 2010: 17). Believers are in both instances obliged to 'keep a book' privately throughout your life. Albeit the omnivision of God.

The western Church rising from the ashes of Roman imperial decline developed a long and important tradition of accounting for sins not only by oneself, but for congregations and for all of (medieval) Christianity (Paulus 1915, Harrison 2002), ultimately resulting in a doctrinal supposition on the economy of indulgence and purgatorial cleansing (Endmann 2003), in effect clearing a path on which the Lutheran 95 theses and the following reformation emerged (Kaufmann 2017).

### **Three confessions of sin**

All three religions concern themselves with books of accounting above and below the moon in the Ptolemaic cosmos, and, as we shall touch upon later, operate with negative debits as the formal position earthly, sinful life. When philosophy freed itself from the strains of Christian dogmatics throughout the Renaissance and early modern society, it took with it the fascination with the written word. The Russian-orthodox theologian once described the three main confessions of Christianity as three ways to cope with the sinful life of the temporal world. The 'negative debit' in the orthodox church is the Church of St. John; the Catholic Church is the Church of St. Peter and the Protestant (trinitarian) Churches of St. Paul. The orthodox prefer with staying as close to the original teachings. Catholics favour a strong, learned papal church. The protestants favor incessant reflection and debate without final resolve (Solowjow 1938).

### **Negative debits of science**

Even though modern social sciences have for the most part separated from Church dogmatic in their impetus for unceasing secularization, it must nevertheless account for all three forms of negative debit. In other words, a modern theory stays close to the source materials, exhibits the strengths of internal coherency and never ceases to reflect upon its premises and tests its basic assumptions.

In the lingo of the philosophy of science, the wording corresponds to the three basic criteria of a strong theory:

- 1) Empirically sound
- 2) Transparent and reproducible methodology
- 3) Explicates the limitations of the approach

In his sociology of knowledge, Niklas Luhmann adds an important fourth criteria:

- 4) Autologic coherence – a theory of theory.

By this, he transfers the Goedelian insight, that no scientific system can replicate the world around it without including itself in the replication; thus, creating a set that includes itself as an element in its own set, into a unrejectable imperative for sociological theorizing (Luhmann 1997: 28ff, Luhmann 2008: 63, Luhmann 2005: 392ff). The contingent choices drawn in the design of a theory are included as selections, described by the theory itself (Luhmann 1992).

Luhmann has an extensive list of publications spanning from 1972 to the posthumous published *Die Religion der Gesellschaft* (Luhmann 1972, 1972a, 1972b, 1987, 1987a, 1990, 1997a, 2002 and others). At no point does he include an analysis of the theological economics of sins and indulgence. The monetary economics of an emerging autopoietic systems of a monetized trade, production and banking is indeed a strong driver of evolutionary pressure upon revolutionary practices of wealth circulation and accumulation (Carmona & Ezzamel 2006), but does not in itself explain the theological-doctrinal structure of debit and credit of sin, grace, indulgence and the (Catholic) sacraments. Gleeson-White notes, that “The use of double-entry itself was like the Catholic confession: if a merchant confessed – or accounted for – all his worldly activities before God, then perhaps his sins would be absolved” (2012: 97). Who knows, if the book or scroll of God with the seven seals, in which all men’s deeds and sins are accounted for, is written in letters, numbers or something completely different (Revelations 5-10)?

### **Value of empty books**

In his theoretical reconstruction of the European evolution of society from a hierarchically structured and stratified form of differentiation towards the emergence and dominance

of the functionally differentiated society spanning the globe from Kuala Lumpur and Ohio to Novosibirsk and Caracas, Luhmann identifies the revolutionary invention of the printing press and the following surge of printed books and pamphlets on the trade routes and markets as an indispensable driver of social transformation (Luhmann 1997: 291-316). But if the printed books are of such prime importance in his triadic design of his systems theory of society (Luhmann 1975), then the unprinted books of accountants challenge his very conception of printed books with their letters and illustrations as a revolutionary transformation of dissemination of communication, to which functional differentiation became the solution for harnessing the unleashed levels of meaning (ger: Sinn). It seems, we can add a negative debit to the design of his theory. We have identified an imbalance in the balance sheet of his theory. As we shall describe later, it now falls upon us to discern the value of the debit entry. The question is: what is the scientific value of accounting books for a theory design with an inherent bias towards printed books with letters in early modern society?

## **Books**

In books, we find stories and arguments, depicted as symbols, letters and at times magnificent imagery. The history of the book as a medium for transmitting and depicting thoughts, theories and experiences to readers, that are distinctly different than oneself. Usually, the dialogues by Plato are regarded as the prime example of the transformation from books as mnemonic devices to a tool of exchanging information, knowledge and experience (Havelock 1963). The dialogues represent not only a single position of thought, as had earlier philosophers and religious texts done. Plato's Phaidon and the other dialogues represent a giant leap in the intellectual ability to give written accounts of not one, but multiple concurrent positions. Their continuing importance and reception in classical and mediaeval philosophy, theology is uncontested. Few other texts from classical antiquity have had a similar impact on the language and discipline of philosophy as the texts by Plato and his student and later towering master Aristotle. Even modern scientific writing adheres to the balanced and reflexive representation in written arguments, upon which the final conclusion and insight is based. The preservation of

written texts in books, on stones, parchment and leather are prime sources of the cultural memory of our common Mediterranean – and even global - history (Assmann 2005).

## **Paper**

Written and circulated books shape the form of monopolies of power<sup>2</sup>. Not only do texts shape our history, so does the book as a medium itself. Since the early 1950ies, the relation between the material medium of textual circulation and the forms of social life has been continuously inquired (Innis 2007). Books, either printed or manus-scripted, is a comparatively late development from around the 11<sup>th</sup> century, stemming from the development of paper and paper mills in the Muslim and Hindu empires east of the Mediterranean Sea. In the 13<sup>th</sup> century, there were 36 public libraries and more than 100 book sellers in Baghdad. From Baghdad and the Moorish Iberian Peninsula, paper was widely adopted by the monasteries for production and circulation of the books in their libraries and accounting offices. The change from parchment to paper had multiple benefits for the management of empires and research alike. Unlike parchment, paper was comparatively cheap and easy to produce across the civilized world, as the materials for production were readily available, whereas parchment was fragile and imported from Egypt.

## **Time-space media bias**

Communication media such as paper or parchment are divided along a structural distinction of bias. The time-based media such as clay-tablets, stones with runes and monuments are durable – and seldom easy to transport and circulate. Time-based communication media communicate for the posteriority. One important and mostly unresearched media are the equestrian statues. The one surviving statue from the Roman empire is the statue, now in the Vatican, of the emperor Marcus Aurelius. Its survival was

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1. <sup>2</sup> “An appraisal of a civilization based on a medium of communication demands a recognition of the significance of peculiarities of the medium” (Innis, 2007, p. 138)

only secured by the common misconception of the portrayed emperor to be Constantine. Equestrian statues in Bronze and marble from the renaissance „...die Absicht, auf das Bewußtsein der Untertanen einzuwirken, sie durch die Sprache der Kunst von staatlichen Maximien zu überzeugen“ (Keller 1971: 51), a communication medium only abandoned after the 1st world war, when motorization replaced the horses, kings were disposed and generals driving tanks across the battlefield (Forrest 2016). Max Weber even build his evolutionary history of the emergence of mankind from the darkness of prehistorical time on a hippological mythology of birth from China to Greece ( Weber 1943: 58 - 63) Whereas time-biased communication media such as equine statues are oriented towards posteriority, space-based communication media are geared towards easy production and circulation. Paper, in this perspective, projects imperial power over a territorial space by circulation of laws, instructions, books, letters and contracts. The relative ease, with which paper is destroyed, is counteracted by the systematic binding of books, storage in dry and well-ordered (monastic) libraries and public archives. But most of all, rapid duplication of manuscripts secured the survival, even if one version vanished. Paper thereby secured both temporal and spatial stability and afforded the booming markets and the growing trade in the Mediterranean a hitherto unseen capacity for expansion of power, law, trade and artisan knowledge.

### **Forgery**

Paper had another important advantage, that secured it the global success, it enjoys. Most of all, ink on paper was perceived resistant to falsification. Whereas letters on parchment can be scratched clean and re-used, the story is different for paper. Parchment was expensive and writing could be scratched of – and often was. The phenomenon of palimpsests, where heretic or otherwise discarded books were reused for new manuscripts. Today, medium archeologists locate erased texts on parchments below the visible ‘last’ writing is a consequence of the re-use and editing of ancient manuscripts.

When ink is used on paper, it is absorbed deep into the structure (Stowasser 2014: 81-85). This is why until this day; handwritten examinations and signatures are only valid with ink and paper. As we shall see later, the relative security against falsification of written accounts on the new space-biased medium of paper is an important development in the

rise of mercantile success of Venetian and other tradesmen from city-states. When the text itself is false on writing, as it was in the case of the infamous 'Donation of Constantine', transferring the imperial powers of the Roman Empire to the Bishop in Rome – the papacy. The donation was for centuries thought to be unforged and the legitimate gift by the Roman Emperor Constantine on his deathbed to the Christian Church. The Constitutum Constantini is regarded as the "most infamous forgery in the history of the world (...) it had great influence in the field of ideas and doctrine" (Fried 2007: 1) and had repercussions to the reformation and far beyond. It is not without irony, that the forgery of the Constantine donation secured the survival of the equestrian statue in Rome of the stoic philosopher and emperor Marcus Aurelius.

### **Traditional sequence of communication media and revolutions in societal structure.**

Letters, notes, manuscripts and letters preceded the invention of the printing press and the advent of the printing press with its cheap and mass-production of printed books, magazines, pamphlets and newspapers. Since the publication of the influential book on The Gutenberg Galaxy, Marshall McLuhan influenced social sciences and argued for an episodic division of historical steps in social evolution along the temporal succession of new inventions of communication media. McLuhan used a fourpartite categorization. Beginning with the oral societies of tribal life, they were succeeded by a culture of manuscripts on parchments, stone, clay-tablets and paper of the ancient empires from China, India, Persia and the Mediterranean civilizations in Egypt, Greece and Rome. The innovation of the printing press with movable types by Johannes Gutenberg in the middle of the 15<sup>th</sup> century secured a wide availability of classical texts. Nearly 80% of the printed books during the first 50 years after the invention of the printing press were earlier manuscripts, now made available to a wider audience – and a starting transition to printing in vernaculars in Italy, France and Germany. It is estimated, that during the 50 years between the invention of the printing press around 1450 and 1500, there were printed "mehr Bücher (...) als in dem gesamten vorangegangenden Jahrtausend des lateinischen Mittelalters in allen Klosterskriptorien zusammen" (Kaufmann 2017: 214) Only now are we transcending the Gutenberg Galaxy and entering the age of electronic media, with the societal structure and power formations trying to catch up and adjust to the new medium environment. Whatever our present state, the important historical

break is located by the multiplication of books, pamphlets and comics, that gave rise to a new social formation.

Eisenstein took up McLuhans thesis of the Gutenberg Galaxy and the importance of the printing press. Her thorough analysis of the impact of the advent of mass production of printed publications (1979) became an important support for Niklas Luhmanns theory of evolutionary ruptures of social structure (Asmann 2018: 147, Cevolini 2007, Clausen & Harste 2019). Not only do we in hindsight conclude, Eisenstein remarks, but the contemporaries were acutely aware of the printing press as both a divine art and an infernal machine (Eisenstein 2011).

### **Printing letters in books**

The massive rupture or, to use the wording of Niklas Luhmann, the explosive growth of surplus of meaning facilitated by the new means of dissemination and circulation of printed books, led directly to the revolutionary years of reformation and counter-reformation, a mass increase in warfare and ultimately to a new political landscape in Europe and the world at large. The modern world society transforms during the 17<sup>th</sup> century from a stratified type of differentiation towards a functional differentiation (Luhmann 1977, 1997: 291-316), re-synchronized by the ability to read(!) “bewahrenswehrte” and “gehobene Semantik” (Luhmann 1980: 4), most importantly, stored in printed books in libraries and archives throughout Europe. Hauke Brunkhorst follows a similar perspective on the relation between societal revolution and written texts. The Protestants “created a new legal science, a new legal rhetoric and theory, and reconstructed canon, civil and customary law, reorganized rules and procedures of proof, evidence and appeal, established new systems of civil and criminal courts, intended new legal methods, *write hundreds of new legal textbooks and thousands of tracts on law, politics and society*” (Brunkhorst 2014: 147, my italics), where the transformations during the 15<sup>th</sup> century escalate into a “total revolution” (148).

### **Other books**

The texts on liturgy, dogmatics and theology, combined with new “legal textbooks and thousands of tracts on law, politics and society” were read, re-read and stored in libraries

and bags, as long as they weren't added to the papal list of prohibited books (Index Librorum Prohibitorum). If this was the case, both books and authors were in danger to burn on the stake<sup>3</sup>.

Even if we accept the importance of printed books for societal evolution, with the consequence of separation of law, politics, science and economy, among others (Luhmann 1977), not all books were impacted directly by the emergence of the printing press. This stays true, even if we limit our perspective to the European theater of printing frenzy. Those accounting books were kept in good order and were a guarded secret of those who kept them. Completed books were stored in private or public archives with limited access. Schools were set up to teach the future writers the art of book-keeping. The type of books not impacted directly by the advent of the printing press were the books of numbers, not of letters. The first printed book including mathematical symbols and equations was printed in Venice in 1494 and carried the title "Summa de Arithmetica, Geometria, Proportioni et Proportionalita". The lavishly printed book appeared more than half a century after the printing press started to turn out books with (latin) letters to a growing audience. The author Luca Pacioli was a mathematician, teacher, book-keeper and Franciscan friar. The summa was written in the vernacular used in Venice and for the first time used the hindu-arabic numerals supplanting the roman numerals. His goal was to create a 'summa', a collection of the state of the art of the mathematical science in both its theoretical and applicable dimensions. His summa includes a small treatise describing the practice of book-keeping 'Venetian Style', describing the structure and practice of Venetian mercantile accounting in contemporary banks, trading houses and merchant enterprises.

The first elaborate description of what became the standard of all western accounting, was written by a man born in the Kingdom of Ragusa, what is now known as the City of Dubrovnik in Croatia. His manuscript from 1458 was until the turn of the millenium regarded as the first written manuscript(!) introduction to the 'Venetian style' of double

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<sup>3</sup> Giordano Bruno: First principle, 1600 / Keppler, Galilei – exemplar. Portugal inquisition (Disney, vol 1).

entry bookkeeping. A new and early version of the manuscript has emerged and shown important changes from the later printed version, earlier used as the basis of translation and scientific exploration in the history of accounting (Sangster & Rossi 2018). The instruction by the Franciscan friar, merchant and student from the University of Bologna on the practice of double-entry bookkeeping for merchants was circulated as manuscript and for a while used as a teaching resource in the abbaci-schools for merchants in spe.

Cotrugli introduces his chapter 13 in *Libro de l'Arte de la Mercatura*, where he deals with the issue of bookkeeping, with an allegory on the pen, with which both God and man operate: "The pen is a tool so noble and so useful that, not only for merchants but, like God, for any art, liberal and mechanical, it is essential." (Cotrugli in Sangster & Rossi 2018: 29). Others follow the steps of Cotrugli, such as Raphali (1475), Pacioli (1494), Tagliente (1525) and Manzoni (1540).

While Cortrugli's was the first description, it was by no means the first application of double-entry bookkeeping. When others followed in his footsteps and elaborated on the practice and descriptions of an innovation first brought by in the banking sector of early Renaissance Venice and Firenze, it has an importance not only for historians of treatises and practices of accounting, but for the tracing of early functional differentiation of the economic system from theology and politics.

### **The Treatise on Double Entry**

The treatise by the Luca Pacioli describes double-entry book-keeping as a distinct style of keeping order in your books and business. For centuries, it was regarded as the first complete description of an art, that had developed in Venice and Florence during the 12th and 13th century (Sombart 1902: 333, cf. 392-397, Derks 2008). Double-entry was a solution to the rising volume and monetarization of the trade between Constantinople in the eastern Roman Empire and the Italian city states as trading hubs of the western markets (Pirenne 2007). It drew on nearly a millenia of evolution in religious accounting of deeds, sins and indulgence. The proclamation with which to start every book of accounting "in the name of God" (Pacioli 2009) or even better: "in the name of God and Profit" (Cotrugli 2018), "were no mere ornaments" (Gleeson-White 2012: 97), as they secured a place of the books in the cosmology of the papal church doctrine and drew on lithurgical precedence.

A century later, the Jesuit monk and diplomat Giovanni Botero<sup>4</sup> wrote the treatise on the reason of state (*della ragion di Stato*, 1589) as a reflection of the Machiavellian Prince and Bodins *Les Six livres de la République*, he published his book on the life and power of city states *Delle cause della grandezza delle città* in 1588, first published in English in London, 1606 as *The Magnificencie of Citities* (Botero 1979). He declares, that

*“man is borne to labor, and most men attend their businesse: ... And pleasure cannot stand without profit and commoditie, whereof she is as it were the verie fruit.” (13).*

Most of the inhabitants of city-states attend their business as merchants, and their primary goal is to generate “profit”, that is the “verie fruit” of the city. Botero continues, how

*“It sufficeth not therefore to the gathering of a Societie of people together, to have abundance of wealth and substance alone; But there must be besides that, some other forme & matter to unite and hold them in one place toghether. And that is, the easiness and commodiousness of conduct, the carrying out and bringing in I meane of commodities of wares too and froe.” (17).*

The “commodiousness of conduct” is directly related to the and the complex task of managing business across the Mediterranean and Atlantic coasts, securing payment of taxes, and ready availability of credit opportunities for Venetian and resident merchants. The development of double-entry book-keeping is a direct result of the insufficiencies of single-entry book-keeping or unstructured books, that aren’t suited to the complexities of trading empires linking the Philippines and China with Paris and Antwerp. The invention

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<sup>4</sup> Botero was well versed in the double-entry bookkeeping practice of the Iesuit order (Quattrone 2004)

was so successful, that the city-states of Italy made or broke kings, shipped crusade armies to the holy land and made the Catholic church accept indirect interests on monetary loans, even though Pope Sixtus famously condemned the practice of charging interest as “detestable to God and man, damned by the sacred canons, and contrary to Christian charity” (Moehlmann 1934: 7). But there is an important exception. The merchants of Venice used the exception to the fullest extent: “Interest upon money was sinful, but interest upon capital was not only lawful but encouraged. A lending B a thousand dollars was forbidden to charge interest, but if A invested the same money in business, he could legally take a huge profit”. (Moehlmann 1934: 10)

The notions of capital, profit and loss are inherently connected with double entry book-keeping. Only by means of the new type of accounting is it possible to continuously make contracts on time-bound investments – and, it needs the Arabic numerals with new math to devise and calculate complex investments by using multiplication and division, introduced to western Europe by Leonardo of Pisa and popularized first in the trading schools and after Pacioli, as arithmetics for both practical use in painting, architecture, trade and the science of mathematics (Katz 2004: 213-5). Keeping good books gave you a much-needed protection against protagonists accusing others of charging interests, thereby endangering the business and threatening the lives of both the merchant and his staff.

### **Order of the books**

The Memoriam: most text, “accidents” report of business transactions. All staff possible writers

The Journal: written by a professional accountant, who converted the temporal notes from the Memoriam into a pre-structure onto a social dimension: transactions from/to business partners. Converts all transactions into the one currency, used in the ledger.

The Ledger: The main book with all accounts and pseudo-accounts “capital”, “cash” and “profit/loss”. In this book, the actual transactions and payments from everyday life are decoupled from the structure deployed. It is in the ledger, that the “double entry” happens. Every transaction is written in the account from where it comes – and where it goes. Every entry of a financial transaction within accounts in the ledgers debits one account and credits another in the equal amount. So, if \$1,000 was credited from the

Assets account ledger, it would need to be debited to a different account ledger to represent the transaction<sup>5</sup>.

Lets look at an example:

I sell my one and only beautiful apple to a customer.

In my memoriam, I write: 18th of may 2019, Apple sold, received 2 EUR, placed in the cash box.

In my journal: 2 EUR: from Apple TO Cash (or in renaissance Italian: a Apple, per cassa)

In my ledger: (1) in my apple-account: I credit 2 EUR from capital, and debit 2 EUR to apple.

(2) I credit the cash-account: I credit 2 EUR from apple, and debit 2 EUR to Cash.

The books of the merchant were to be named equally. The first book was to be signed with a cross. When the books were closed to calculate the balance, a new set was to be procured. All books were to be brought to the magistrate and stamped/signed by the public office, before they entered into use and after the books were closed. Public accountants scrutinized the books thoroughly, thereby securing, that all taxes had been paid and no illegal activities or omissions had been carried out. As early as 1400, Genoese and Venetian merchants and banks could experience unannounced audits by the magistrate. Their accounting obligation secured a high level of trust between merchants, if books were signed and cleared by the magistrate.

Paper and ink showed its strengths and usefulness in the signing of the accounting books. By registers in the city, all merchant books were noted and 'licensed' for use; and by the near impossibility of forgery with written business accounting, the city states secured a high level of business stability.

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<sup>5</sup> <https://blog.hubspot.com/sales/general-ledger>

### **On Revolutions and numbers**

Bookkeeping was revolutionized with the advent of paper. The rising prosperity in the early renaissance Italian cities created the ground for development of double entry bookkeeping.

Handwritten, 'certified' books were in use throughout the epoche of the Gutenberg Galaxy with it's functional differentiation. Only with the emergence of analog and digital computers during the last century, did book-keeping transform itself. Accounting as a profession rose to fame along the industrial revolution and have gained positions of prime importance in corporations and public administration alike. Their "accounts" have by all means become the "true account", whereas the lives of everyday men are relegated to "experiences" with "limited insight".

Bookkeeping was indirectly linked with the printing press. With the advent of instructions on good practice in bookkeeping and the 'new' double-entry system, printed guides and instructions secured world dominance of hindu-arabic numbers as the isometric mirror of business, finance and state economies (Gleeson-White 2013).

### **States emerge**

In his assessment of the rise to fame of the modern state and its colloquial legitimation of power as reason of state, Luhmann remarks on the late transition of the strong renaissance city-states: „Erst mit der endgültigen Dursetzung des Fürstenstaates auch in Italien (bewunderte Ausnahme: Venedig),“ does the concept of state reason – the *raggio di stato*, *raison d'état* – gain traction and prominence in the contemporary political literature (Luhmann 1993: 65). The city-states of Florence, Genoa, Ravenna, Naples and even Ragusa re-consolidated their statehood as smaller territorial states. The political historian Spruyt, argues, that: “In the long run, however, sovereign states displaced city-leagues and city-states. States won because their institutional logic gave them an advantage in mobilizing their societies' resources” (Spruyt 1994: 185). The cities were heavily dependent on successful trade and the availability of high levels of credit.

During the Italian Renaissance, society continued along the path of testing functional differentiation as a *modus vivendi* of coping with the expanding horizon of European

society. Following the constitutional movement in the aftermath of the papal revolution in the 11<sup>th</sup> and 12<sup>th</sup> century (Berman 1983), the expanding networks of traderoutes and exchange with Muslim and Abbasid tradesmen, and the organizational challenges of crusades to Jerusalem and the contact with mongol invaders all challenged existing forms of social organization. The invention of paper led to a scribal mass production of copying manuscripts (lt. manus = hand). In this environment, the books were regarded as important and collections of books. It is still evident in the naming of the Christian Bible: bibliotheca, hence bible has the meaning of (Gods) library. The books slowly gained the new function of remembering and ordering the progress of Gods creation, the histories and legitimations of institutions of power, legality and ecclesia. The book became a metaphor on the creation itself. Leibniz would later “read in the book of the world” (Asmann 2018). Books ordered time. Yet, books also were artifacts from a time gone by, so they were kept in private and city archives, monasteries and scholarly libraries at the newborn universities emerging in every large city from Bologna and Paris to the boundaries of European Christianity.

As modern-day man knows, money is divided in credit and debit, with your personal bank account managed by an accountant. This fairly new invention of every man and woman having bank accounts is preceded by 800 years of financial book-keeping innovations.

## **Conclusion**

The renaissance practice had both theological and cosmological connotations and drew heavily on recent developments in trinitarian theological discussions (Friedman 2004). We might even argue, that double-entry bookkeeping wasn't feasible without the nominalist reduction of universalism by theological masterminds such as William of Ockham (1287 – 1348) and the Franciscan friar and professor Duns Scotus (1266 – 1308) in opposition to Thomistic cosmology. The groundbreaking innovations in number-theory, formal distinctions and the concept of haecceitas informed generations of 'Scotists', both inside the learned circles of the Franciscan order and beyond. As argued elsewhere, the epistemological challenges by the Metaphysics of Duns Scotus are only partially coped

with in contemporary theories (Clausen 2019, Clausen 2020), including the architectural features of the design by Luhmann.

Nevertheless, he did build his theory of communication media on a solid basis by integration of Eisenstein and McLuhans argument on the revolutionary effects of the emergence of printing press technology in western, Christian Europe. The Luhmannian theory program became a research initiative focused on the (printed) texts of letters, and especially on books in libraries. By illustrating the inherent blindness in his approach, we are able to discern the limits of his arguments. It does not null the concept of functional differentiation, but it does point towards a bias in the empirical basis. The design itself is adaptable and progress on understanding and integrating the arithmetics of (binary) calculations is ongoing (Roth 2019); amending both the theoretical design and broadening the empirical basis to include the historical and present forms of empty and filled books of accounting, be they digital or analog.

When Luhmann identified “gehobene” and “bewahrenswehrte Semantik” (Luhmann 1980: 4) as his empirical basis, and thereby meant the structure once designed by Isidor of Seville, the limits of semantics were at the boundary of texts consisting of letters and using numbers naively. Our challenge is to widen the concept of semantics to develop a new, binary bookkeeping practice for developers of social theory. We must ask ourselves: which accounts, regardless of letters or numbers, count as gehobene and bewahrenswehrte Semantik from hereon? What theoretical tools are available to researchers, that both penetrate the semantics and order observations across the modalities of expression and distribution? The task is not an urgent one. Society doesn't wait, but as it continues to pour an ever-greater number of literary texts into existence, there's an abundance of empirical work to enjoy. On the other hand, the numerical challenge by the omnipresent texts of numbers are less compatible with the semantics born out of the resulting structure of the printing press revolution.

In the face of the state of contemporary political communication on a global level, effects of the quantitative supremacy of numbers in the semantics are evidently visible. The means, goals and ends of politics have changed from discussing ideology in a language of letters towards accounts of 'counting'. If the capacity in politics to balance between the

two accounts of numbers and letters, the recourse is an inherent moralization of political communication, as the moral code forces a comparatively rather low level of complexity upon the semantics of political communication. In effect, observing the negative debit in the theoretical design, marks the imminent transformation of semantics in political communication. The phenomenon of Gretha Thunberg and the grassroots movement “Fridays for future”, is a quintessential example of the global convergence of the moral dictum: the numbers on the effects of climate warming are clear – everyone, and especially politicians – should feel guilt and obligation to do penance and obtain eco-indulgence.

Society moves in mysterious ways. There is a strong form-dependency linking the emerging practice and treatises on double-entry bookkeeping in the northern city-states of Renaissance Italy and the Adriatic sea and to rising sea levels, dying thuna and Gretha Thunberg. There is a windy road from Dubrovnik to the climate crisis of today.

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