

THE BASICS OF GENERAL FINANCIAL SCIENCE BY ANTUN FERDINAND ALBELY. KNOWLEDGE CIRCULATION AND DIGITAL TEXT ANALYSIS OF A LEGAL TEXTBOOK*

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This paper aims to present interpretations and modifications of the early 19th century legal and economic knowledge within A. F. Albely's *The Basics of General Financial Science*, a textbook which focuses on the aspect of public finances. Referencing his own work to other authors in this academic field, Albely participated in a disciplinary discourse which served as a hub for circulation of ideas. This paper's primary concern is revealing the sources of Albely's legal and economic knowledge and noticing modifications which occurred in ideas between different texts. Digital text analysis, accessed at the web-available platform *Voyant tools*, will prove to be an important heuristic asset, as it will disclose textual environments of ideas appearing in the analysed texts. This approach will enable new interpretative possibilities in the investigative field of knowledge circulation, as it will employ results of digital text analysis in order to discern Albely's intellectual influences and give insight into an idea modification process.

Keywords: financial science, Antun Ferdinand Albely, Joseph von Sonnenfels, digital text analysis

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1. Introduction

The centerpiece of this investigation, a legal textbook *Rudimenta politicae universalis aerarii* (*The Basics of General Financial Science*), written in 1824 by professor Antun Ferdinand Albely (1794-1875)¹ during his teaching career at the Royal Academy of Sciences in Zagreb,² remained in author's writing until 1996, when it was published as a critical edition by the Faculty of Law at the University of Zagreb.³ This was the first scientifically written textbook in the field of public finances intended for the students of the Royal Academy of Sciences in Zagreb. The editors of this edition revealed to the wider academic community that a legal textbook in financial sciences existed at this Academy which operated between 1776 and 1850.⁴ The edition itself is composed of a facsimile reproduction of Albely's manuscript, Latin transliteration and translation into Croatian language, while an *Afterword*⁵ by Željko Pavić and a critical review of the author's work titled *System, policy and administration of state expenses and revenues in the work of A. F. Albely*⁶ by Jure Šimović offer legal and historical contextualization to this work. Albely's intention was to supplement the teaching material for the students of the Faculty of Law at the Academy in Zagreb in the field of cameralistic disciplines and financial science, presenting

¹ Legal historians and lexicographers have noted Albely for his career at the Academy in Zagreb, his new views on economic science and philosophy of law. Most of the contributions concerning Albely's life, education and professional career are published in: Željko Pavić, ed., *Pravni fakultet u Zagrebu*, vol. 3, (Zagreb: Pravni fakultet, 1996), 7-40. Albely's education and career will shortly be presented later in the article.

² Five such academies existed in the Hungarian Kingdom between 1777 and 1850, and, with few exemptions, included Philosophical, Theological and Legal Faculties as preparatory courses for enrollment in the Habsburg universities. These operated in Győr, Nagyszombat, Kassa, Nagyvárad and Zagreb. See: Attila Szilárd Tar, "Die Ungarischen Rechtsakademien in den 1850er Jahren," in *Die Thun-Hohenstein'schen Universitätsreformen 1849-1860*, ed. Christoph Aichner and Brigitte Mazohl (Wien – Köln – Weimar: Böhlau Verlag, 2017), 222.

³ Antun Ferdinand Albely, *Rudimenta politicae universalis aerarii. Osnove opće financijske znanosti*, (Zagreb: Pravni fakultet, 1996). The original manuscript is held at the National and University Library in Zagreb (Manuscripts and Old Books Collection) and titled: *Rudimenta politicae universalis aerarii quae in latinum compendium redigit A.F. Álbely, A.A.L.L. Philosophiae ... advocatus*. Signature: R 3064.

⁴ Various Croatian historians described the functioning of the Zagreb Academy from different aspects. See: Vjekoslav Klaić, "Kraljevska akademija znanosti u Zagrebu (1776.)," (Zagreb: Dionička tiskara, 1912); Lelja Dobronić, *Zagrebačka akademija. Academia Zagrabien-sis. Visokoškolski studiji u Zagrebu 1633.-1874.*, (Zagreb: Dom i svijet, 2004); Dalibor Čepulo, "Hrvatska pravna povijest i nastava pravne povijesti na Pravnom fakultetu u Zagrebu od 1776. do danas," *Zbornik PFZ* (63) 2013: 885-919.

⁵ Željko Pavić, "Pogovor," in Albely, *Rudimenta politicae*, 395-404.

⁶ Jure Šimović, "Sustav, politika i upravljanje državnim izdacima i državnim prihodima u djelu A. F. Albelyja," in Albely, *Rudimenta politicae*, 405-412.

the local academic community with a compendium of prescribed legal material in this field, but also with a display of his own erudition which becomes apparent through his consultation of various contemporary authors. The primary method of supplementing our understanding of knowledge tracking in such a textbook, will encompass locating certain ideas as they were formulated in Albely's writing and establishing a visible link to their provenance and possible modifications in this field of legal knowledge. His work, although not published during his lifetime, resembles the teaching material passed on to his students in Zagreb. Moreover, it speaks of intellectual influences which formed Albely's ideas and positions his book within a network of legal works which shaped the field of financial science in this period.

Historical investigation of intellectual interaction and exchange of knowledge has already revealed the complexity of issues pertaining to this field of inquiry. The concept of knowledge circulation takes a prominent role in recent studies and as a part of its theoretical framework adopts the idea that knowledge circulates among the agents and within open intellectual communities, rather than being unilaterally dispersed from center to the periphery. The phenomena of constant modification and evolution of knowledge is emphasized as an intrinsic part of intellectual exchange.⁷ Furthermore, the concept questions the unilateral nature of cultural transfers but does not imply that all knowledge was accessible equally to all agents or distributed through the same intensity.⁸ Rather, a multitude of aspects of knowledge come into play when its circulation becomes a focal point. It is not only the creation, reception, modification, or even fabrication of knowledge that become relevant for the understanding of these phenomena, but also organisations such as institutions and written media such as books that start to exemplify sites where knowledge circulation appears in its subtle forms. A shift from a biographical approach with intellectuals and other agents in the focus revealed these sites as relevant aspects and active entities which operate and dictate knowledge circulation.⁹

⁷ Phillip Sarasin, "Was ist Wissensgeschichte?" *Internationales Archiv für Sozialgeschichte der deutschen Literatur* (36) 2011, 165-166.

⁸ Johan Östling, David Larsson Heidenblad, Erling Sandmo, Anna Nilsson Hammar, Kari Nordberg, "An Introduction," in *Circulation of Knowledge. Explorations in the History of Knowledge*, ed. Johan Östling, Erling Sandmo, David Heidenblad Larsson, Anna Nilsson Hammar and Kari Nordberg (Lund: Nordic Academic Press, 2018) 18-20; Gisèle Sapiro, Marco Santoro, Patrick Baert, "Introduction," in *Ideas on the Move in the Social Sciences and Humanities: The International Circulation of Paradigms and Theorists*, ed. Gisèle Sapiro, Marco Santoro and Patrick Baert, (Cham: Palgrave Macmillan, 2020), 2.

⁹ Helge Jordheim, "The printed work as a site of knowledge circulation. Dialogues, systems and the question of genre," in *Circulation of Knowledge*, ed. Östling et. al., 232.

The purpose of this paper will be to disclose knowledge in one of such sites. Albely's textbook is a unique example of an attempt to apply the knowledge in the contemporary field of financial science which he acquired during his education not only in the case of Croatian intellectual environment, but in the Kingdom of Hungary as well. Since his textbook was not published and hence did not circulate among his contemporaries, the expected result of this analysis is not to evaluate the reception of knowledge composed in his work among the students at the Academy in Zagreb or his peers in the Habsburg academia. Rather, when tackling the issues of knowledge fluctuation, this investigation presents methodological means for tracking modifications of knowledge, primarily as they appear in a scholarly work embedded in a relatively strict academic framework. Therefore, Albely's text will be juxtaposed to writings by one of the most prominent Habsburg cameralists, Joseph von Sonnenfels (1732-1814), while the results of a digital text analysis will offer further evidence for links between these texts, but also point to modifications of knowledge introduced by Albely.

2. Cameral Science in the Habsburg Academia

Although the Croatian translation of *Rudimenta politicae universalis aerarii* represents an effort which could popularise its content to some extent, this case study relies on the Latin original, as the terminological discrepancy between contemporary legal science and Albely's own disciplinary field may prove misleading. Namely, the term *aerario* in the title of the textbook in focus represented the state treasury and was not exclusively in the focus of interest of the legal scholars discussing financial science. It was, however, one of the major topics within the disciplinary field which evolved out of cameralistic philosophy and the concern of improving state administration and management of public finances. The legal discipline which was based on resolving these issues and developed in the academic sphere from the 1760's in Vienna was *Polizeywissenschaft*, which could conditionally be translated as political sciences, but largely focused on security and well-being of citizens with expectations of modernizing public services and resulting in a more efficient state as a whole.¹⁰ Albely's focus on economic, fiscal and legal aspects in his book was

¹⁰ László Kontler, "The Uses of Knowledge and the Symbolic Map of the Enlightened Monarchy of the Habsburgs: Maximilian Hell as Imperial and Royal Astronomer (1755-1792)," in *Negotiating Knowledge in Early Modern Empires*, ed. László Kontler, Antonella Romano, Silvia Sebastiani and Borbála Zsuzsanna Török, (New York: Palgrave Macmillan, 2014), 90.

certainly characteristic of the academic interests within this disciplinary field, also described as the 'sciences of state'.¹¹

The framework within which the Habsburg intellectuals shaped their views on this topic was defined by the educational system, which underwent a thorough modernising process, starting in the second decade of Maria Theresa's reign (1740-1780). Among the major characteristics of the cameralistic philosophy was the idea that the state intervention into various aspects of public life could serve to benefit both the state and its subjects. An important sphere which was turned into a public affair and brought under the control of a state was the school system, thus transforming universities into public institutions.¹² Prominent intellectuals in various fields of academic inquiry were channeled towards improving the school system in order to coordinate the learning material with the needs of the state.¹³ Certainly among the most important intellectuals of the Habsburg university reform was a German jurist, Joseph von Sonnenfels, who introduced the political and cameral sciences into the curriculum of the University in Vienna, where he started to teach in 1763.¹⁴ Furthermore, among the plentitude of works within this academic field emerging from the beginning of the 18th century, was his work published in three volumes *Grundsätze der Polizey, Handlung, und Finanzwissenschaft* (*The Basic Principles of Political, Mercantile and Financial Science*),¹⁵ which enjoyed a wide reception at the Habsburg universities and was used as a coursebook by other authors, as it represented a comprehensive learning material in the form of a textbook.¹⁶

¹¹ Borbála Zsuzsanna Török, "Measuring the Strength of a State: *Staatenkunde* in Hungary around 1800," in: *Negotiating Knowledge*, ed. Kontler et. al., 235.

¹² László Kontler, *Translations, Histories, Enlightenments. William Robertson in Germany 1760-1795*, (New York: Palgrave Macmillan, 2014), 11.

¹³ A series of (proto)modernizing reforms at the University of Vienna, starting with the Faculty of Medicine in 1749, were initiated by a personal physician of Empress Maria Theresa, and professor from Leiden, Gerard van Swieten (1700-1772). Ivana Horbec, *Zdravlje naroda – bogatstvo države. Prosvijećeni apsolutizam i počeci sustava javnog zdravstva u Hrvatskoj* (Zagreb: Hrvatski institut za povijest, 2015), 16; Vlasta Švoger, "Izgradnja modernog Sveučilišta u Habsburškoj Monarhiji. Reforme visokog školstva u 18. i 19. Stoljeću," *Anali za povijest odgoja* 18 (2020): 9-10.

¹⁴ Constantin von Wurzbach, *Biographisches Lexikon des Kaiserthums Oesterreich*, vol. 35, (Wien: Sinacher – Sonnenthal, 1877), 317-343, 323.

¹⁵ The textbook was first published in 1765, while its Latin edition, which will be used as a source in this inquiry appeared in Bratislava in 1808: Joseph von Sonnenfels, *Principia Politiae, Comercii et rei Aerarii (...) latine reddita a Wolfgango Beke*, tom. I-III, Posonii MDCCCVIII.

¹⁶ Keith Tribe, "Cameralism and the Science of Government," *The Journal of Modern History* 56 (1984): 275.

Educational reforms initiated at the court in Vienna were introduced into the Kingdom of Hungary and the core document for this purpose – *Ratio educationis totiusque rei literariae per regnum Hungariae et provincias eidem adnexas* (*The System of Education and General Schooling for the Kingdom of Hungary and the Attached Provinces*) was issued in 1777.¹⁷ This document prescribed the foundation of five Royal Academies of Science, one of which was established in Zagreb. The detailed curriculum encompassed every subject taught at these educational institutions, with the Faculty of Law consisting of four Chairs, among which was the Chair for Political, Cameral and Economic Sciences. The legal material appertaining to this Chair was to be taught in both academic years, which was also the duration of the whole curriculum.¹⁸ Even more, the first professor of political and cameral sciences at the Zagreb Academy, Adalbert Adam Barić (1742-1813), obtained his doctoral degree as a student of Sonnenfels and had introduced the discipline to the Croatian students even earlier, having taught this discipline at a newly established study in Varaždin from 1769 and continuing to teach at the Academy in Zagreb for a brief period in 1776 and 1777, before taking the position of a professor at the University of Buda, where he even became a rector in 1786.¹⁹ The establishment of this field of academic inquiry in Zagreb by one of the most prominent legal intellectuals in the Kingdom of Hungary indicates that the intense reception of cameralistic philosophy laid firm foundations for the future professors to develop the ideas of modernising the state finances.

However, by the time Albely became a professor in Zagreb, cameral sciences experienced a set of disciplinary changes, primarily as they gave way to national economics and administrative science, which first occurred in the German intellectual world in the early 1800's.²⁰ While acknowledging this shift in economic focus from court-dominated state economics towards the topics of distribution and consumption of national wealth within the field of *Nationalökonomie*, the changing nature of German universities is emphasized

¹⁷ *Ratio educationis totiusque rei literariae per regnum Hungariae et provincias eidem adnexas* (...) Vindibonae (...) MDCCLXXVII.

¹⁸ *Ratio educationis*, Sectio IV, Cap. VI, 337-339.

¹⁹ Ivana Horbec, "The 'Quiet Force': The Role of Legal Education in the Disciplining of the Hungarian and Croatian Nobility in the 1760's," *Povijesni prilozi* (53) (2017): 98; Pavić, *Pravni fakultet*, 80.

²⁰ Lotar Schilling, Jakob Vogel, "State-Related Knowledge: Conceptual Reflections on the Rise of the Modern State," in *Transnational Cultures of Expertise. Circulating State-Related Knowledge in the 18th and 19th Centuries*, ed. Lotar Schilling and Jakob Vogel, (Berlin – Boston: De Gruyter Oldenbourg, 2019), 4.

as a factor which initiated this process.²¹ The situation in the Habsburg academia and particularly in the Hungarian educational framework was quite different, as *Ratio educationis* permitted limited space for disciplinary interventions by individual professors throughout the period from 1777 to 1850. Furthermore, the cameral sciences in German universities were never taught as an independent discipline, but were a part of the general programme of Faculties of Philosophy, themselves the most junior of the four faculties.²² On the other hand, cameralism was elevated as a distinct subject in the curriculum of the Faculties of Law at the Habsburg universities, including the Royal Academies of Sciences in Hungary. Even though the educational framework prescribed by the *Ratio educationis* remained unchanged until 1850 and Sonnenfels' textbook in widespread use by the professors at the Royal Academies in Hungary, new generations of legal scientists managed to produce written material and transform the existing knowledge in the field of political, cameral and financial disciplines despite the strict institutional framework. Albelly's textbook exemplifies this and could partially explain to which degree was it possible for a professor of legal sciences to intervene into a prescribed body of literature and attempt to modify teaching material.

Albelly started his career at the Academy in Zagreb as a teacher of Greek language and substituting the professor for natural, general public and international law from 1819 and 1821 respectively, even before obtaining his doctoral degree at the University of Pest in 1823.²³ While the tripartite field of natural law, even though losing its academic influence in this period, still presented the basis of legal education, Greek language was not a common subject in higher educational system. Albelly's professional grasp of it might indicate his focus on historical aspects of legal studies, but did not influence his writings in the field of financial sciences. After completing his studies in Pest, he returned to Zagreb in order to pursue his career as a professor, now occupying the Chair for Natural Law and remaining there until he transferred to the analogous position at the Academy in Győr in 1829. In 1835 he moved to the position of a professor at the Royal Academy in Posony, moving further up the academic ladder, which becomes apparent through his successful publishing activity in the field of legal philosophy, and becoming an acknowledged

²¹ Hans Frambach, "The Decline of Cameralism in Germany at the Turn of the Nineteenth Century," in *Cameralism in Practice. State Administration and Economy in Early Modern Europe*, ed. Marten Seppel and Keith Tribe, (Woodbridge: Boydell & Brewer, 2017), 239.

²² Frambach, "The Decline of Cameralism", 259.

²³ See: Zlatko Herkov, *Iz povijesti javnih financija, financijskog prava i razvitka financijske znanosti u Hrvatskoj*, (Zagreb: Pravni fakultet, 1985), 195; Pavić, *Pravni fakultet u Zagrebu*, 721.

intellectual in this field.²⁴ However, his interest in financial sciences influenced his work perhaps with greatest intensity during the teaching years in Zagreb. Although this could be explained by the disciplinary focus on the field of political and cameral sciences in his own doctoral thesis at the University in Pest, titled *Positiones in universal jurisprudence and political-cameral sciences*,²⁵ the intellectual interest shown by preparing a textbook in financial science might have been due to his responsibilities as a substitute professor of cameral sciences, since the position at that Chair was vacant from 1824 to 1828.²⁶ Apart from lecturing on the subjects pertaining to this academic field, Albely was also expected to hold public examinations and publish the related legal material which was based on his lectures. Unfortunately, none of those printed examinations remain, but it is clear from his effort to produce a comprehensive textbook that he considered that the learning material needed improvement, while he aimed at passing on the knowledge which he acquired during his education at the University of Pest to his students in Zagreb.

3. Financial Science and ideas by Albely and Sonnenfels

Although not published during his lifetime, it is clear that *The Basics of General Financial Science* contains a body of knowledge which was created in the process of knowledge circulation and was intended for teaching purposes at the Faculty of Law in Zagreb. The focus of this analysis lies on the issue of tracking ideas as they circulated among the intellectuals of the Habsburg academia and appeared in Albely's work in particular, while the question of detecting them in textual sources needs to be addressed. Although the academic analysis of intellectual history has to concern itself with minute anatomy of ideas with respect to their content, an assumption that the ideas depend upon the textual constructions which represent them has to be taken into consideration. This thesis appears as a heuristic tool used to discern textual environments which surround individual ideas and opens a possibility to recognize similarities in authors' practices when they address common areas of academic interests. In an effort to disclose intellectual influences on an author's writing process, this approach utilizes digital text analysis that aims to reveal textual

²⁴ József Szabadfalvi, "The Beginnings of Hungarian Legal Philosophical Thinking," *ARSP: Archiv für Rechts- und Sozialphilosophie / Archives for Philosophy of Law and Social Philosophy* 96, (2010): 342.

²⁵ Antun Ferdinand Albely, *Positiones ex universa jurisprudentia et scientiis politico-cameralibus (...) pro consequenda suprema juris universi doctoratus laurea*, (Budaë: Typographia Regiæ Universitatis Hungaricæ, 1823).

²⁶ Pavić, *Pravni fakultet*, 721.

networks surrounding the words which represent ideas.²⁷ The resulting analysis of these networks can lead to better understanding of the provenance of ideas appearing in academic works.²⁸ Such attempts serve to either corroborate already existing presumptions on the intellectual authorities in various disciplinary fields, or reevaluate those views.

As indicated earlier, Joseph von Sonnenfels was perhaps the most influential writer in the field of financial science, with his works circulating among the professors and students of the Habsburg higher educational system during the second half of the 18th and early 19th centuries. The underlying cameralistic idea that the unification of the state financial activities with its budget should present a primary concern in regulating the public finances, present in the *Basics of Financial Science*, can with certainty be traced to the philosophy promoted by Sonnenfels.²⁹ Albely accounts for Sonnenfels' influence on his own work, stating that Sonnenfels further developed the attempts of earlier scholars to reconcile the discrepancy between the state incomes and the state expenses, but that such endeavors necessarily fell short of their final goal, since those scientists lacked practical and reliable data on production principles.³⁰ This notion emphasizes the fact that Albely wrote his textbook more than half a century after the first publication of *Principia politiae* and that more recent scholarly developments emerged in the field of financial sciences. The presence of these contemporary works in Albely's textbook is noticeable, as more than half of the twenty-one authors whose works he consulted and provided reference to publish their books after the 1800.

Nonetheless, the disciplinary focus of Albely's work on the issues of balancing the state treasury with respect to its income and expenses, corresponds to the third volume of Sonnenfels' book, which deals with the last aspect of the tripartite field of political science, trade and state treasury. Since the topics appertaining to this field of academic inquiry were shared by both authors, an attempt to compare their treatment of central terms in their texts should be made in order to evaluate the possibility of tracing Sonnenfels' influence in Albely's thought. The prerequisite for such an analysis is the process of

²⁷ Franco Moretti, "Network Theory, Plot Analysis," *Literary Lab Pamphlet* 2 (2011): 4.

²⁸ Ingeborg van Vugt, "Using Multi-Layered Networks to Disclose Books in the Republic of Letters," *Journal of Historical Network Research* 1, (2017): 28, 31-36.

²⁹ Šimović, *Sustav*, 406.

³⁰ Albely, *Rudimenta politicae*, 5-6. *Eruditi his utilitatum civilium differentiis et necessitatum magnitudini modum posituri, ac una publicarum perceptionum durabilitati consultari, emendationem conati sunt detegere aerarialme administrationem. (...) Horum conatus denique exceperunt opera quaeipiam rem aerarialem scientifice pertractantia quae conscripserunt (...) Sonnenfels (...). Verum politici isti, genuinis productionis universalis principii destituti, plurima in praxi desideranda reliquerunt.*

digitization, which mainly concerns itself with rendering the texts digitally readable and compatible with digital analysis. This process included character recognition and ensuring the equivalence between printed and digitized texts. While in the case of *Principia polittiae*, a text available in the digital form online, the used Optical character recognition (OCR), embedded in the used programme ABBY FineReader 12, required minimal interventions, Albely's book was scanned manually. Hence the process was more challenging, as the critical edition of *The Basics of General Financial Science* encompasses a Latin original and a translation into Croatian language (Image 1). The resulting OCR process of the digitized text therefore required further refinement in terms of exclusion of Croatian translation and double-checking of character recognition. Final result of this process of digitization is a refined Word document containing a purified Latin text by Albely (Image 2).

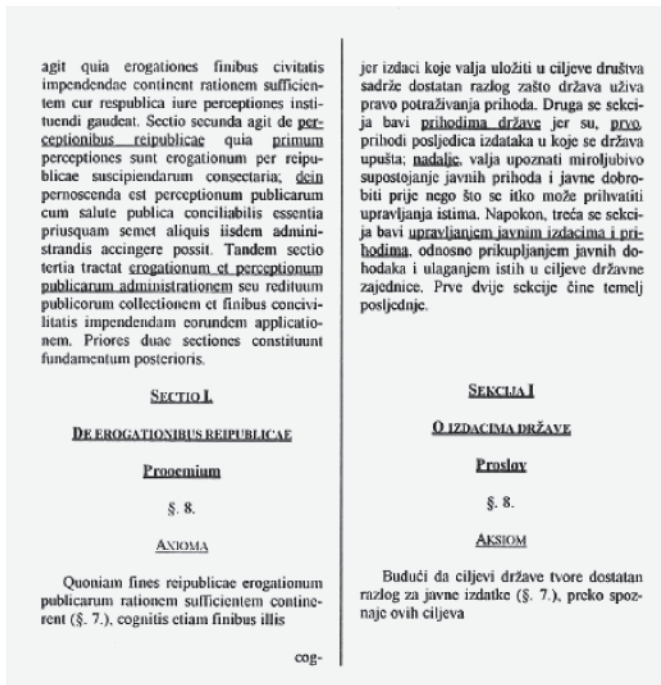


Image 1. A digitized page of Albely's textbook.

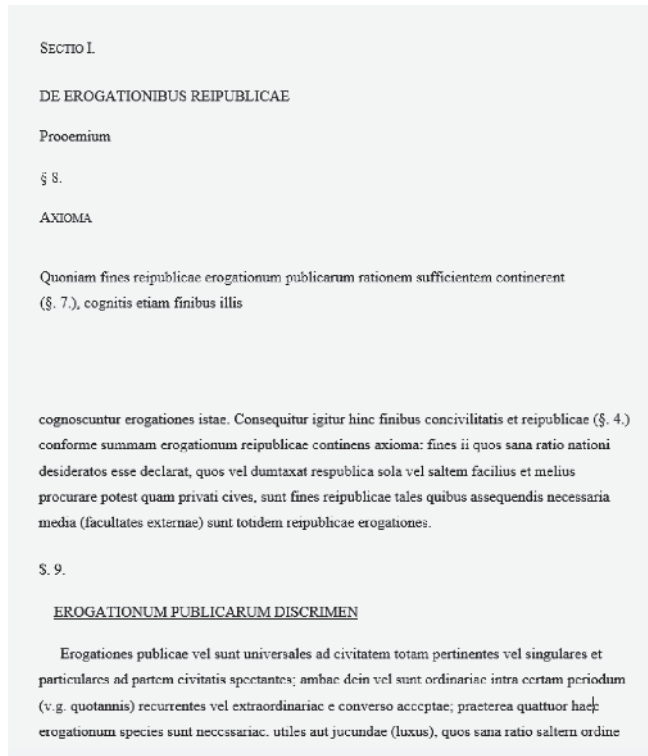


Image 2. Digitized Latin text of *Rudimenta politicae*.

For the purpose of digital text analysis, both of the textbooks will be probed by the digital programme for textual analysis *Voyant tools*. This ‘web-based text reading and analysis environment’,³¹ offers an array of digital analysis tools, mostly oriented towards quantitative text analysis and visualization tools used to present the data in textual corpus from various perspectives. In particular, the terms *erogatio* or *expenses* and *aerario* or *state treasury*, both of central importance for the academic field which was the basis of the author’s inquiry, will be disclosed as a part of a wider network of terms in order to reveal and compare the practices employed by the two authors. They are both used extensively by Sonnenfels and Albely in their respective works and fall into the scope of five most frequent terms, which supports their analysis as central terms. The visualization function named ‘Links’ in *Voyant tools* selects a number of most common terms connected to the main term, based on the frequency of appearances within the same textual environment of ten words,

³¹ *Voyant tools* is available online at: <https://voyant-tools.org/>, and offers a wide variety of digital text analysis, including term frequency analysis, visualization tools and collocation tools.

which is the default option, although this function is scalable. The thickness of lines connecting the central term to the border terms in a resulting network graph indicate the frequency of the terms appearing in the same context of ten words as the central term, but is, unfortunately, not representable outside the digital *Voyant tools* environment.

In the first case, the term *expenses* appears 77 times and is connected to seven appurtenant terms in Albely's textbook, namely: *administration* in three grammatical forms, *state treasury*, *civic*, *republic* and *explains*. The term *expenses* appears 101 times and relates to six terms in the third volume of Sonnenfels' *Principia polittiae* which are *fields* in three different grammatical forms, *elders*, *I owe* and *by reason* (Fig. 1, 2).

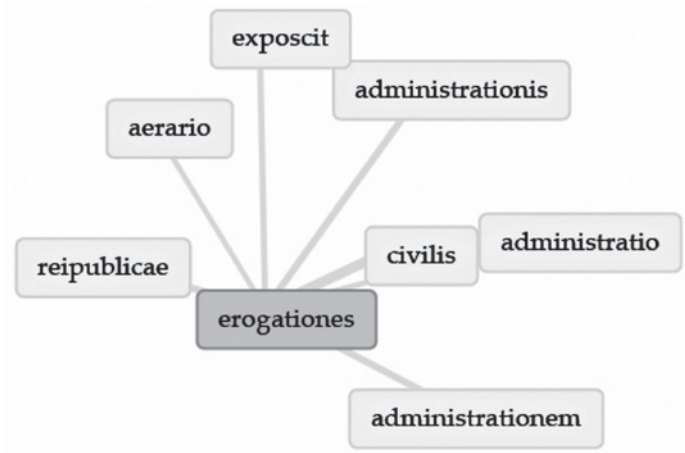


Fig. 1. The term *expenses* in Albely's *Rudimenta politticae*

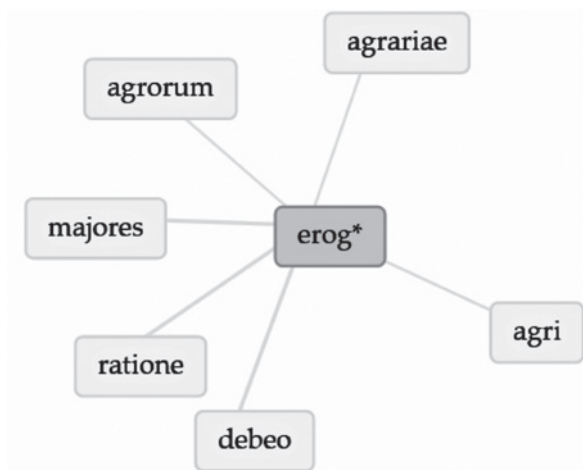


Fig. 2. The term *expenses* in Sonnenfels' *Principia Polittiae*

The term *aerario*, standing for the state treasury, appears 45 times in Albely's work and is connected to five terms: *expenses*, *republic*, *administration* in two grammatical forms, and *remittance*. On the other hand, in Sonnenfels' case it appears 69 times and is also linked to five appurtenant words which are *right*, *administration*, *good*, *applicable* and *aids* (Fig. 3, 4).

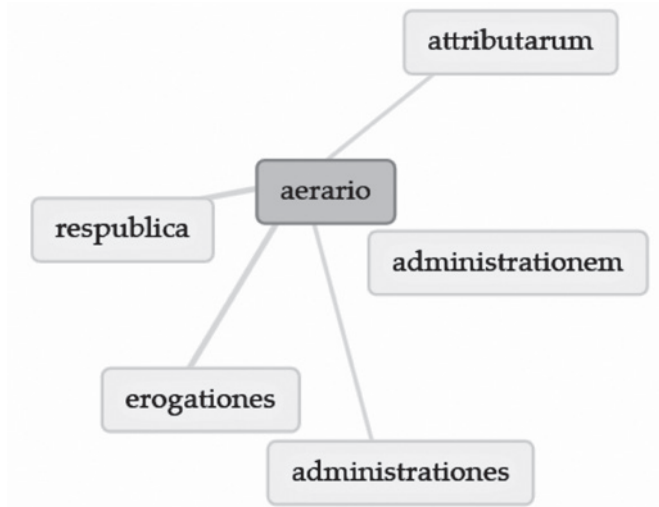


Fig. 3. *State treasury* within the network of appurtenant terms in Albely's textbook.

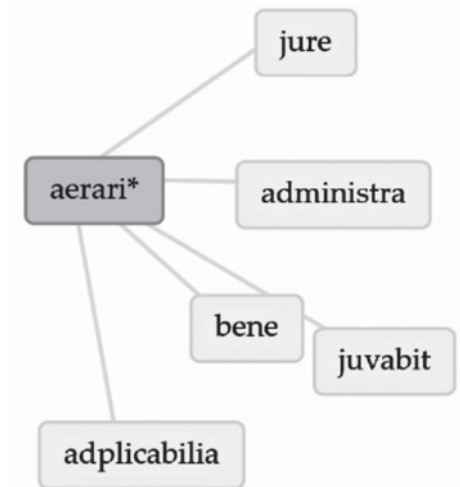


Fig. 4. *State treasury* within the network of appurtenant terms in Sonnenfels' work.

The visualization of central terms within their textual environment offers an insight into the treatment of major concepts appertaining to the field of financial science by Sonnenfels and Albely. In the first case, it is observable that

Albely expresses the concern with expenses in correlation to ‘administration’ (the terms *administratio*, *administrationis*, *administrationem*), ‘state treasury’ (the term *aerario*), but also to terms ‘public affairs’, ‘explains’ and ‘civic’ (*reipublicae*, *exposcit* and *civilis*). This stands in contrast to what we encounter in the parallel analysis of Sonnenfels’ work. The terms ‘fields’ (*agrorum*, *agri*, *agrariae*) stands out as principal allocated words to the term expenses, along with ‘elders’ (*majores*), ‘by reason’ (*ratione*) and ‘I owe’ (*debeo*). Although some of these terms, after visually presenting these results of digital text analysis, offer little to firmly support an argumentation on disciplinary differences between the two authors, some stand out as indicative for Albely’s and Sonnenfels’ views on the state expenses. In Albely’s case expenses correlate largely to administration, supplemented by the state treasury, *The science of state treasury (...) is a sum of principles which guide the best administration of state expenses*.³² Sonnenfels correlates the term to the the words describing agronomical activity: *The owner of the field (...) must recover all his expenses and what he anticipates from cultivation*.³³ Even though any conclusions about the shifting nature of state expenses depending on land-based economy to the administrative-oriented state, based on these observations would prove to be far-fetched, the examples indicate that the intense reception of Sonnenfels’ ideas – or at least views on important subjects – might not have occurred at all in Albely’s text. However, the following example shows some similarities in the treatment of the term ‘state treasury’. While again some of the appurtenant terms emerging through the textual analysis offer little insight into the nature of the conceptual shaping of the state treasury by the two authors, it appears that the idea that the state treasury corresponded to administrative functions was shared by both authors. While in Albely’s case the connection between the terms *state treasury* and *administration* is clear already in the previous citation, in Sonnenfels’ book we encounter: *Agreeing with most writers on the topic of state treasury, the administration of the state treasury (...) should entirely be included in the definition*.³⁴ While still not enough to propose that Sonnenfels’ work directed Albely in writing his textbook to a great extent, the second example shows that the terms used to describe central topics in some aspects of this disciplinary field operated in similar textual environment and in both of the examined works.

³² *Politica aerarii (...) est complexus principiorum quorum ductu erogationes (...) reipublicae optime administrantur*. Albely, *Rudimenta politicae*, 23.

³³ *Possesor agri (...) omnia, quae ratione culturae erogat, et anticipat, recuperare debet*. Sonnenfels, *Principia politiae*, tom. III, 207.

³⁴ *Cum plerisque scriptoribus rei aerariae consentit, administrationem publicorum reddituum (...) ut ad definitionem omnino cooptari debeat*. Sonnenfels, *Principia politiae*, tom. III, 4.

4. Conclusion

The academic inquiry focusing on tracing ideas within a certain body of knowledge, among the agents who partake in intellectual exchange or, as in this case, in academic literature, is continually seeking to develop new methods of research. The analysis presented in previous passages draws upon that endeavor and relies on relatively new trends of incorporating digital tools into the methodological apparatus of historians dealing with knowledge fluctuations. As shown above, there is potential in interpretation of digital text analysis, primarily in the sphere of tracking units of knowledge as they appear in academic writings in the same disciplinary field. In this sense, we can observe modifications of ideas between Sonnenfels and Albely, particularly when they are represented by central terms, such as *expenses* or *state treasury*. Although there is little doubt that Albely consulted the works by Sonnenfels, this analysis suggests that various elements of their texts need to be taken into account in order to discern the appearing differences in their writings. These elements include nuances in textual appearances of central terms and differences in their focus on important topics.

Admittedly, the field of digital history is still intensively searching for refinement in the steps taken towards resolving critical theoretical issues between the digital and the historical. Furthermore, this disciplinary framework appropriately fits the evaluation by James Secord, who stated that the historians “have a tendency to neutralize fundamental challenges by creating new subdisciplines that allow their advocates room to work while minimizing their impact.”³⁵ Nonetheless, it seems that probing new methodological approaches in overcoming these challenges is necessary, particularly when tackling with the circulatory character of knowledge, which is continuously asking for new interpretations and refining the historical theoretic framework. For this reason the presented analysis of Albely’s textbook aimed to take a turn into seeking after the provenance of concepts and ideas which represent the core units of knowledge, though the approach still needs furnishing and the investigation expanded in more directions. However, there is a sense that these traceable units of knowledge also need more academic consideration in order for us to fully comprehend the phenomena of knowledge circulation. Hopefully the presented analysis is a small step in the right direction.

³⁵ James A. Secord, “Knowledge in Transit,” *Isis* 95, (2004): 670.

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