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# As in the past or beyond it? Preliminary accounting-organizational perspectives of sanitary emergencies

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## ABSTRACT

The current global crisis does not seem to have precedents, despite history teaching us that numerous sanitary emergencies had a devastating impact and were at the time of unprecedented and unequalled interest. The interest in this case is on the one hand to the capability of making a clear referring picture on the rupture points in social practices, such as the managerial ones. On the other hand, the investigation would show a paradigm of interdependences between accounting and organizational models through a longitudinal historical view (Plague 1656, Cholera 1836, Yellow fever 1800, Covid-19). Given the severity of the pandemic that globally populations are suffering as the result of Covid-19, the authors offer a study on how previous sanitary emergencies have been treated. This would allow the authors to make a more appropriate analysis of the pandemic in which populations are immersed. The condition of urgency and state of necessity, in which the entire global community finds itself, make the structuring of analytical-interpretative research works necessary, that consider the observation of reality through the help of synchronic and diachronic approaches.

The authors longitudinally provide a frame in which the contents of accounting for epidemics appear unmodified from the cholera of 1836-37 and yellow fever 1800 until the recent sanitary emergency (Covid-19), demonstrating a strong and pervasive influence during Covid-19 of the other periods analyzed. Similarities would be demonstrable, according to social and organizational repercussions, between the plague of 1656 and the recent Covid-19. In this sense, accounting processes involve not only the managerial perspective of its technicality and the need of knowledge on the epidemic data, but also involve the socio-organizational and psychological individual sphere, influenced by the data made available. The documental analysis would be considered one of the main values of the research work. It would enrich the scenario, in consideration also of the longitudinal comparison of the cases analyzed and the opportunity to match past events under the lens of the recent Covid-19 epidemic from different perspectives. According to the rupture points and similarities that distinguish accounting practices and socio-organizational repercussions during the events considered, the research would contribute with original and topical hermeneutic views.

**Keywords:** accounting, document analysis, epidemics, organizational repercussion, social practices, knowledge

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L'attuale crisi globale non sembra avere precedenti, nonostante la storia insegna che numerose emergenze sanitarie abbiano avuto un

impatto devastante e sono state all'epoca come ad oggi di un interesse senza tempo e senza pari. L'interesse, in questo caso, si focalizza da un lato sulla capacità di costruire un quadro di riferimento chiaro sui punti di rottura nelle pratiche sociali, come quelle manageriali. Dall'altro, l'indagine mostrerebbe un paradigma di interdipendenze tra modelli contabili e organizzativi attraverso una visione storica longitudinale (Peste 1656, Colera 1836, Febbre gialla 1800, Covid-19). Data la gravità della pandemia che le popolazioni mondiali stanno soffrendo a causa del Covid-19, gli autori propongono uno studio su come sono state trattate le precedenti emergenze sanitarie. Ciò consentirebbe agli autori di proporre un'analisi più appropriata della pandemia in cui sono immerse le popolazioni. La condizione di urgenza e lo stato di necessità, in cui si trova l'intera comunità globale, rendono necessaria la strutturazione di lavori di ricerca analitico-interpretativi, che considerino l'osservazione della realtà attraverso l'ausilio di approcci sincronici e diacronici.

Gli autori forniscono longitudinalmente un quadro in cui i contenuti della contabilizzazione delle epidemie appaiono immutati dal colera del 1836-37 e dalla febbre gialla del 1800 fino alla recente emergenza sanitaria (Covid-19), dimostrando una forte e pervasiva influenza durante il Covid-19 degli altri periodi analizzati. Analogie sarebbero dimostrabili, secondo ricadute social e organizzative, tra la peste del 1656 e il recente Covid-19. In questo senso, i processi contabili coinvolgerebbero non solo la prospettiva gestionale nella sua tecnicità e la necessità di conoscenza sui dati epidemici, ma anche la sfera socio-organizzativa e psicologica individuale, influenzata dai dati messi a disposizione. L'analisi documentale sarebbe considerata uno dei valori principali del lavoro di ricerca. Arricchisce lo scenario, oltre la considerazione del confronto longitudinale dei casi analizzati e l'opportunità di far combaciare gli eventi passati sotto la lente della recente epidemia di Covid-19. La ricerca contribuisce a fornire visioni ermeneutiche originali e attuali, secondo i punti di rottura e le somiglianze che contraddistinguono pratiche contabili e ricadute socio-organizzative durante gli eventi considerati.

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**Keywords:** contabilità, analisi documentale, epidemie, ripercussioni organizzative, pratiche sociali, conoscenza

## 1 – Introduction

The recent Covid-19 pandemic appears as one of the greatest examples of the global expansion of a sanitary emergency, which according to the data recently reported by J.H. University has practically spared almost no territory (<https://coronavirus.jhu.edu/map.html>).

What happened is necessarily a warning for management scholars to provide a generalized and interdisciplinary reflection (Walker, 2005;2006;2008). Reflections would be needed on the optimal management methods and how sanitary emergencies affect, and have influenced in the past, the operating methods and social practices. In addition to the aforementioned, crucial inferences would be distinguishable on how methodologies and practices in social sphere during epidemics have changed over time. The authors try to provide a quite critical view on the theme through a longitudinal comparative approach (Carnegie & Napier, 2012) and how much it has influenced and impacted the human condition and welfare during the years. Above all, as is the case specifically proposed, it would be preeminent to follow an integrated approach on how to focus the investigation, evaluating the interdependencies existing between the two points of view: (1) the sphere of accounting and (2) the social-organizational one.

The research-works available would tend to focus the attention on the managerial perspective of disasters, both natural and man-made (Kohn, 2007; Van Zyl, 2012). A wide segment of the literature, focuses the attention specifically on the context of individuals, organizations, and industries, preeminently pointing the interest to the impact that disasters and consequent crises have on their good progress. For example, demographical aspects, damage costs, and economic repercussions deriving from emergencies would be the

mainstream topics (Hays, 2005; Coburn, Wagner & Blower, 2009; Cunha, 2004; Rappuoli & Dormitzer, 2012; Reed *et al.*, 2013; Monto, Comanor, Shay & Thompson, 2006; Hoppensteadtand, 1975; Bloom & Canning, 2004). By contrast, sporadic and limited contributions would be present of the accounting and its supplementary aspects deriving from the epidemics (Yu, 2020; Manetti, Bellucci & Bagnoli, 2017; Capelo & Araújo, 2019). Specifically, the emergencies deriving from epidemics would represent rare and specific contextual frames, involving a multitude of factual influences (Napier, 2002; Coronella, Antonelli & Lombrano, 2017).

To date, the implications of global health emergencies, especially the magnitude and spread of the recent one (Covid-19), which has been even greater than the financial crisis of 2008 and so unexpected and so pervasive after the World Wars, had not yet been deeply observed, and therefore remained unanalyzed especially from the point of view of accounting and its cross-referring implications. In fact, the main objectives of the study are the following:

(1) to explore external factors contingent in historical events that made interdependent accounting and its organizational repercussions;

(2) considering a longitudinal analysis related to limited cases study in terms of accounting procedures during epidemics.

The research would contribute to the literary development on the theme of *ad hoc* accounting, including organizational and social views in the management of emergencies, and in the cases proposed: epidemics.

Contexts of local government would be privileged starting points in investigating accounting practices for epidemic control under the historiographical lens. Intrinsic social-organizational character and traits would be discovered by the accountability research. Perceived needs, psychological repercussions and strategies which were in place to cope with the emergency and the generalized fear of contagion, would be made visible by the accounting perspective and the study of papers when available.

Year of contagion, May 1656,

From the beginning of the month of May we heard about the city, that people died more than normal, for various reasons that caused this mortality. First it was said because of rotten cod, then of dust in the waters of the churches, was there never so severe punishment from the solemn hand of God, could it have been a plague ever seen? (...) It was heard that people died by hundreds and by thousands with different diseases, some immediately, some with buboni, others with black spots called in the same way (...)”(translated from: Archiepiscopal Archive of Naples (“Diaries of Ceremonies” of Naples Cathedral, 1651-1660 – Vol.4).

Accounting books, neglected for decades (O’Brien, Remenyi & Keaney, 2003; Hernández-Esteve, 2010) would be an insurmountable treasure to read and re-read recent occurrences from the perspective of the social practice developments (methods, approaches and discipline) and its transversal facets.

Following the main aforementioned investigative pillars, the proposed research would be centered not merely on reconstructing the historical phases of the multitude of diseases and disasters occurred during the centuries all around the world. In fact, in the specific case, the authors intend to indirectly retrace the stages of the epidemics used as reference points and case studies for longitudinal analysis (plague 1656, cholera 1836-37) under the motivational lens of Covid-19 pandemic through the accounting changes and its influences referring to the *ad hoc* accounting for the yellow fever in 1800 (Capelo & Araújo, 2019).

According to the observations operated by Walker (2005; 2006; 2008), since 2000 there has been a shift in the traditional accounting historian's debate arena, following a "new accounting history" perspective, due to the emergence of new themes and calls to identify future directions. Napier (2006) identifies that view as histories of accounting, power and knowledge, professionalization of accounting, new understanding of accounting's roles in representing the economic, financial reporting and accounting theory. On the inspirational wake of new archaeological discoveries and the recognition of the role of accounting in socio-religious and organizational practice, the authors provide a fractal geometric point of view (Mandelbrot, 1989), interconnected, and branched with organizational theory and sociology.

The authors shall not focus the interest on the dramatic losses in demographic terms, already investigated by several authors (Forti Messina, 1976; Leoni, 1990), but they intend to canalize and direct the interpretative effort on the institutional practice of accounting (Di Maggio & Powell, 1983; Hopwood, 1990; Meyer & Rowan, 1977; Meyer & Scott, 1983; Potter, 2005; Powell & Di Maggio, 1991; Scott, 2001). In this sense, the authors try to catalyze hermeneutic perspectives of inference by identifying the rupture points in recursive and fixed cycles inherent in social life under external factors contingent. In addition to this first guideline, the *ad hoc* structured research design, considers comparatively the changes deriving from the same circumstances hundreds of years later.

The analysis proposed, based on comparative case studies (Eisenhardt, 1989; Yin, 2013) through a longitudinal lens, starts investigating the original documents interpreted thanks to a synchronic and diachronic approach (Saussure, 2000; Stables, 2002). So, the method of counting during Covid-19 and Cholera in Naples 1835-1837, have been compared with the plague in Naples during the year 1656. It has been also possible to investigate by secondary sources (Capelo & Araújo, 2019) the *ad hoc* accounting in Cádiz during the yellow fever spread in 1800, accounting of pawn during 1656 (Nappi, 1980) and required accounting practice for field hospitals (lazarets), not implemented during 1656 (De Renzi, 1968).

Through the methodical historical reconstruction and the hermeneutical view on primary sources, it has been possible to frame an explorative timeline of rupture points related to social-organizational interrelations of accounting for epidemics during the centuries, from the XVII to nowadays in Italy.

Primary sources from:

- Archiepiscopal Archive of Naples, Vol.4, "Diary of Ceremonies" of Naples Cathedral 1651-1660;
- Archiepiscopal Archive of Naples, Bunch n. 20, "Diary of Ceremonies 1825-1840"; p.63
- Archiepiscopal Archive of Naples, "Letter Arcibishop of Naples 1856,, pp.4-8
- State Archive of Naples, Bunch n.932-935, "Private Archives - Bourbon";
- State Archive of Naples, Bunch n.394, "Supreme Magistrate of Health – General accounting 1656-1808";
- Pio Monte della Misericordia Archive of Naples, Bunch n. HA/47, "Deliberations" 1835-1839, p.90.

The formal structure of the paper, adequately outlined by the authors following the research design, takes into account that: the first paragraph introduces the argument and moves the reader to comprehend the entire manuscript's aims and scope. Section 2 introduces and frames the background. The following specifies the methodological approach and the entire design of the paper, the main pillars of the interpretative paradigm. In Section 3.1 the authors present to

the reader also a periodization and contextualization of the cases analyzed. The last part shows the main findings and critically concludes the paper, including future developments and limits.

## 2 – Background and interpretative paradigm

### 2.1 *The accounting history perspective*

It would be possible to affirm that accounting practices that arose were used to solve problems (Gomes, 2008; Horvat & Korošec, 2015; Rainero & Modarelli, 2020), when for example facing situations of crisis like sanitary emergencies, but a not completely developed literature and referring paradigms on these aspects and external factors contingent would be present.

According to the previous sentence, it would be possible to quote Masi (1963), who in his book, *Accountancy in prehistory and antiquity* considers “reasoning” (i.e. the accounting practice, deriving from *-ragioneria-*) “contemporary with man because, as soon as human life is affirmed, the first reasonings also arise there”. During the centuries, the development of trade and the increase in mercantile and commercial activities, made methods of mercantile arithmetic and accounting more advanced (Lee, Bishop & Parker, 1995; Franci & Toti Rigatelli, 1982).

While the literary production on these aspects would be vast and recognized, studies that consider specifically the main accounting systems performed to cope with emergencies, from the past to recent periods, seem to be not widely developed. With more specificity to the aims of this manuscript, precise research-works evaluating the interdependencies existing between organizational-social influences within the accounting profile, including longitudinal historical comparisons, seem necessary investigations through which to interpret contemporaneity.

The adaptability to change, according to the needs and the fundamental origins of the development of a practice, such as the accounting one, as well as its modeling skill, which increases its potential as a technological tool (Gomes, 2008; Horvat & Korošec, 2015) of knowledge creation and governmental power (Stachezzini, 2012; Townley, 1993; Burchell *et al.*, 1991; Foucault, 1995), seems to be worthy of interest. Therefore, these interesting aspects would be incrementally enhanced in their essence, especially if studied under the external factors contingent lens (i.e. epidemics).

Above all, the analysis of the points of rupture, conjunction, disjunction, analogy and difference, the interweaving of influences under the aegis of external factors contingent, would constitute a peculiar research agenda on the perspectives based on the need for management and attribution of meanings by numbers. This enormous and widespread institutionalized human practice (Hoopwood, 1990; Potter, 2005), from its origins, would not lack criticalities and aspects of fundamental importance for cross-organizational and social inferences (Carnegie *et al.*, 2020). This would sometimes include the pre-eminence of the latter over the former, sometimes vice versa, introducing a hermeneutic possibility of a critical nature, especially from the historical point of view. In the light of the recent epidemic (Covid-19) the authors would follow these investigation pillars.

The managerial approach used, strictly based on constant numerical calculations and media pervasiveness in the communication, confronts the parallel and necessary considerations of the psychological aspects connected to the attribution of conventional mathematical symbols to social constructs such as illness and death. So, the recent Covid-19 epidemics, could be a privileged point of view in guiding the comparison that would shape the meso-structure of the paper. Thanks to an a-posteriori view it would be possible to observe an absence during plague

1656, a presence through accounting sources during cholera 1836 and yellow fever 1800, a pervasiveness of media influence enhanced by ICTs during Covid-19.

The accounting role achieves governmental objectives, especially during extreme situations that tend to exacerbate the need to manage crises, disasters etc., taking into account the amount of losses, damages etc. through the technique of counting. On the other hand, the attribution of meanings to numbers and the urgency condition, would necessarily call into question organizational theory and accounting as a social practice.

In any case, both perspectives would go hand in hand, and should be considered on a scale of importance at the same level. As stated by Miller and Napier (1993), while the method tends to adapt to needs and requirements, and is changing its response to external variables, its essence continues to be the same, identifiable with the term "accounting".

Therefore, the authors of the research tend to be critical, not so much of the aspect of the method and its contents, but of the impact that this absorbs or rejects in relation to the external factors contingent. Carnegie *et al.* (2020) affirm that past and present are connected, and the study of accounting, using a historiographic approach, would allow inferences deriving from observation and interpretation. In this sense, the method based on the longitudinal comparison of case studies would justify its application.

At the basis of the discussion, the authors consider the issue of knowledge creation, the changes in social and technological practices, which led to the resolution of problems and the satisfaction of needs, such as in this case of epidemics.

Liotard (1979) started to reflect on a dysfunction of the maximization of the efficiency dimension aforementioned in terms of knowledge. According to that, Lyotard (1979) predicted only an illusionary perspective of complete control over the system.

Accounting (as a technique) lends itself well to the purpose of achieving (presumed) knowledge. In parallel with the spasmodic search for knowledge, humans would try to satisfy their need for security (Maslow, 1943), intending knowledge as a means to achieve full control and therefore security. The way to reach this knowledge and certainty considers every means available to humans, therefore also and above all accounting. Through this technique, it would be essential to pass from an attribution of meaning to the number. In this sense, the concept of governmentality (Stachezzini, 2012; Townley, 1993; Burchell *et al.*, 1991; Foucault, 1995), widely recognized in relation to accounting (Sánchez-Matamoros *et al.*, 2005; Hoskin, & Macve, 2000; Zambon, & Zan, 2007; Servalli, 2013; Ezzamel & Bourn, 1990; Gomes, Carnegie & Rodrigues, 2014) would structure feelings of certainty and control inherent in the need for security, especially during times of crisis such as epidemics.

For this reason, the mere demographic analysis of the numbers of the epidemic, or exclusively the accounting method analysis, focused on a limited time frame, would greatly limit the interpretative power of the historical accountability documents, as necessary sources to primarily frame and interpret its discursive nature.

It is by analyzing its discursive nature that it is possible to open new scenarios of investigation. Only in this sense, it would be possible to consider the impacts on society, on the organizations, on the social sphere etc., comparing the latter with recent external factors contingent, which call into question the same needs and the same technologies to face them. Precisely for these reasons, accounting and its documents, especially during external factors contingent such as epidemics, would manifest its maximum potential under various profiles. The items that identify the numbers expressed, would compare different dimensions, such as

those investigated in this manuscript, and therefore deserve the necessary attention. The main contribution that interpretative accounting history would produce, could be identified both on the organizational and social side.

To study accounting under the lens of the context in which it operates (Carnegie, 2014; Hopwood, 1983;1990) would mean to attribute connotations of value, because the investigation would go beyond the boundaries of the single discipline, investigating the existing interdependences and adopting other discipline paradigms (i.e., historiography, sociology, organization).

In this sense, the concept of viewing accounting history under a renewed ideology from the technical dimension to social practice, would make the shift from accounting history to accounting (in) history possible (McWatters, 2014; Walker, 2005; Napier, 2006; Carnegie, 2014).

The paper's proposition, according to the challenge required of accounting historians, would go beyond the technical dimension of accounting practitioners (as considered in its contents), also exploring and appreciating accounting's impacts, influences and interdependences under the lens of social and organizational functioning with the support of historiographical methods.

As suggested by Walker (2005) and Gaffikin (2011), concerning the pattern of interdisciplinary history, that approach would emphasize the potential to enhance connections between accounting and the holistic view of social phenomena, considering broader social implication of the single discipline.

These cited authors and many others, contributed to the accounting literature from a historiographical point of view, enlarging the visual spectrum and the investigative paradigms, conceiving accounting as a social practice, rather than a mere technique, impacting on human behaviours as well as organizational and social functioning. In addition to what aforementioned, archival research, based on accounting original documents, would enlarge its visual spectrum beyond the boundaries of the method, through the analysis of the method itself and its interdependences with other disciplines.

In this sense, conceiving that accounting would be a social fact, its subsequent declensions would derive from its ontology. According to that, it would be clearly possible to formalize its contextual explanation within social and organizational paradigms. In the same way, these paradigms would develop interdependently in the past and in the present. The temporal developments considered by historians would help them in this field to understand not only the methodological approach to use, but through this evolutionary view, to understand the impacts produced by social different paradigms. In this direction it would be possible to read through the society as a whole and its facets in the past and in the present, permitting inferences.

## ***2.2 – Interpretative paradigm***

In relation to what was previously stated, the paradigm through which the authors try to interpret the original documents and the clues contained therein, follows a line of critical extension, as it approaches and aligns aspects not conventionally connected to accounting.

Only recently, authors such as Chwastiak (2008), Sargiacomo, Servalli & Carnegie (2012), Quattrone (2004), La Theule, Lambert & Morales (2020), Miley & Read (2014) opened the boundaries of research in accounting, once purely and traditionally related to financial aspects, to the social dimension and to the ethos and organizational dynamics behind the numbers



deriving from wars, earthquakes, diseases, mass exterminations, identifying moral value attribution to social constructs such as death, illness, diversity, losses etc.

The most recent contribution on the theme of death and accounting is the one provided by Yu (2020), who analyzes the accountability under two profiles:

(1) the one of the mere technicalities, *ad hoc* provided by the government, to manage and create knowledge on the epidemic spread, intending the meaning of “*accounting for*”; and

(2) the other one intending “*accounting as*” a “moral practice”.

So, the goal would be to intersect both perspectives, integrating them under the light of contextual impacts, due to the social and organizational variables. In this sense, the authors try to problematize on the methods of calculation and measurement of the epidemic spread by using the institutionalized practice of accounting as the technique: what is really achieved is the integration of sociological (moral) and purely accounting (*accounting for*) visions

In addition, the authors would focus the attention on the “moral meaning” that accounting acquires during emergencies such as epidemics. According to this *double paradigm*, it would be necessary to investigate the rupture points and analogies achievable, observing events through the comparative approach, on the social and organizational side.

Following this interpretative paradigm and the investigative approach graphically reproduced in fig.1, the authors, take a critical view of the accountability historical research, (re)opening a question, already considered by Yu (2020), specifically related to single Covid-19 cases in Wuhan (China), who observed that there would be a transparency dimension related to the accounting of epidemics, on the other hand an accountability dimension related to mourning.

According to the hermeneutic view proposed before, the authors would express the need to formalize a consideration. On the one side, accountability as transparency could be included into the foucauldian governmentality perspective of knowledge and control (Stachezzini, 2012; Townley, 1993; Burchell *et al.*, 1991; Foucault, 1995). During Covid-19 enhanced by the ICTs tools for instant information-sharing. On the other side, the accountability for mourning would open another question about the social perspective of rituals and the remembrance of the dead. These two paradigms would be inextricably connected to the accounting technique, its contents, attributes of meaning, numbering activity and the organizational perspective inherent the epidemic external factors contingent (Appendix – Figure A-1).

### 3 – Methodology design and periodization

#### 3.1 – Methodological Approach

Levant and Zimnovitch (2017) affirm that in accounting history there are entire segments unexplored, citing sport, agriculture, hospitals etc. Following the suggestion to explore new fields in the scope of accounting history, the authors try to contribute with this literary production, by historiographically investigating external factors contingent (i.e. epidemics), under the lens of past similar occurrences (plague 1656, cholera 1836-37, yellow fever 1800). That could be a great opportunity for the re-emergence of a renewed hermeneutic conception and analysis on how accounting would be a pervasive social solution, structurally connected to external factors contingent and contextual needs, capable of influencing and being influenced by them.

Starting from narrative and mere accounting models, based on primary sources (ledgers, diaries, memories diaries, annotations and other more specific interesting accounting documents as Bulletins and Daily reports etc.) directly from archival research, which according to Carnegie and Napier (1996), Miley and Read (2014), represent extensions of traditional accounting and accountability research. The authors propose a critical reflection on social institutionalized accounting practice during sanitary emergencies through a multi-faceted point of view.

RQ1: *How is epidemic/pandemic accounting configured in specific segments of history?*

RQ2: *Are the models recognized in the past events analyzed still valid today?*

RQ3: *How the social-organizational and accountability paradigms interdependently impact and influence each other?*

To answer these questions, the authors opted for a precise research protocol and adequate deriving methodological approach. Therefore, it is important to first introduce the main steps that will be explained below. First of all, the authors provided a gap identification based on three interdependent stages:

(a) on March 2020 a preliminary gap identification on SCOPUS database;

(b) ten months later a mirror system based on gap identification by the same query has been provided on SCOPUS database and on BusinessSourceUltimate database, concentrating questioning efforts through this second database on a topic representation that reflected no accounting results;

(c) a direct questioning research activity on specialized Journals' databases. The methodological approach selected was a three-period choice for a longitudinal comparative analysis.

The possibility to investigate on these themes has been subsequent to a gap identification. Focused on a web-based searching activity, the gap identification has been conducted primarily on referring databases for scholars, academics, and practitioners in ambit of management, business and accounting.

So, Scopus database, that uniquely combines a comprehensive of abstract collection deriving from more than five-thousand publishers, has been chosen by the authors to conduct a first level literature screening. Following the protocol and the precise design and scope of the research, the authors started filtering results emerging by the criterion "accounting history", to provide the main general sources on the topic. Subsequently, the authors decided to add the subsidy of other criteria through Boolean variables: AND "epidemic" OR "disease" OR "pandemic" (title, abstract and keywords).

The searching activity gave back No. 94 results, once limited to the ambit of Business, Management and Accounting: No. 0 results (March 2020).

The same query:

*"(TITLE-ABS-KEYaccountingANDhistory)ANDTITLE-ABS-KEY(epidemic)ORTITLE-ABS-KEY(disease)OR TITLE-ABS-KEY(pandemic))AND(LIMIT-TO(SUBJAREA,"BUSI"))"*

has been reproduced ten months later on the SCOPUS database, unfortunately the results emerged were No. 2, which however, cannot be strictly attributable to the accounting history.

Simultaneously and transversally, through the same searching criteria, another database has been questioned: Business-Source-Ultimate. This first-level screening has brought to light an evident lack of direct access to literary contributions on the specific topic. In fact, following to limit the subject area, no reference to accounting was present (Appendix – Tab. A-1 and Graph. A-1).

Positive feedback on the existence of contributions attributable to the accounting for epidemics has been achieved alternatively, investigating single referring journals' databases through the criteria "epidemic". In this sense, the Journals' databases have been individually questioned and the relative results are reported in Table 1. In this, sense, the choice to consider *three periods* of dramatic losses, in terms of demographics aspects, reproducing similar extreme urgency conditions, made a longitudinal comparison focused on the rupture points of institutional practices possible.

Above all, the main focus has been made on the methods used for the accounting procedures and its contents during epidemics. In addition, it has provided an interesting view on the interrelations existing between accounting and social-organizational paradigms, enhancing literature in this field. Although the choice of only *three periods* would not be optimal to guarantee a complete coverage of space and time for generalizations. This exploratory research has the aim of producing useful insights and reflections for cross-fertilization and more in-depth research following the research question related to the dramatic events considered and the longitudinal perspective. That could favor the analysis of the accounting role during sanitary emergencies regarding the procedure of transforming infected and dead people into numbers, and vice versa. According to that view the authors dedicate attention to the social-organizational changes during epidemics, especially in rituals such as burial activities and ceremonies (Hazel, & Leopold, 2013) (considered by the authors as an ancestral accounting for remembrance).

**Tab. 1 – Gap identification** (Source: our elaboration from Journals' databases)

JOURNAL	RESULTS
Management & Organizational History	0
Accounting Organizations & Society	1
Critical Perspectives on Accounting	0
Accounting History Review	0
Accounting History	1
Accounting Historians Journal	0
British Accounting Review	0
ABACUS	0
De Computis	1

Because accounting and organization are social sciences, the historians in this boundary are obliged to consider the wider social implication of the discipline (Gaffikin, 2011). Levant and Zimnovitch (2017), in their discourse on the epistemology of management science, reflect on the hermeneutic paradigm, arguing that it can be helpful in management research. According to the

method of historiography, they cite Lemarchard (1993) justifying the choice of analyzing the technique in its context.

In line with the aforementioned, the hermeneutic perspective of this research tends to consider a wider range of implications to make the interpretation activity as complete as possible, strictly referring to the contextual factors, external factors contingent of the time and socio-economic-political frames.

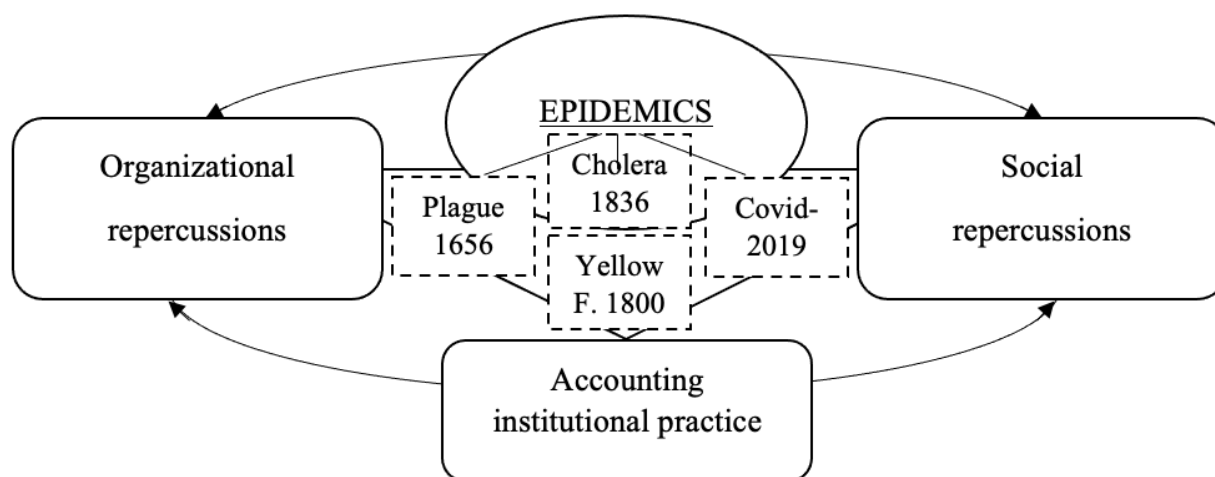
As reported in Figure 1, the authors consider a double perspective under the lens of the accounting institutional practice:

- (1) organizational repercussions and
- (2) social repercussions (i.e. burial and sanitary activities).

In this sense, it would be possible to affirm, through the lens of the *three epidemics periods* chosen by the authors for the longitudinal comparison, the role of accounting as an institutional practice. Since it emerged as a technique, it has proved to be a solution to problems, embracing modifications not only in itself but on a broad spectrum in social and organizational terms. Each disaster creates changes, also and especially in social practices, in fact accounting as institutional practice reflects its impacts on social and organizational sphere.

According to that, at a methodological level, the authors opted for a precise application of the longitudinal comparison based on accounting models, reputed as the most appropriate and adequate approach to this kind of investigation; especially considering *three periods* of epidemics (Plague 1656, Cholera and Yellow Fever 1836;1800; and Covid-19) and their multiple facets falling into social and organizational paradigms.

**Fig. 1 – Investigation approach** (Source: our elaboration)



The interesting starting point would be due to the availability of original primary sources, that for historians in general, and accounting historians in the specific case, are essential tools of analysis and interpretation. In this direction, often also the absence of sources and data would reflect the possibility of inference, but the researcher needs to empower the hermeneutical effort using other sources, other periods, other approaches, to sustain thesis reflecting the nearest truth. Exploratory analysis, like the proposed case, aims to produce useful insights for more in-depth subsequent research capable of validating or refuting what has been expressed, but at the same time guaranteeing a path, a guide, for the authors and other researchers.

The intertwining possibility, produced by the multidisciplinary aspect inherent in the heuristic of the main propositions considered - alternative periodization and comparison among individual results and interpretations - would demonstrate traits for cross-fertilization, perpetrating a prerogative of the research area that lends itself to going beyond its own borders. Thereby "*breaking-the-chains*" of the strictly formal discipline, confined only by a limiting technicality.

The research design provided by the authors, would follow the invitation to a transdisciplinary and multidisciplinary view of accounting history, considering an eclectic approach to the field open to a wide range of methods and hermeneutics (Walker, 2005;2006;2008; Napier 1993; 2016).

An interpretative view of accounting can open multiple inferences and a wide-ranging investigation on contextual aspects, not of secondary importance. In this sense, the main value attribution would not be placed merely on the technique, but on the potential interdependencies existing between accounting and its institutionalized social extensions (Di Maggio & Powell, 1983; Hopwood, 1983; Miller & Napier, 1993).

### 3.2 – *Periodization*

Studying accounting from the historiographic point of view, should be approached by understanding its impact, emerging in this way as a key facilitator of knowledge (Carnegie *et al.*, 2020) or as defined by Hernández-Esteve (2010): a privileged way.

The authors try to frame an original interpretation of the development in social-organizational aspects related to the evolution of accounting practices in disaster time (Shimizu & Fujimura, 2011) such as the ones proposed: Plague 1656, Cholera between 1836-1837 (Massafra, 1988), yellow fever 1800 and Covid-19 (2019).

As aforementioned, the possibility to intersect multidisciplinary aspects, is the main contribution of research like this, which does not intend to be definitive, but draws on specific past events to look at reality and recent events, through critical perspectives induced by document analysis of primary sources.

Crucial for historical research is the relationship with the context in which the episodes occurred. The help of the description of the events by synchronic and diachronic approaches (Saussure, 2000; Stables, 2002) would be fundamental. Through these views, the concrete relationship existing between researcher and history, unavoidably passes through the documents, the researchers' imagination and capability of reconstruction, and nevertheless through the hermeneutical tendency. In this sense, the description produced in conjunction with the event cannot be ignored, because it is closer to reality. To mitigate external influences, malpractices and misunderstandings, the authors would fix the main points of the history with the aim to facilitate reading and comprehension of the context in which the events originated, and the documents were produced.

Comparing the epidemic events and sanitary emergencies affecting human life in the past (killing thousands of people in a short time), "*the plague is certainly the most cruel*" (Laudato, 1985). A direct view of the spread of the plague in Naples 1656 has been retrieved from the Archiepiscopal Archive of Naples, "*Diaries of Ceremonies*" of Naples Cathedral, 1651-1660 – Vol.4". According to the aim explained before, the authors provide the transcription and translation of the original document about the "*Year of contagion, May 1656*".

This terrible contagion (Plague 1656) appeared in the Mezzogiorno of Italy, precisely during the Spanish domination and during a climate of revolt and riots, similar to the one led by Tommaso Aniello (Masaniello) years before (1647). The plague “as a divine punishment” and other beliefs spread by terror, by poor culture and poverty; in this sense the word of mouth started unexpected and uncontrolled violence in the streets, causing alarm and riots (Galasso, 1970).

During the plague, in Naples they instituted an *ad hoc* institution for guaranteeing the management of the spread of the disease, named “Supreme Magistrate of Health”. In addition, several legal provisions were promulgated for ensuring a good operational activity during the emergency, for example the ones considered by Nappi (1980) for the good management of field hospitals (lazarets).

In regard to the main investigative field of the research (accounting and its interrelations during epidemics), the provisions required by law at the time, as recognized and well indicated by Nappi (1980), made the activity of record-keeping mandatory, especially focusing attention on the principal voices indicating the incoming patients, the outgoing ones and dead patients. These ones are the principal items of a dramatic balance-sheet, precisely attributable to the accounting procedure during the spread of cholera in Naples (1836-37) (G-H-I- Figure 4) and what is reported by Capelo and Araújo (2019) concerning the yellow fever *ad hoc* accounting in Cádiz.

De Renzi (1968), a well-known scholar in the context of epidemics, in his book on Naples during the year 1656, mentions the prospect of the death penalty for infringers of the field hospital's accounting. Contrarily, the same author affirms that during the emergency of the plague in 1656 the aforementioned legal indications were applied, but not respected (De Renzi, 1968).

This point would show a fundamental pillar in terms of the hermeneutic potential for the following evolution of research design. In fact, the first insight was born from this, because of the requirement, but apparent absence of accounting documents for field hospitals' management (encountered by a secondary source).

The authors started to investigate these aspects approaching the Cemetery Office of Naples Municipality, where only documents related to 1800 are available. The same absence of documents was found at the S. Gennaro's Treasure Archive of Naples. In parallel, at Pio Monte of Misericordia Archive of Naples accounting processes appear missing for the year 1656.

In this regard the State Archive of Naples' “*Supreme Magistrate of Health*” – “*general accounting*” 1656-1808 / 1809 -1811 - N.394”, has extensive documentation about 1700 and 1800, but only one document is dated 1656 (the year of the plague). In addition, secondary sources such as De Renzi (1968) would confirm the difficulty at the time in finding documents concerning the quantification of the dead and precise numbers of the population. By contrast, records related to pawn during the plague have been analyzed by Nappi (1980). The evidence would frame the specificity of contextual “chaos”. At this point, a quite clear frame appears of what happened through the lens of the accounting and the social-organizational perspective, but to enhance the thesis, the authors decided to investigate centuries after the plague of 1656, and to compare the same territory, in the same circumstances: the cholera disease during the years 1836-1837 and yellow fever 1800.

The spread of cholera between 1836-1837, which re-emerged in 1856 (Archiepiscopal Archive of Naples, “Letter Archbishop of Naples 1856”; pp.4-8), appears a specific and adequate

frame which highlights strong comparisons about the view of transforming infected and dead people into numbers during sanitary emergencies.

If on the one hand, the plague of 1656 demonstrated an apparent emptiness from an accounting perspective, on the other hand, the spread of cholera centuries later appeared to be an unexpected source of detailed information about the methods of epidemic management with numbers and records.

After the minimalistic introduction to the archival consistency, a framing of the cholera spread, in line with the specificity of the paragraph, would be necessary. Cholera seems to be remembered as the disease able to have made the 19th century obscure, devastating entire regions in Europe (Hardy, 1993). From a medical perspective, cholera is a virulent infectious disease (Malavade *et al.*, 2011), an acute diarrhoeal infection caused by the ingestion of food or water contaminated with the bacterium (*Vibrio cholera*) and has an ancient reputation as a killer disease (Sheikh *et al.*, 1997). Its spread, like the one characterizing the plague, and the association between poverty has been widely debated among historians (Cawood & Upton, 2013). The spread of cholera would seem to have caused a myriad of deaths, provoking substantially the same circumstances as the previous plague contagion, but it appeared in a later period. On the other side, through the lens of social learning (Bandura, 1971) it would seem a different awareness was gained, at least from a management perspective experience was gained from the previous epidemic spread.

Therefore, regarding the period of diffusion of cholera (1836-37) and yellow fever (1800), many original sources and documents are available to historians, especially for accounting historians, who want to consider the evolution and developments of the discipline connected to the epidemics and the methods/approaches used for their optimal management.

Important information to make hermeneutical inferences on the period and accounting roles, would be shaped by the following considerations related to the original documents (cholera 1836-37) retrieved from "*Pio Monte della Misericordia Archive of Naples "Deliberations" (1835-1839), Bunch n. HA/47, p.90*", in which it is reported: "*a number of masses must be celebrated in one day on behalf of the dead due to cholera disease, how many are the latter*" (23 January 1837). This sentence appears really useful for the context framing, given that it would be possible to consider the modified presence and consistency of rituals. Therefore, on the social side, the role of numbers as "accounting for remembrance", clearly appears from the original documents for the periods analyzed. Therefore, the consistency of rituals, according to mere accounting methods, appears reconsidered, resized and quite subverted by the existing emergency conditions.

During the research process, the world suffered a sanitary emergency, that cannot be ignored, and necessarily had to be included in the analysis: Covid-19 spread, that the World Health Organization declared (11th March 2020) as a pandemic.

History repeated itself and humans had to face the emergency and a renewed interest in accounting for epidemics began to grow in parallel with the growth of the infections and the need to manage its spread globally. A mainstream view on the institutionalization of the pandemic accounting had started a few weeks after the first declared case of unknown pneumonia in Wuhan (China) on 31 December 2019, becoming pervasive situation in people's lives.

As affirmed by Walsh (2020) throughout history, nothing has killed more human beings than infectious diseases and Covid-19 shows how vulnerable humans remain. The accounting

of numbers and calculations make clear the impact of the pandemic on people, managers, and their everyday life.

Parallelisms and paradoxes would be present and clearly visible among the periods analyzed by the original documents, and accounting always reveals, changing its appearance, the needs of the moment, the human abilities, the managerial experience and dependence on calculations, institutionally moving itself as a pervasive feature during health emergencies.

## 4 – Findings

### 4.1 – *Accounting for epidemics and organizational prevalence: a timeline of the “technology” evolution*

Accounting, recognized as a technique to solve problems and as a practice of economic calculation, would focus attention also on the discursive nature of its calculation, on the vocabulary and language underlying the idea of a calculative technology. Accounting changes its form, reshaping itself over time, explicating its role, its significance, attributes and traits through the external factors contingent that the “technology” is called to face. The centrality of accounting change brought historians to shape the lines of the technique developmental steps (Miller & Napier, 1993) (Appendix, Figure A-1).

Through the findings of this research, the authors would start to investigate the aforementioned perspective, but following an intersection of wide-spectrum views on interdependencies and transversal impacts. This reasoning and approach would strictly link the external factors contingent, the cogency of the time (Shimizu & Fujimura, 2011; Sargiacomo, 2015) and the contextual variables. So the research intends to investigate, not merely the previous indicated pillar (i.e. accounting as a technological tool), but making also inferences on its potential organizational and social influencing factors.

According to the aforementioned, the authors try to reconstruct a timeline of the accounting change, considered under the metaphor of “technology” (Gomes, 2008; Horvat & Korošec, 2015), during health emergencies, as the ones considered within the periods analyzed. Above all, crucial attention is paid within a frame that evaluates its social and organizational impact, as well as the inverse influences performed by contextual factors to the detriment of its comprehensive completion (Figure 3). The timeline considers the interpretative lens indicated in Figure 1, permitting to compare, longitudinally, three spheres of influence and change: the organizational, social and accounting perspectives (Figure 2). The approach preferred by the authors for this work would constitute a clear mirror system able to compare three paradigms of influence from the accounting historians’ point of view.

On the social-organizational side, the sanitary emergency and its management seem to prevail over the accounting procedures, intending them as a methodical tool, that during the plague 1656 would tend to be deinstitutionalized (in the adoption) in favour of organizational practices, significantly impacting on the social ones (i.e. burials and common graves).

According to this perspective, places, like the “Fontanelle Cemetery” (in Naples), currently open to tourists, remembers a physical accounting records of remembrance, emphasizing the lack of rituals and institutionalized social practices, valid before the emergency, such as religious ceremonies (Carroll, 2008; Rutterford & Walton, 2014; Tarlow, 1997). On the mere accounting side, as mentioned in an introductory manner, mandatory provisions to keep records about the incoming, outgoing and dead patients were laid down to guarantee a good



management of field hospitals using the accountability technological tool. Even if there was an order for up to the death penalty for violators (Nappi, 1980; De Renzi, 1968), provisions were subverted and widely not applied. In the meantime, despite the destruction due to the following wars, alternative accounting documents remain available and appear for the purposes of this research (reports, diaries, 1st notes, ordinary management etc.). In parallel there were alternative accounting sources, those not merely deputed for the counting activity and the management of epidemics, as common graves for mass burial, became places that acquired the role of "accounting for remembrance".

#### **4.2 – The emergence of an *ad hoc* accounting: the coexistence of accounting and social-organizational perspectives**

There are indications of the widespread practice of accounting during epidemics in 1800 by the authors Capelo and Araújo (2019), naming this approach as *ad hoc* accounting. They involve original documents concerning the accounting of an epidemic crisis in Cádiz during the year 1800. According to the documents provided by these authors, the methodological approach in keeping track of deceased, new infections and healings, in addition to the precise geographical place, were surprisingly similar to the original documents provided supporting the thesis of this article. The address lines through which the accounting of the epidemic condition provided by Capelo & Araújo (2019) would match the approach ascribable to the documents found available and analyzed in relation to cholera spread in Naples during the years 1936-1937 (Figure 2). These specular findings would irrefutably validate the existence and implementation of *ad hoc* accounting during the external factors contingent of 1800, moreover with demonstrable similarities in the method.

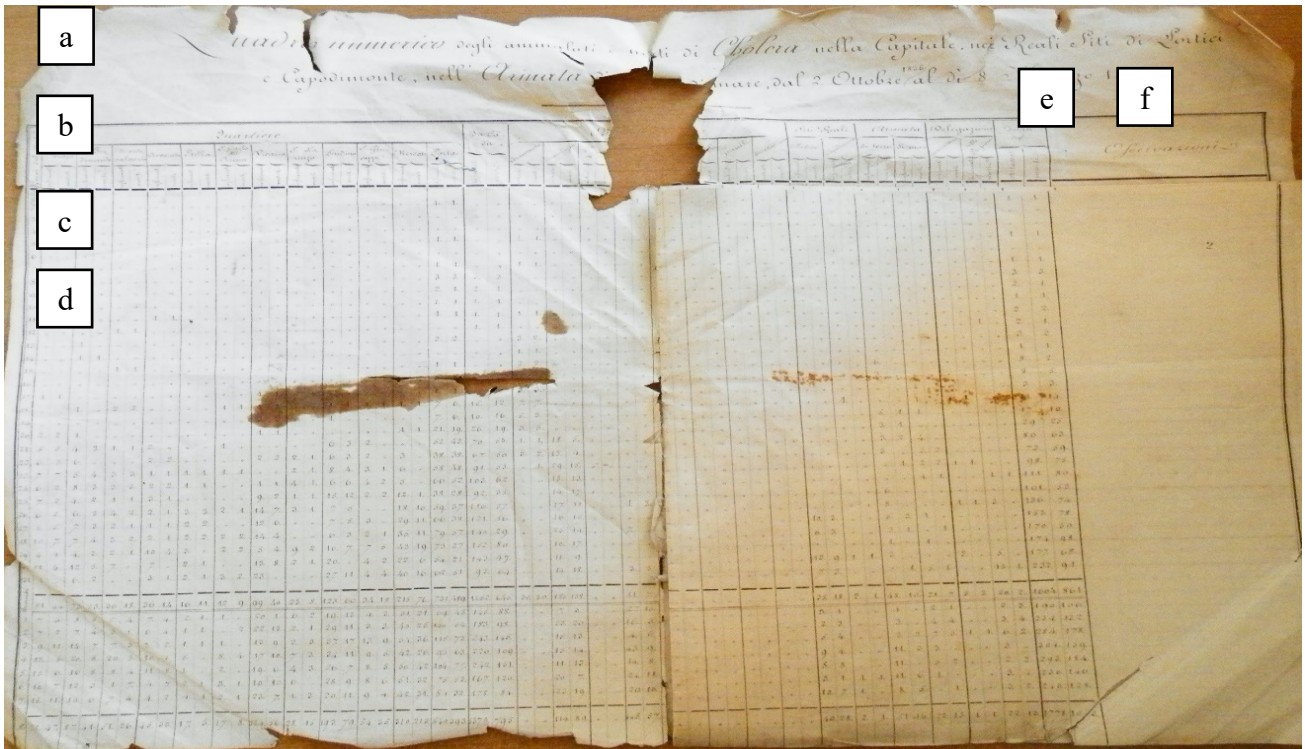
External factors contingent, as recognized during war periods, would produce accounting change, inciting its development to solve precise problems or in satisfying needs due to the exceptional traits of the moment (Rutterford & Walton, 2014; Tarlow, 1997). In fact, according to the aims and scope of the research, the accounting system provided during 1800 in Cádiz due to yellow fever (Capelo & Araújo, 2019) and the one structured during 1836-1837 in Naples (Figure 2), would match being in nearly the same context, previously acquired know-how and familiarity with accounting approaches, due to the mercantile nature of the cities analyzed.

So, similarities in the evolution of the method would be highlighted under the lens of the management of the recent spread of Covid-19. As observed by the authors and by evidences from secondary sources (Forti Messina, 1976), the consistency of the archival funds preserved in the State Archives of Naples, allow access to interesting accounting documents: Bulletins of the cholera of the capital; Daily reports of the Colonel Chief of Staff of the Army; Daily reports of the Prefecture of the Police.

Due by the awareness acquired in the previous centuries, as demonstrated by Foucault (1999), evidence on advances in the context of medicalization could be observed from XVIII century. During the cholera of 1836-37, on the social and organizational side, many original documents would reveal the greater interdependence existing between the organization and accounting as related to the health emergency. This hermeneutic a-posteriori paradigm would result from the implemented knowledge in the health sector, medical advances and greater experience in the management of epidemics. On this side, important information could be extracted by the analysis of the "Diary of Ceremonies 1825-1840" (p. 63) from the Archiepiscopal Archive of Naples (Bunch n. 20).

Thanks to this document it would be possible to shape the lines of a rediscovered social activity, downsized, but still coexisting during and re-emergent after the epidemic event. In fact the diarist in that year decides to take into account: *“the day of the epiphany the choir took place (...) and it will take place all the time (...) afterwards began the rite of thanks to God who freed us from cholera disease”* (6<sup>th</sup> January 1837).

**Figure 2 – Numerical frame of sick and dead of cholera in the capital and in royal sites from 2<sup>nd</sup> October 1836 to 8<sup>th</sup> March 1837**



Numerical frame of sick and dead of cholera in the capital and in royal sites from 2 <sup>nd</sup> October 1836 to 8 <sup>th</sup> March 1837												
a	Quarter								e	f		
	Quarter		Quarter		Quarter		Quarter				Total	Observations
	Quarter Name	Quarter Name	Quarter Name	Quarter Name	Quarter Name	Quarter Name	Quarter Name	Quarter Name				
	S	D	S	D	S	D	S	D			S	D
i	e	i	e	i	e	i	e	i	e			
c	a	c	a	c	a	c	a	c	a			
k	d	k	d	k	d	k	d	k	d			
1												
2												
3												
4												
(...)												

**Source:** our photograph and transcription - retrieved from State Archive of Naples, “Private Archives - Bourbon” – Bunch n.932-935

The “accounting of epidemic numbers”, preeminently devoted to the sum and subtraction of incoming and outgoing patients, of newly infected or no longer infected areas, the comparison with data of the day before etc. became a crucial activity in analyzing the trend and the epidemic managerial strategies, enclosing in itself the so called “technological” role.

This more conscious approach, also enhanced by a governmental view, left more space for rituals. In fact, there is evidence from secondary sources of burials provided by the Municipality, granted to all poor people who died of cholera (Forti Messina, 1976). The foregoing reinvigorated accounting as an organization-interdependent management tool (Riccaboni *et al.*, 2006; Gomes, 2008; Hopwood, 1990; Horvat & Korošec, 2015). In this sense, rituals could help the emergence of accounting records through the creation of mortuary receipts, transforming dead into numbers.

During the past centuries, scribes had the task of keeping track of events chronologically, for example diarists (Strazzullo, 1961). Usually priests kept count of the deaths instead (Derks, 2008; Servalli, 2013), in fact, the book of the dead (*liber defunctorum*) is a register introduced by the Romanum ritual of 1614 (Gallo, 1949).

It is not uncommon, to come across problems in State Archives and lack of evidence and records related to personal data, such as the day and year of death, before 1800. In fact, often it would be possible to find indications of this data only in Diocesan Historical Archives. In this sense, it is no coincidence the authors’ chose 1800 as the investigation period for the *ad hoc* accounting for epidemics.

With the advent of more structurally organized societies, the governing and administrative bodies began to consider “accounting for remembrance” as an act of population governmentality regarding tasks (Foucault, 1991; McKinlay & Petz, 2018) which until then had been entrusted to the clerical activity.

According to a precise division of social and administrative tasks, despite the dramatic sanitary situation, the aforementioned, favored the possibility of coexistence, although resized of rituals and organizational tasks, in a strict relation to the accountability practices. In this sense, at a social level; minor repercussions seem to be perceived, despite the substantial reduction in aggregate activities or in any case in religious practices, in the remembrance of the dead.

Focusing the attention on the mere accounting side related to the period analyzed through the *ad hoc* structured mirror system, the activity of keeping track of the spread of the epidemic appears to be more ready, standardized and properly set up to acquire a common knowledge of the various perspectives related to the contagion. The accounting-organizational interrelated view, would have favored a quite precise management of risky events and more conscious action-planning.

### **4.3 – Covid-19 Advent: accounting-organizational perspectives as in the past or beyond it?**

The accounting methods for the cholera epidemic, structured and implemented on the basis of what was required by law in the years of the plague of 1656, would appear to be a guideline model for the recently observed mode to face Covid-19, by acquiring knowledge of accounting-based approaches.

Concerning the social-organizational aspects of the recent Covid-19 pandemic, the interest in analyzing the context, would be necessarily focused on the paradox existing that, despite the

great technological advancement also in medicine, the management of crises and risks, shows human beings to be unprepared for a wide-spread and globalized epidemic (Elbe, 2018; Meyer, 2000).

A metaphorical return to the past, the renewed mainstream of the quarantine (Yan & Zou, 2007), the coexistence of field hospitals and hospitals, mass burials and military convoys for the transport of the deceased (as detailed by the international press), seem to materialize again the period of the plague previously analyzed.

In this case, despite the re-emerging organizational and social variables of influence, however it does not seem to deinstitutionalize the pervasiveness of the accounting tools as a methodical approach to govern and manage the emergency. In this sense, an *ad hoc* solution to the problem would emerge with strong similarities with the past.

The know-how acquired and the institutionalization of accounting as a social practice from an ancestral point of view, native and inherent in human beings, favored again the emergence of the technological tool to solve problems, to manage crises and satisfy the need to remember a multitude of data.

This time, during Covid-19, the accountability system would be structured based on an architecture of aid and mediation of the ICTs, provoking new repercussions in the individual and collective sphere from a psychological profile (Davidson & McFarlane, 2006; Freedy, Kilpatrick & Resnick, 1993; Goldmann & Galea, 2014; Uutela, 2010).

Another result emerging specifically oriented to accounting perspective of the analysis, would lead to the hypothesis of a latent and clearly observable pervasiveness, dominating the scene during the spread of Covid-19. According to this observation, instrumental to the social and organizational aspects of epidemic management, the accounting tool structured to acquire knowledge of the contagion, would seem to maintain the same contents evidenced by the original sheets related to cholera 1836-37 (Figure 3) and yellow fever 1800 (Capelo & Araújo, 2019). The differences observable during this period would regard the ICTs mediation, the faster data-sharing and their publicizing (Wigand, & Klee, 1994). Although, during the plague, the accounting practice had an indirect impact on the population, or in any case scheduled by the official bulletins (when provided) (De Renzi, 1968). By contrast, during the recent pandemic (Covid-19), social implications would be strongly evident relating them to the psychological impact originated from the pervasiveness of the accounting instruments, used as a means of information and immediate availability of data, increasing frustrating conditions (Locander & Hermann, 1979; Tausczik *et al.*, 2012).

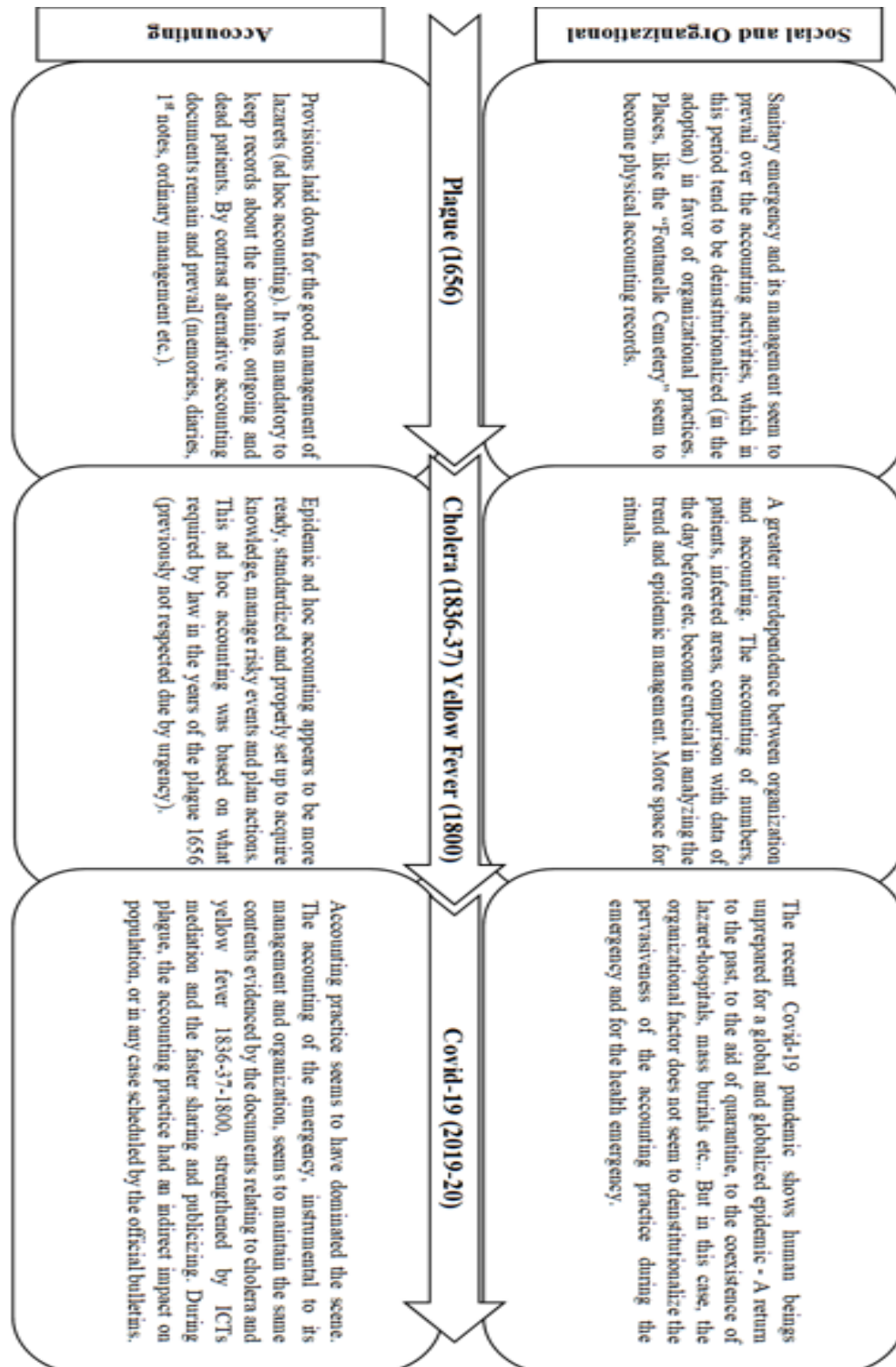
According to Carnegie *et al.* (2020), as a demonstration of what emerged, it is possible to respond to current challenges and to interpret them, also using a historical approach, only by the interconnectedness between accounting, organizational theory and social practices, in order to be able to show a clearer vision, that is complete, not fragmentary and partial.

In this sense, the institutionalism (Carnegie & Napier, 2019; Antonelli *et al.*, 2007; Carmona & Ezzamel, 2006; Covaleski & Dirsmith, 1988; Dean *et al.*, 2016; DiMaggio & Powell, 1983; Hopwood, 1990) of the accounting practice, in the light of the route inversion from accounting history to accounting in history, from old to new perspectives (Funnell, 1996; Carnegie, 2014; Carnegie & Napier, 2002) would take its fundamental foundation in the rupture points and differences in changed social practices during the time.

It would be possible to say that during disasters, such as the plague is, the sanitary emergency and the difficulties of the time would leave the place to the organizational activities,

often casual generated by chaos (i.e. plague in Naples 1656), by which the institutional accounting practice appears with lower frequency, also considering burial activities (as an ancestral practice for remembrance) (Cirillo & Garbato, 2014; De Renzi, 1968; Garazhian & Yazdi, 2008; Nielsen *et al.*, 2014; Brunborg *et al.*, 2003; Faust, 2006).

**Fig. 3 – Accounting-social-organizational evolution in sanitary emergencies: a longitudinal mirror system** (Source: our elaboration)



Thus, there would be more ancestral situations in which the organizational aspect, even casual, would prevail over that of accounting which appears neglected (Naples plague 1656), while on other occasions, due to experience, accounting would be interdependent to the organizational aspects (Cholera 1936 -37). The comparison of the plague of 1656 with the organizational practice operated in Naples during Cholera (1836-1837), would be able to clarify the changes due to the previous experiences acquired, and the renewed institutional accounting practice that is strictly interdependent with the organizational and social perspectives (Riccaboni *et al.*, 2006; Hopwood, 1990).

So, the time of the plague in Naples in 1656 would demonstrate that this relationship would be valid in abstract (due to the legal requirements) for sanitary emergencies until the XVIIth century in Italy. Regarding the plague in Naples in 1656, it would be possible to access just one surviving ledger dated 1656 and available at the State Archive of Naples under the category “*Supreme Magistrate of Health*” (registers of the organization created *ad hoc* to safeguard people during sanitary emergencies) in which are reported records containing expenses and quantities linked to the daily and ordinary management of the institution, such as foodstuffs and tools like bread, spoons, fishes etc. and several annotations attributable to payments, involving names, dates and a description of the obligation (viewable as a concise and rapid note). It would be also possible to identify, that in the area in which the ledger 1656 is preserved, there is another one dated 1743-1767 in which there is more specific and ordered double entry book-keeping (involving sections DR and CR). By contrast, the previous ledger appears as concise and rapid notes, probably due to the urgency and needs of the emergency period.

After hundreds of years, within the same context, it would be possible to identify the rupture point in which, no longer the organizational perspective acquires a supremacy power at the expense of the accounting one, but the latter starts to be useful and crucial during disasters in a great interdependence with the organizational aspects (Riccaboni *et al.*, 2006; Hopwood, 1990). In this way, through original documents investigated by archival research, the authors would show the great accounting practice operated during cholera in Naples 1836-1837. In addition, it has been considered what was mentioned by Nappi (1980), that although there were detailed, but rudimental provisions for the good management of field hospitals, to keep records about the incoming, outgoing and dead patients, during the plague of 1656 in Naples, these legal indications were not respected, probably due to the emergency provoked by the sanitary conditions (De Renzi, 1968) and the organizational need to accelerate burial activities (De Renzi, 1968; Cirillo & Garbato, 2014), where rituals were suppressed. According to the aforementioned, the avoidance of respecting accounting regulations for field hospitals, despite a death penalty and their mandatory scope, led to a downsizing and quasi-removal of the accounting role during the older natural-health-disaster (Shimizu & Fujimura, 2011) (the plague of 1656).

The subsequent advancement of chaotic organizational practices (Coppola, 2006) had dramatic repercussions on the sociological side. In fact, also the accounting of the dead (highly practiced from ancestral times during wars and in ordinary social life) (Rutterford & Walton, 2014), in this regard would not find a response with a developed institutional practice, especially from the perspective of using mass graves (i.e. *fontanelle cemetery in Naples*). Following this hermeneutic approach, the dead of the plague would have implemented a kind of “accounting for remembrance” not recorded by ledgers, and replaced by cemeteries without tombstones, in which remain only a number of bones without names.

The parallel case study, based on the historical accounting investigation related to the cholera pandemic in Naples of 1836-1837, would demonstrate a turnaround in favor of accounting institutionalism, in which a different approach would be clearly visible compared with the plague of 1656, as described in the previous paragraphs. So, the documental provision, would ensure a great framework of context, a fixed connection with the main literature regarding disasters, that appears a little underestimated, but full of points for development.

The multidisciplinary approach (Previts *et al.*, 1990; Walker, 2005) considered by the authors, and the interrelations proposed for the advancement in this context, would be useful for further research of similar topics, but focused on several global investigations and especially related to a European context in the same period, affected by the same problems that Naples suffered. The interdependences existing between accounting institutionalism and its role in history (Walker, 2005), organizational theory, the context of disasters and sociological repercussions, make the historical perspective full of points on which the reader could reflect and translate these into other areas with the information acquired. Following this point of view, the authors decided to consider the spread of Covid-19 and the J.H.

University dashboard to evaluate and analyze the differences or similarities existing among the cases considered for the investigation. If on the one hand, the cholera period would show advancements in the accounting practice for sanitary emergencies, envisaging a reduced impact on the rituals for dead people (as reported before from the "Pio Monte della Misericordia" Archive of Naples "Deliberations", Bunch n. HA/47, p.90), by contrast, during the recent Covid-19, quarantines, mass burials and mass graves seem to have returned to the mainstream. Once analyzed the cases from the hermeneutic point of view, considering social and organizational perspectives, interpreting the presence and the absence of data as crucial sources for the historical research, the authors concentrated their efforts on the punctual analysis of the accounting content related to the documents retrieved about the cholera period, comparing them with the J.H. University Dashboard about the spread of Covid-19 (Figures 4-5) (Table 2), according to the findings provided by Capelo and Araújo (2019). The similarities existing among the original documents retrieved from the archival research (fig.3-5) and the dashboard provided during Covid-19 spread (fig.6), would be simply comparable, highlighting crucial point, characterizing the accounting for epidemics. The high comparability of the points would be shown graphically thanks to the Table 2.

**Tab. 2 Comparison between cholera (1836) accounting documents and J.H.U. Dashboard**  
(Source: our elaboration)

Original documents content	J.H. University Dashboard content
A) Geographical indication	A) Geographical indication
B) Number of cases of the day	C) Number of cases of the day
C) Died under treatment/ healed of the day	D) Died under treatment/ healed of the day
D) Died previous day	E) Died previous day
E) Total deaths	F) Total deaths
F) Observations	G) Observations
G) Actual cases	B-I) Total cases
H) Died	F) Total deaths
I) Under treatment/ healed of the day	I) Under treatment/ healed of the day

L) Comparison of cases and deaths yesterday and today	H) Comparison of cases and deaths yesterday and today
	J-G) Actual Cases
ADDED POINTS:	*Home isolation; **Swabs done; ***Graphical trends

The separation between military and civils (Figure 4) has been reported also by Capelo & Araújo (2019)

**Fig. 4 – Cholera 1836-37 original documents: Accounting model and voices** (Source: our elaboration - retrieved from State Archive of Naples, “Private Archives - Bourbon” – Bunch n.932-935)

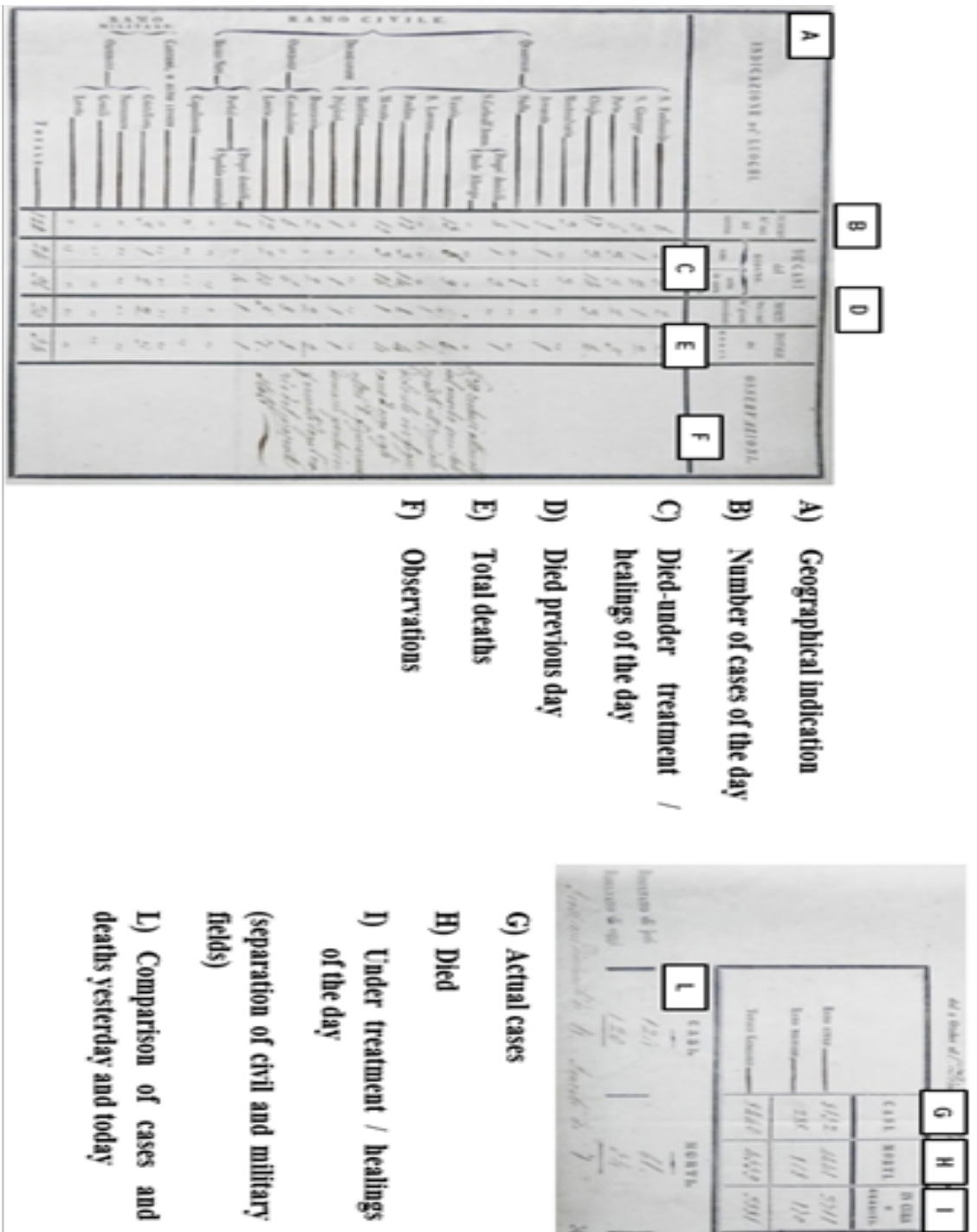
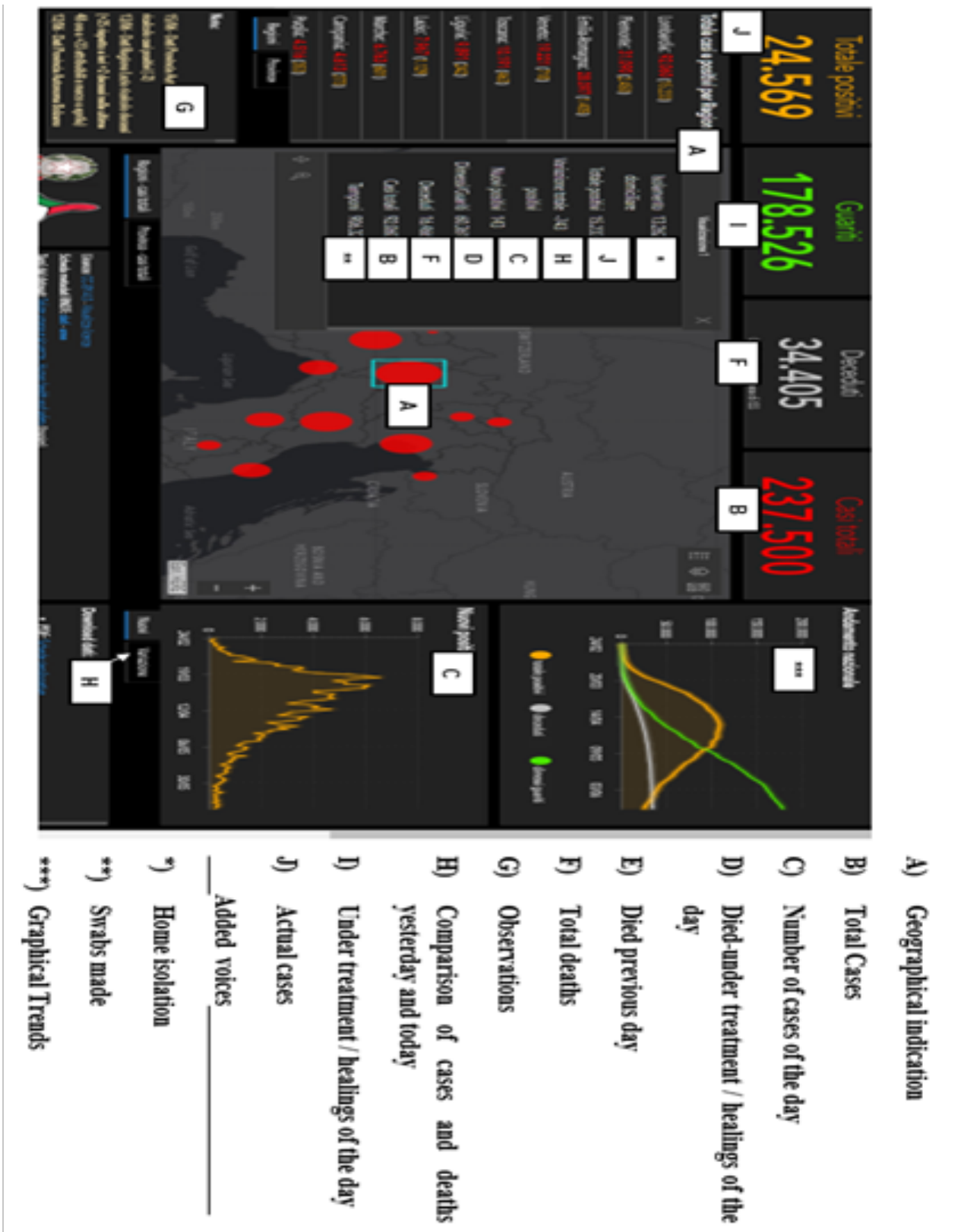




Fig. 5 – Johns Hopkins (2022). Covid-19 Dashboard: Accounting model and voices (Source: our elaboration)



The comparison of the plague in 1656 with the organizational practice operated in Naples during Cholera (1836-1837), yellow fever 1800, and during the recent Covid-19 spread, would be able to clarify the changes due to the previous experiences acquired and the renewed institutional accounting practices, strictly interdependent with organizational perspectives (Riccaboni *et al.*, 2006; Hopwood, 1990).

The perspective proposed, would transversally consider epidemics on the one hand, by a reflection on a kind of interwar period, as able to accelerate accounting processes (Rutterford & Walton, 2014), and on the other hand, the inadequacy of the reporting mechanisms shown by Miley and Read (2012) during the war. In fact, it would be clear that during the plague in Naples 1656, no accounting for epidemics took place, even if the law required ledgers for field hospitals, favoring organizational perspectives triggered by the need to solve (chaotically) the sanitary emergency. By contrast, during the cholera a strong accounting approach was established, supposedly due to the experience and know-how two centuries earlier.

In this way, through original documents investigated by archival research, the authors would show the great accounting practices operated during cholera in Naples 1836-1837, that would reflect the recent procedures operated in accounting also for Covid-19 pandemics (Johns Hopkins (2022)).

The precise geographical identification and the number of deaths, infected and healed, made on paper by the historic accountants, recently appears enhanced only thanks to the ICTs and dashboard tools provided by software houses, but not changed in the formal structure and method.

The Figure 5 reproduces precisely the points present both during cholera (Figures 4-5) and the spread of covid-19, adding just three points indicating how many people are in home isolation (\*), how many swabs were made (\*\*), and graphical trends (\*\*\*)

Certainly, the contents of accounting for epidemics appear unmodified between the cholera of 1836-37 and the recent Covid-19 sanitary emergency, reflecting a simpler legal requirement (which before was not respected) for the accounting of field hospitals (in the plague 1656) that of three points: incoming, outgoing and dead patients. By contrast, social and organizational repercussions would be similar in the plague of 1656 and the Covid-19 epidemic, regarding the burial activities and rituals. On the accounting side, Covid-19 would demonstrate a stronger pervasive power than the other periods analyzed, involving not only the managerial perspective and the need for knowledge of the epidemic data, but also the individual psychological sphere, influenced by the data made available.

The psychological impact of accounting (during Covid-19) seems to convey a habitual addiction and numbness, deinstitutionalizing again its narrative and the meanings behind the numbers, for example the number of deaths. Moreover, an accounting activity in which a high number of deaths would formalize a positive meaning to a reduction of the number of sick seems, in the authors' opinion, a manipulation of the information deriving from mere numerical data.

Therefore, if during the plague the organizational pre-eminence, related to the spasmodic containment of diffusion, exceeded both the accounting social practice as a technique and its moral paradigm, the remembrance, as well as in the ritual aspects during the spread of Covid-19 do not seem changed. In addition, it does not seem that these aspects managed to coincide in the best possible way. On the contrary, in 1800 (cholera) all these aspects coexisted more harmoniously, despite the persistence of similar extreme emergency conditions.

## 5 – Conclusion

Unexpected paradigms shall become visible to the observer thanks to an a-posteriori view: (a) during wars or other disasters processes of accounting tend to accelerate in terms of types, forms and numerosity (Rutterford & Walton, 2014), while (b) the first case proposed (Plague 1656) shall show that during sanitary emergencies, the organizational repercussions tend to deinstitutionalize accounting practices in favour of emergency management, reserving attention only for alternative recording activities (i.e. letter writing, diaries, annotations etc.). The paradigm just introduced implicates a contingent influence on the social-organizational side, also in terms of deinstitutionalization in burial activities, rituals and ceremonies (e.g. mass graves without ceremonies or reduced frequency of them).

Centuries after, the Cholera spread during the years 1800 and 1836-37 (c) would demonstrate a better-structured and standardized approach to accounting for epidemics, based on legal requirements.

The most recent perspective, shaped by the Covid-19 (d), shall show (compared to Cholera) a quite unmodified method of accounting for epidemics, and solely enhanced by the ICT tools. In this sense, implications on individual and social psychological dimensions, have been considered.

Following the consideration made before, the authors propose a critical and interpretative reading of the cases, comparing them from a business-accounting and organizational perspective, favoring a critical-interpretative effort, being implicitly linked with historical explanations. The approach used by the authors, also permits and draws inferences from the evidence in primary sources (McWatters, 2017), also shaping a longitudinal timeline, that is able to fix the period and the development of accounting for epidemics and its impact.

The research, however, incorporates intrinsic limitations. Probable limitations of the study would derive from the identification of the spread of just three epidemics/pandemics from the past to the recent present. However, these three events would have been important and crucial to shape the introductory lines of accounting for epidemics, because of the presence of documental results (for past events) and evidence (for recent events).

An important focus could be based on a triangulation and mirror system between the documental analysis proposed in this article, and a rereading in light of the probable access to new primary sources available. Further avenues of research would be about the possibility to analyze the plague in Milan (1630) and the London one (1665) also using the writings of authors like Manzoni and Defoe.

At this stage, the study would produce insights that could favor cross-national comparisons on the topic, stimulating multidisciplinary influences and providing a starting point for deeper investigations. In order to be generalizable, the research still needs to be implemented by transversal disciplines such as demography, sociology and organizational theory.

Other archival research results may come from the same scholars in the field of accounting history and from their precious hermeneutic contribution. Therefore, at present, numerous insights can start from this exploratory study, using multidisciplinary and transdisciplinary efforts. What has been defined as cross-fertilization, can help to fill the remaining gaps, or in any case to validate or invalidate what is expressed, according to a Popperian logic.

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## Sites

COVID-19 Johns Hopkins' *Dashboard*. Retrieved from: <https://coronavirus.jhu.edu/map.html>.

## Appendix

**Tab. A-1 – Gap identification - Main subjects resulting on Business-Source-Ultimate** (Source: our elaboration on results emerging from Business-Source-Ultimate database)

Topic	No.	Topic	No.	Topic	No.	Topic	No.
Therapeutics	8747	Medical Research	1297	Physiology	737	Cross-Sectional Method	559
Public Health	4591	Mortality	1288	Developing Countries	736	Pregnancy Complications	557
Diagnosis	3507	Vaccination	1278	Mental Depression	722	Obesity	551
Diseases	2552	Symptoms	1248	Health Status Indicators	715	Myocardial Infarction	550
Research Methodology	2119	Cardiovascular Diseases	1155	Disease Management	710	Children's Health	547
Comparative Studies	2057	Confidence Intervals	1148	Diabetes	707	Sars (Disease)	544
Aids	2044	Coronary Disease	1064	Health Outcome Assessment	691	Cerebrovascular Disease	534
Health	1880	Hiv	1051	Quality Of Life	685	Dairy Cattle	534
Disease Risk Factors	1860	Infectious Disease Transmission	1043	Health Risk Assessment	680	Drug Therapy	531
Clinical Trials	1820	Longitudinal Method	1035	Pandemics	677	Drugs	530
Hiv Infections	1791	Health Services Accessibility	990	Alzheimer's Disease	673	Chi-Squared Test	525
Epidemics	1761	Heart Diseases	972	Sexually Transmitted Diseases	658	Mental Health	522
Patients	1748	World Health	956	Pathogenic Microorganisms	643	Medical Protocols	517
Medical Policy	1685	Psychology	908	Prevention Of Communicable Diseases	641	Obstructive Lung Diseases	511
Letters To The Editor	1577	Data Analysis Software	907	Smoking	634	Clinical Medicine	504
Medical Cooperation	1570	Randomized Controlled Trials	878	Musculoskeletal System Diseases	630	Comorbidity	501
Prevention	1532	Hypertension	846	Logistic Regression Analysis	627	Lung Diseases	498
Medical Care Costs	1522	Etiology Of Diseases	842	Vaccines	616	Disease Incidence	488
Evaluation Research	1498	Alcoholism	837	Hiv-Positive Persons	602	Age Distribution	485
Communicable Diseases	1468	Immunization	818	Genetics	596	Public Health Surveillance	477
Preventive Medicine	1341	Surveys	812	Tuberculosis	589	Women's Health	477
Epidemiology	1,334	Treatment Effectiveness	801	Drug Efficacy	582	Hospital Care	472
Disease Complications	1326	Medical Screening	796	Hiv Infection Transmission	582	Health Education	471
Chronic Diseases	1305	Aids Prevention	789	Medicine	579	Hiv Prevention	470

Disease Prevalence	1302	Health Promotion	774	Health Behavior	570	Juvenile Diseases	459
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**Graph A-1 – Gap identification - Main subjects resulting on Business-Source-Ultimate** (Source: our elaboration on results emerging from Business-Source-Ultimate database)

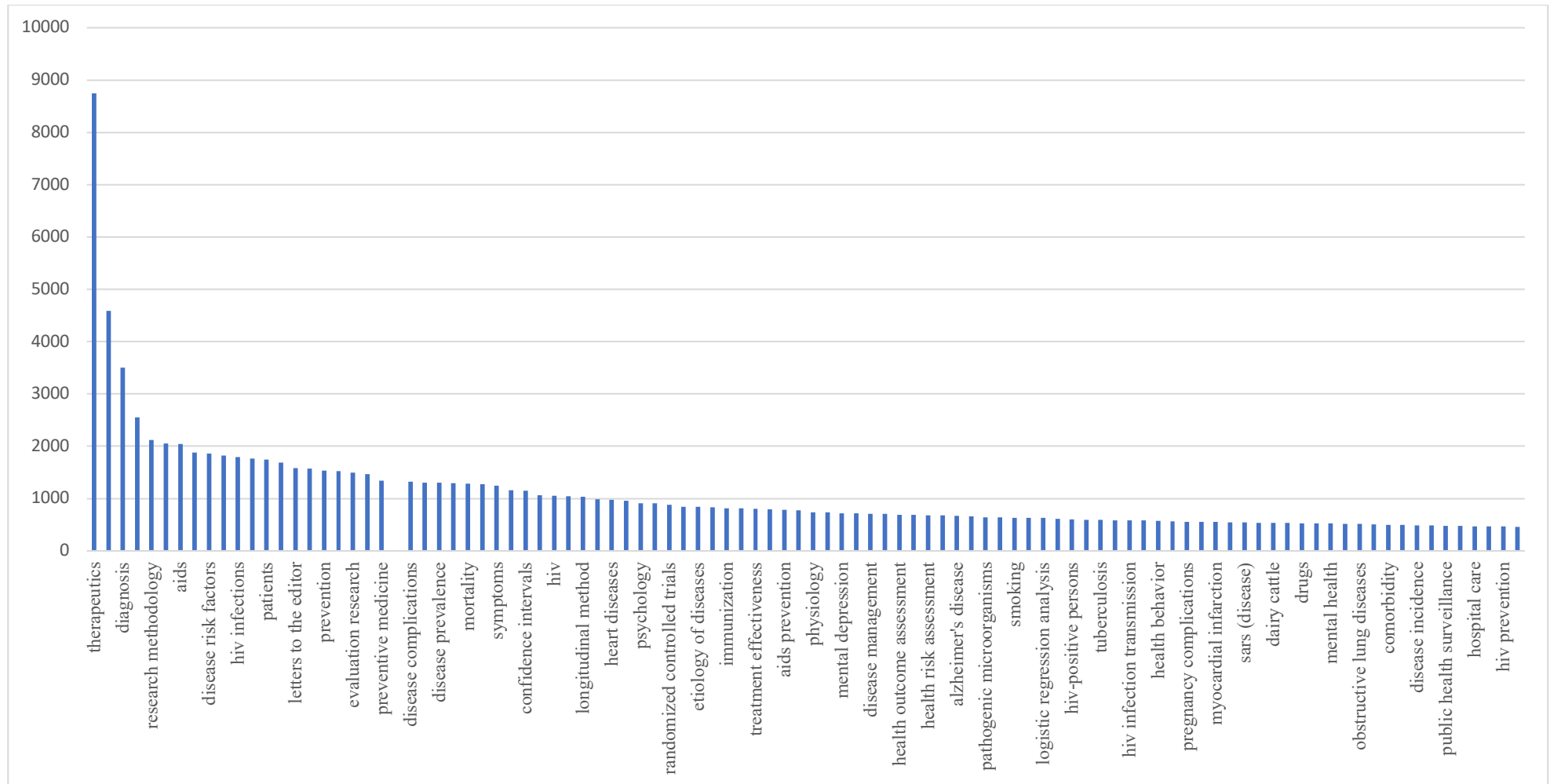


Fig. A.1 – Accounting change as social practice and its interdependencies (Source: our elaboration)

