

A pioneering and enlightening doctoral dissertation on medical education: Horsch's German thesis (1807)

Una tesis doctoral pionera e iluminadora en educación médica: La tesis alemana de Horsch (1807)

Inés M^a Fernández-Guerrero¹, Manuel Torralbo-Rodríguez², Cristina Fernández-Guerrero³, Antonio Fernández-Cano^{4*}

¹ General University Hospital "Virgen de las Nieves", Emergency Service, Avenida de las Fuerzas Armadas, 2. Granada 18002. Spain. E-m: inesmariafernandez@yahoo.es. ORCID: 0000-0001-7020-9182

² Department of Mathematics. University of Córdoba, Avenida Medina Azahara s/n. Córdoba 14071. Spain. E-m: maltorom@uco.es. ORCID: 0000-0002-7224-0105

³ General University Hospital "Virgen de las Nieves", Service of Anaesthesiology, Avenida de las Fuerzas Armadas, 2. Granada 18002. Spain. E-m: cris85f@gmail.com

⁴ Retired. Department of Research Methods and Diagnostics, Campus de Cartuja. University of Granada. Granada, 18071. Spain. Tel./Fax: 34 958 244253; C-E: afcano@ugr.es. ORCID: 0000-0003-3991-4443

*: Autor para la correspondencia.

Recibido: 5/5/25; Aceptado: 26/5/25; Publicado: 28/5/25

Abstract

Introduction. This study analyzes a German doctoral thesis entitled *Über die Bildung des Arztes als Klinikers und als Staatsdieners* (On the Education of Physicians as Clinicians and Civil Servants), defended by Philipp Joseph Horsch (1772-1820) at the University of Würzburg in 1807, possibly the world's first doctoral thesis in the field of medical education. **Method.** This study is a historiographical and bibliographic review of an academic document, a doctoral dissertation retrieved from the German LEVIVO database. Therefore, it is a documental case study. **Results.** The academic context and its agents are easily inferable: the University of Würzburg with its associated clinical hospital, the Julius Hospital (*Juliusspital*) and its medical professors. At the beginning of the 19th century, Europe was immersed in the devastating Napoleonic wars. The text addresses a series of dilemmas related to basic conceptions of medical education, established as dichotomies to be overcome by emphasizing clinical teaching. These dilemmas included: the new versus the old, theory versus practice, medicine as an art versus as a science, hospital versus outpatient medicine, and state physicians versus private ones, which the author does not consider antagonistic, or exclusive, but rather options that can be integrated, synthesized, because they are basically complementary and solvable through hybrid solutions. The author's extensive attention to physicians as civil servants is discussed. In addition, a number of pedagogical recommendations are inferred from the thesis. **Discussion.** The thesis offers a novel vision of medical education for its time, containing a series of considerations that are still relevant today in the movement of Practical Medicine. Throughout the thesis there are abundant educational recommendations that should not be ignored because they are perennial, in the Leibnizian sense of the term.

Keywords: Medical education, historical aspects, pioneering doctoral thesis, 19th century.

Resumen

Introducción. Este estudio analiza una tesis doctoral alemana titulada *Über die Bildung des Arztes als Klinikers und als Staatsdieners* (Sobre la educación de los médicos como clínicos y funcionarios), defendida por Philipp Joseph Horsch en la Universidad de Würzburg en 1807, posiblemente la primera tesis doctoral del mundo en el campo de la educación médica. **Método.** Este estudio es una revisión historiográfica y bibliográfica de un documento académico, una tesis

doctoral recuperada de la base de datos alemana LEVIVO. Se trata, por tanto, de un estudio de caso documental. **Resultados.** El contexto académico y sus agentes son fácilmente deducibles: la Universidad de Würzburg con su hospital clínico asociado, el Hospital Julius (Juliussspital) y sus profesores de medicina. A principios del siglo XIX, Europa estaba inmersa en las devastadoras guerras napoleónicas. El texto aborda una serie de dilemas relacionados con las concepciones básicas de la enseñanza de la medicina, establecidas como dicotomías que debían superarse haciendo hincapié en la enseñanza clínica. Estos dilemas incluían: lo nuevo frente a lo viejo, la teoría frente a la práctica, la medicina como arte frente a como ciencia, la medicina hospitalaria frente a la ambulatoria, y los médicos estatales frente a los privados: dilemas que el autor no considera antagónicos, ni excluyentes, sino opciones que pueden integrarse, sintetizarse, porque son, básicamente complementarias y resolubles mediante soluciones híbridas. Se discute la amplia atención que el autor presta al médico como funcionario público. Además, se deducen de esta tesis una serie de recomendaciones pedagógicas. **Discusión.** La tesis ofrece una visión de la educación médica novedosa para su época, y que contiene una serie de consideraciones que siguen siendo relevantes hoy en día en el movimiento de Medicina Práctica. A lo largo de la tesis hay abundantes recomendaciones educativas que no deben ser ignoradas porque son perennes, en el sentido leibniziano del término.

Palabras clave. Educación médica, aspectos históricos, tesis doctoral pionera, siglo XIX.

1. Introduction

Doctoral theses are largely dismissed in scientific research, regarded as minor documents ascribed to what has been called "grey literature," being more products of teaching rather than research. However, a thesis is a macro academic topic of study, a combination of the three basic tasks: research, teaching, and academic management. A thesis as an initial and initiatory work that reflects the academic life of the doctoral student, although it is not necessarily his or her *magnus opus*, or work of a lifetime.

A thesis gives us a central idea of the topic on which it works or for which it works. Therefore, a pioneering thesis that initiates research in each field of study has a primarily informative and formative function: to shape this seminal contribution by testifying to the origin of the research topic and, therefore, of the field into which it is integrated. Scientists must, therefore, have precise information and knowledge about the origins of their different disciplines. This dictum reminds us of Aristotle's argument in his *Metaphysics* (1) that we understand a subject best when we see it grow from its origins. Specifically, Aristotle (1) stated: "seeking first to understand the causes of the entities that surround us ... in the search for their causes, they advanced to that one."

The rationality of this study is, thus, first and foremost, to review possibly the world's first doctoral thesis in the field of medical education (hereinafter, ME). This thesis could refute, by spotlighting one of its most relevant pioneering achievements, the assumption that there is little interest to be found in doctoral ME given the low level of subsequent publication (2).

2. Method

This case study is a historiographical and bibliographical review of an academic document, a doctoral dissertation (3) retrieved from the German *LIVIVO datenbank*, a powerful search portal in the Life Sciences area (<https://www.livivo.de/>). This database indexes, among other documents, doctoral theses defended at German universities and other European universities since the 17th century. It is therefore a theoretical and analytical study, eminently qualitative and quasi-naturalistic, because no observation was made but textual analysis, to which the criteria of validity and reliability (jointly as trustworthiness) proposed by Guba (4) can be applied. Thus, the study is credible because the data are derived from the translation into Spanish of a text written in German using a powerful translator (DeepL) and the interpretations derived from them were agreed upon by the authors. Likewise, the study is transferable to other theses since the process of realization is

duly explained; see below. The study is plausibly reliable although complete evidence would require replication and better done by other researchers outside this study. It is also confirmable because the data and interpretations are free of manifest biases since the authors have been aware of them and have acted ethically and rigorously in the collection of data and interpretations that are supposedly well-founded. Nevertheless, the authors are aware of the Italian locution *traduttore, traditore*, which determines that there is no such thing as a perfect translation, especially in a language as complex as German, and of which there is no academic tradition in Spain of working with it.

The general methodological sequence of this work was: Localization and retrieval of the digitized version of the thesis. Translation of the text. Pervasive reading the text. Data selection. Identification of patterns and structures. In-depth analysis of the content. Data-based interpretations. Writing a report (this manuscript).

2.1. Formal aspects of the thesis

The thesis (3) is entitled: "On the Education of Physicians as Clinicians and Civil Servants" (in the original German, *Über die Bildung des Arztes als Klinikers und als Staatsdieners*) with an added subtitle: "A program with its lectures about remedies, psychic and clinical medicine" (*Ein Programm, womit seine Vorlesungen über Heilmittellehre, psychische Medicin und Klinik*). It was defended at the German University of Würzburg on Monday, 4 May 1807. The thesis was published as a book by editor Joseph Stahel of Würzburg, featuring EB Garamond typeface, a French influence and differing greatly from the original Gothic German font. It consists of 69 pages without figures and captions. The paragraphs are separated by double spaces. It is written in German, breaking the previous trend to write medical books in Latin. Its title page is shown in the following figure 1.

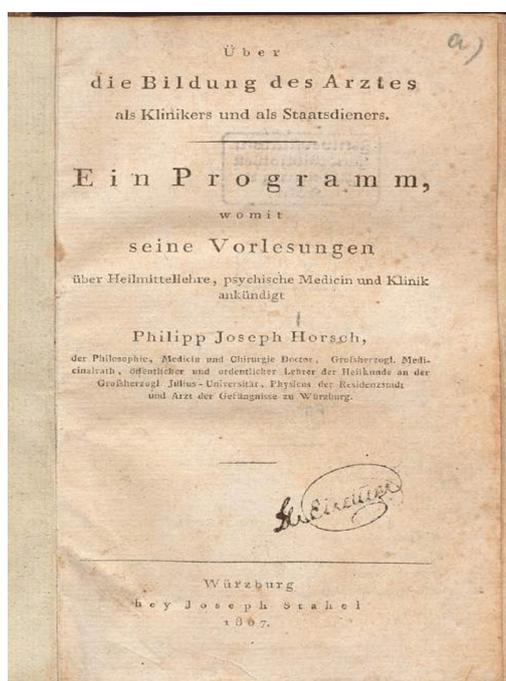


Figure 1. Front page of the German thesis *Über die Bildung des Arztes als Klinikers und als Staatsdieners* (On the Education of Physicians as Clinicians and Civil Servants) by Philipp Joseph Horsch (1807)

An additional search in the *LIVIVO* database reveals another thesis (5) entitled "What can a well-equipped clinical school do for the state?" (*Was kann eine gut eingerichtete klinische Schule dem Staate nuetzen?*), which might, at first sight, according to its title, seem to bear some relationship to

ME. However, a reading of its barely four pages reveals very little connection. Rather, it is a thesis more akin to medical ontology, reminiscent in its wording of Luther's *95 Theses of Wittenberg*.

Already in our XXI century, the thesis is directly referenced twice in Google Scholar and indirectly 5 times and always in documents from the beginning of the XIX century and in no case with derivative citations. The author is referenced 15 times in texts from the beginning of the 19th century and 23 times in documents published after 2000. This recent interest could be due to what we could well call Romantic Medicine (6) and in Germany especially since all references Google Scholar are in German. The current idea of Practical Medicine and its teaching (7) has now revived and vindicated Germanic authors of the early 19th century, including Horsch, as early proponents and pioneers of what has also been called Medical Bedside Training (*Medizinisches Training am Krankenbett*) associated with Healthcare for the Poor (8) (*Gesundheitsfürsorge für die Armen*). However, both the title of the thesis and its author do not appear in any Web of Science-Clarivate database including an exhaustive search in the ProQuest™ Dissertations & Theses Citation Index. Likewise, there is no trace of author and thesis in PubMed.

3. Results

3.1. About the author and his cited colleagues

The author himself, Philipp Joseph Horsch (1772-1820), provides a brief curriculum vitae on the second page of his published thesis, which reads as follows: Doctor of Philosophy, Medicine and Surgery, medical advisor (*Medicinalrath*) to the Grand Duke-Bishop of Würzburg, public and ordinary Professor of Medicine at the University of the Grand Duke Julius (9), physician (*Physicus*) of the Residence City and clinician of the prisons of Würzburg. He also ran a pioneering outpatient clinic (10), like the polyclinic established by Jacob Fidelis Ackermann (11) in Heidelberg. Horsch's other written scientific output (12-17), apart from his thesis, can be considered abundant for his time, and all of them are focused on clinical considerations.

In his thesis, as in the rest of Horsch's work, we can glimpse the remarkable interaction with his colleagues at the University of Würzburg and especially with the physicians of the Julius Hospital (*Juliusspital*), whom he quotes profusely throughout the thesis. Special mention is made of Ackermann (11) from Heidelberg, but the influence of medicine at the University of Paris with its medical schools (18) can also be seen in later Horsch's work on the concept of medical education in a chapter on the study of medicine at the university (*Rede über das studium der Medizin in Universität*) (19).

Horsch praises his contemporaries (17, 19, 20) at the clinical school in Würzburg: the then already-deceased clinical professor (Joseph Nikolau, added) Thomann; the also-deceased professor (Friedrich, added ?) Willhelm; the "esteemed veteran Carl Caspar on Siebold, founder of the surgical section of the Julius Hospital as a clinical school" (3, p. 50); his sons Barthel von Siebokl (sic, erratum), head of the surgical section of the hospital; and Elias von Siebold, head of the obstetrical wing of the *Juliusspital*, "both known for their writings and honors in the teaching profession" (3, p. 50); and "to the esteemed Professor (Nicolaus Anton, added) Friedreich, whose efforts are directed towards the true education of the physician" (3, p. 51). About these last three he wrote: "my colleagues thus unite their zeal for our clinical institution, which extends to the whole of medical practice, , there is no separation of the art into different parts, but all three endeavor to treat the art of healing as a whole, and their classes differ only in the different direction chosen, in the medical clinic the purely medical patients, in the surgical clinic those patients whose cure requires an operation or other manual assistance, in the obstetric center, besides teaching obstetrics in normal cases, they instruct in the treatment of sick pregnant women, abnormal deliveries and sick women who have recently given birth" (3, p. 51). He also quotes the late Professor (Johann Joseph, added) Dömling "founder of a local secondary school from the outpatient practice." (3, p. 51) with whom he had co-published a journal entitled *Archiv für die Theorie der Heilkunde* (Archive for the theory of Medicine) in Nürnberg with one single volume (21).

Horsch's influence has been traced primarily through visits to his outpatient clinic, the *Bürgerspital zum Heiligen Geist* (Citizen's Hospital of the Holy Spirit), which Johann Lucas Schönlein, the father of modern German medicine, visited as recorded in Manger's book (21). The current interest in these romantic medical figures of the early 19th century, and particularly those of the Würzburg school, may well stem from Gerabek's article (22) in which Dömling, Horsch and others are described as doctors of the poor and ignored by German medical science. Gerabek is more lenient, telling them "almost forgotten" (22).

3.2. *The contexts of the thesis*

At that time, at the beginning of the 19th century, Europe with Germanic states included was immersed in the devastating Napoleonic wars. Even the Bavarian city of Würzburg itself suffered the tribulations of war and changes in sovereignty, belonging to one state or another. Nevertheless, the German university saw exuberant development, with the consolidation of the classical universities (Würzburg, included) and the emergence of other powerful universities during the 19th century. Medical studies in Würzburg already had a remarkable tradition and a strong track record throughout the 18th century, bolstered by being imparted at one of the pioneering university hospitals: the *Juliusspital* (23), which the author considers to be well equipped and suitable for the education of the clinician, as "the observant participant in the study of medicine is a very important part of the training of the clinician"(3, p. 39) because "the participant observer enjoys a special advantage at the hospital, since he can observe patients as he pleases" (3, p. 40), although Horsch acknowledges the limitations of some hospitals "are not large enough to accommodate sick children and women who have recently given birth to be admitted to them for the treatment of diseases requiring special training." (3, p. 51). The author embraces the neo-Hippocratic conception of medical art but tinged with the German Enlightenment's own assumptions (*Aufklärung*). He uses the term light (*Lichte*) up to six times always in the sense of "light that fights against darkness" (3, p. 35), "new discoveries ... he had already brought them to light," (p. 6) "however much light may be expected," (3, p. 29) "to shed light on the mutual relationship between the hospital and outpatient clinic." (3, p. 48) We consider, then, that the thesis is not only characteristic of the German Enlightenment, but also elucidates German ME and, thus, European ME.

3.3. *Conceptions of medical educational*

The efforts of physicians of that time, such as Horsch, were focused on liberating medicine from two heavy burdens: mere theoretical speculation, which leads to charlatanism; and primary empiricism, which only leads to mere isolated, superficial practice, reducing medicine to a trade. Both would be merely guided by the regulative *de juvantibus et nocentibus* (about helpful and harmful) (3, p. 18). The central axis of his conception of medicine and its teaching at clinics should be understood in its double meaning: inquisitive (centered on anamnesis and semiotics) and applicative (centered on the implementation of the curative method itself). The author advocates for the simultaneous use of both meanings, and criticizes (Ignaz Paul Vital, added) Troxler (24) as a reductionist, accusing him of "confusing the true vision of the clinic ... which does not show at all what the clinic in the State really is." (3, p. 30-31)

3.4. *Overcoming dilemmas*

The thesis presents a series of dilemmas related to basic conceptions of ME, set out as dichotomies to be overcome by emphasizing clinical teaching. Reading this thesis, one sometimes has the melancholic feeling that the problems affecting ME that are described persist even today, more than 200 years later. Thus, a study (25) shows that 64% of young medical professionals in Germany do not feel adequately prepared for the practical requirements of the medical profession. Equally, in Spain medical graduates assess their acquired competences as rather low above all eminently practical competencies (26). Even clinicians point out the multiple barriers for clinical

teaching in primary care (27). These educational dilemmas have already been discussed by the author and are presented here in a more synoptic way, as follows:

The new versus the old. Horsch (3, p. 5) notes that the principle has been established that it is the indispensable duty of the physician to keep abreast of the latest developments in his science, and that efforts have, therefore, been made to revitalize the academies, and the professors, among which the old still lingers. But he points out that there is, perhaps, nothing more damaging than regulation, for mankind is not concerned precisely with the novelty of the knowledge with which the aspiring physician is endowed, but with the truth of it, its applicability, and its confirmation in real life. Truth never becomes obsolete, it remains eternally new, and it alone gives science its true perfection. The solution to the above dilemma is the primacy of medical truth, of knowledge over self-deception and belief, on the one hand, or of stagnation and blindness, which makes it impossible to perceive the lost path, on the other; that is, to position oneself unilaterally in one or the other position.

Horsch acknowledges that "Hippocrates gave us such important teachings that they will always remain of equal value," (3, p. 55) but, at the same time, criticizes that: "the same one-sidedness is that of those who only consider the old as the true philosopher's stone, and its age as the true Golden Age, and despise the new one as a kind of Iron Age." (3, p. 6) His conclusion is definitive when he states: "The new is organically linked to the old, and it will never be possible to draw an exact line between the two ... and this rationale should be the norm for educational institutions." (3, p. 7)

Theory vs. practice. The author declares that ME is not intended to make the pupil acquire a mechanically organized body of knowledge, or to have pupils adopt a chaos set of theoretical opinions. Here he speaks of subject matters and their scope; hence: "What is required here is not a complete history of the subject-matter, but an extract of the best, as far as the limits of the semesterly lectures permit." (3, p. 10). The author continues: "The object of medicine is the human being and his relationship to nature as a whole. The view of nature is twofold, the empirical and the speculative ... This is the basis of one of the most important regulations for medical teaching institutions in medical schools." (3, p. 10) There is a search for convergence between "reflection, which precedes all speculative research, and without which no speculation is possible; but without speculation, empiricism remains meaningless and out of place." (3, p. 10) Horsch insists on "not degrading ME into a mechanical routine, which adheres to simple empiricism" (3, p. 15). His conception of ME is conclusive: "mere empirical findings are not enough; theory must intervene, which processes this material in order to proceed to the depth of the disease, its origin and development." (p. 21)

Medical art versus medical science. The author speaks of medical art as the application of theoretical scientific knowledge to clinical practice. Speculation is empty of content where it has not been preceded by empiricism and slips into charlatanism. There is no medical art unless it is preceded by scientific knowledge, without which it is reduced to mere craftsmanship. Like Ramón y Cajal (28) who criticized "big practitioners" (*practicones*, in Spanish), Horsch reproached the ME of his time when he stated: "In academic lectures it is often found that the empirical part, however well the instruction is carried out, is too much isolated and loses track of the theoretical advances" (3, p. 11). From this it can be inferred that the author endorses the synthesis of art and science, not to be considered antithetical concepts, but rather complementary, generating hybrid knowledge between the two, in order to extract an always timely recommendation of already integrated theoretical and practical approaches "which characterizes the true artist of healing, who detests artisanal cures" (3, p. 25). The clinic as a school of art is "therefore, the cornerstone of medical knowledge and technical knowledge and skills, and the unity of these can only be achieved through it." (3, p. 33)

The clash between medical art and medical science continued to fester in the first third of the 19th century, and here Horsch anticipates it to some extent. This confrontation was magnified by the clash between two different approaches to research in medicine: the supposedly scientific, numerical, and statistical (quantitative) one, proposed by Pierre Louis (29) versus the artistic approach, centering on case studies (qualitative) proposed by Risueño de Amador (30).

Hospital medicine versus outpatient medicine. The discussion between the potential for clinical education in hospital and outpatient medicine is discussed at length in the thesis (3, p. 39-44). According to Ackermann, who called the latter a polyclinic, it was preferable. Horsch cites the full reference to Ackermann's writings (31) when discussing both modalities. Faced with this other ambivalence, Horsch concludes that both have their specific functions and can be equally valid as long as they are centered on the clinic; as Horsch states: "The true training school for the medical artist is the clinic, the value and importance of which prevails in a single voice" (3, p. 12). The author asks where the clinical institutions of the various academies concur, answering that they exist in their own hospitals, with some using patients from private (outpatient) practice for clinical instruction, and others combining both institutions.

Horsch worked in both areas, but mainly in outpatient medicine, following the model of the Heidelberg professor Ackermann, but recognizing the potential of the *Juliusspital*. Embracing an integrative conception, he states: "only when both institutions are used at the same time and fulfil the demands that can be placed on them has clinical teaching reached its true perfection" (3, p. 41) and "both are equally indispensable for the education of the physician," (3, p. 42) although he later states that "the hospital teacher ... is obliged to teach most of this lesson only historically, while the students in the outpatient clinic are instructed in everything." (3, p. 47) He then acknowledges that "the *Juliusspital* here is a specially built hospital clinic which, thanks to the most recent improvements and upgrades and facilities, leaves little to be desired, as described in Thomann's Annals (*Annalen*) (32, 33) and several others." (3, p. 48)

State physician versus private physician. Horsch states that "the unfortunate idea that the truly educated doctor is only for those (the rich) and that the poorer class can be satisfied with routine doctors should not be discussed here although experience, unfortunately, shows that various individuals appear as doctors who have neither the profession nor the education for it" (3, p. 17). Here he speaks of the intrusiveness of a branch of the medical profession, "the so-called minor surgeons" (*die sogenannten Kleinchirurgen*), who are admitted to the sacred halls of Aesculapius out of favoritism," (3, p. 17) and even against the rare figure of the *afterarzt* (the anus physician) (sic!) "who creates the concept of illness from certain sensory characteristics and administers what his master or his prescription book ... has taught him." (3, p. 18) But he also recognizes that: "As a rule, the physician begins his practical career in the barracks of the poor, so he must know how to perform his art even in the most adverse circumstances." (3, p. 43)

The author criticizes the fact that private doctors, reserved for the rich, are generally well trained, while ordinary doctors are, routinely, poorly trained, making this powerful argument: "If the true education of the doctor is important for humanity, there is certainly no reason to educate or tolerate doctors who are incapable of a true knowledge of disease." (3, p. 18)

There were far more controversial dilemmas than those discussed so far. Others included questions such as internal versus external causes of illness, with the author concluding that they may be due to "an act of interaction" (3, p. 23) between the two, with this approach to the hypothesis of interaction being quite novel. The author does not consider all these dichotomies antagonistic, or exclusive. Rather, the two options are considered integrable, synthesizable, because deep down they are complementary; hybrids, as they now say.

3.5. *The physician as a civil servant*

A preliminary question arises here: what was Horsch's conception of the state (*Staat*) at the beginning of the 19th century: the state as a kingdom or principality, the city-state, or a supposedly unified Germany? Irrespective of which conception is assumed, one of Horsch's most original contributions is the consideration of the physician as a civil servant of the community. He is also the state. (She is too, we add). Attacks against doctors, so common in Spain (34), are attacks on the state. On the very first page of the text of his thesis he makes this doctrinal statement:

... the physician himself should intervene directly in the aims of the government; he should not limit himself to assisting through his care the inhabitants of the State but should also look after everything that affects the public as a whole. (p. 3) ... he should not limit himself to fulfilling these functions in a certain district, but rather throughout the country. (3, p. 4)

This statement, which may seem irrelevant now, because it is taken for granted, is significant in the context of the time in history when he made it: the early 19th century. The author is tacitly telling us that medicine is too important to be left in the hands of politicians alone. He goes on to say: "The importance of the medical profession... is why the State should take care of ME establishments and why it desires the greatest possible development of these educational institutions in order not to aspire only to an apparent perfection." (3, p. 4)

The state must not only desire that all practicing physicians work together for the general state of health, but it is necessary that "the foundations for this be laid at educational institutions." (3, p. 52) For, the author continues, "as long as physicians work in isolation and without higher unification, the aim of the state will never be achieved." (p. 52)

Horsch (3, p. 56-58) sets out the areas in which the physician must act and be trained: hygiene, with responsibility for health police stations (*Gesundheitspolizeianstalten*), with the consideration of state medicine (*Staatsarzneikunde*) as "true medicine, since there is no other difference between the two than that of the relationship with an individual object, the human being, and the relationship with a multiplicity as a relative individuality, the state." (3, p. 56) But, at the same time he acknowledges that "there is little hope that the so-called state medicine will reach that stage of culture of which it is capable. It is, therefore, necessary that all medical disciplines, and not only a part of medicine, be objectified and imparted in the clinical school" (3, p. 57). Thus, he recognizes that "forensic medicine, a discipline of state medicine, has benefited from practical exercises by dissecting cadavers to great advantage ... and this requires a special institution to provide teaching for medical students under the guidance of their teacher in all subjects" (3, p. 57). And he points out that "a first step in this direction was taken at the end of the 18th century in Landshut," alluding but not citing an article from the *Salzburger Medicinisch-Chirurgische Zeitung*, an Austrian journal founded in 1774 and closed in 1864 despite its excellence.

He also emphasizes as a function of state medicine "to eradicate as far as possible national epidemics, especially smallpox, which still rears its head here and there despite the great efforts that have been made to eradicate it" (3, p. 58). Horsch goes on to say that the education of the future state physician in the face of epidemics should not be limited to calculating ratios, but that "he should be able to extract those results which will enable him to investigate the causes of the increase or decrease of the population, the diseases peculiar to each age and sex, and their causes, in order to orient himself to find the means of reducing mortality. This difficult and complicated undertaking certainly requires instruction and training in order to be able to undertake it successfully on one's own account" (3, p. 59). Here, and not out of nationalist exaltation, we must refer to the Spanish expedition led by Balmis (35, 36) which brought the smallpox vaccine to Asia and the Americas in 1803-1806.

3.6. Pedagogical recommendations

Throughout the thesis there are abundant pedagogical recommendations that should not be ignored, because they are perennial, in the Leibnizian sense (37) of the term. Some of these include:

- The physician in his future practice, where he should have the guidance of a teacher (3, p. 15).
- Complex cases are extremely important and instructive for clinicians (3, p. 19) and these difficult clinical cases "should reveal to him (the physician) the true relationship between experience and speculation, pointing out to him the necessity of a mutual interaction between the two." (3, p. 20)
- The best instruction can be obtained at well-equipped clinical institutions" (p. 21). And in order that "ME may be as perfect as possible, the future physician must be prepared for both practice and public service." (3, p. 61)
- Harmony between educational institutions can only be achieved through active cooperation by their teachers. They should work out a general plan of general education and, through their advice, strive to progressively improve it. (3, pp. 11-12). The current emphasis is not only on collaboration between teachers, but also schools (38), demanding a nationwide agreement as a means to obtain high-quality education
- In view of the variety of pupils attending clinical schools, and how varied their preparatory educations are, clinical instruction is proposed as a means of overcoming this variability. (3, p. 23) Without it, the aspiring physician receives no more instruction than a tradesman, and such instruction is mere practice. (3, p. 24)
- The clinician should not be concerned with theoretical teaching (3, p. 24), although he recognizes that "we can never say that medical theory is complete." (3, p. 34)
- The author states that "we cannot promise more than we can deliver, insofar as our other medical knowledge is advanced, but that for the time being it must gain more solidity." (3, p. 29-30)
- The physician must have the soul of a philanthropist in the face of "patients who have long been suffering from ailments and have found no help from their physicians, or have been abandoned by less compassionate ones, and often place all their hope in a newly arrived physician, even if he cannot fulfil their exaggerated hopes." (3, p. 44) Ultimately, Horsch argues for the humanitarian training of the aspiring physician, one that avoids painful and inhumane episodes, and the development of professionals who are morally resilient, insisting on "the treatment of old and sick patients, convicts and even those prosecuted by justice." (3, p. 60)
- The physician's ME should "enable him to observe the general influences (food, drink, housing, weather conditions, etc.) on the inhabitants of a whole city, and the calculation of this influence on general health." (3, p. 47)
- Education in emergency medicine is recognized as necessary to enable physicians to perform properly in the event of emergencies, as "unfortunately we are experiencing more and more cases in which the rescue was not as successful as desired" (3, p. 59). "The advantage of training in rescue activity, especially in real cases, for which there is never a lack of opportunities at the academies, especially if they are located in somewhat populated areas, is, therefore, obvious." (3, p. 60)
- Horsch explains the need for specific training in the writing of medical information for which "it is very useful to practice more extensively in reports and expert opinions Not everyone with a scientific education, even if they possess superior knowledge, has the same skill in the written essays ... that reach medical colleges and courts." (3, p. 62) He proposes real rather than simulated cases when he says: "If this instruction, at the same time on real cases, is of more interest, and the work is more diligently undertaken, the teacher, who is also a physician, has the best opportunity to give practical instruction for future public service." (3, p. 62)
- The case study and its pedagogical complement, the case method, are the basic didactic and cognitive resources. Thus, Horsch defends them when he states: "If all police and court cases generated are used for this purpose, their diversity will captivate attention and revitalize the activity because real-life intervention always gives the beginner a greater incentive" (3, p. 62). We now call this motivation for learning and rationale for teaching.
- At the end of his thesis, the author proposes the design of a brief curriculum for medical training at a clinical institution which he will open the following summer to teach both internal medicine and surgery combining these two fundamental but historically distant medical approaches as a great achievement, also including notions of pharmacy, hydrology and "psychic" (sic) medicine.

4. Discussion

A question arises: how topical are this thesis's approaches? Here we have tried to present considerations that are still relevant to ME today. An in-depth investigation of this thesis would be possible and desirable, but we are aware of a bias that tends to appear in historical studies of medicine: presentism; that is, interpreting the past based on contemporary concepts and values. This thesis was a product of its time in history but also represented an unquestionable step forward for ME in its emphasis on the clinical sphere, on practice; and also in its consideration of the physician as a civil servant requiring medical training.

The thesis also featured a novelty for its time; in particular, it constituted an effort to achieve social medicine; that is, medicine for all, which is why it particularly praises the work carried out at the *Juliussspital*, whose medical/surgical clinic in the city center not only admitted patients from the city and the countryside, but also all sick servants and day laborers. In addition to the clinical wards, there was a special institution for epileptics, an institution for the insane, special rooms for patients suffering from exanthema, and special wards for venereal diseases. In particular, "the institutes for servants and officers offer an excellent opportunity to become acquainted with the diseases of these classes." (3, p. 49) In view of the *Juliussspital's* outstanding facilities, Horsch acknowledges "the excellent predilection of our government for the greatest possible improvement of the academic institutions of learning, the significant funds of the Julius Hospital, and the excellent reputation of the professors employed by it." (p. 49) The superiority of German medical science over that of other notable nations, such as the USA, may well be due to this prevailing practice of great involvement and funding by the State (39).

It should also be noted that, in the face of a series of classic dilemmas that have been undercutting the foundations of ME with their exclusions, the author employs a convergent, complementary, and integrative approach shunning sterile antagonisms.

5. Conclusions

- Admittedly, the thesis was rather an island confined to the German sphere and only during the first decades of the 19th century. However, this pioneering thesis is a qualified contribution to ME because of its ground-breaking originality, illuminating medical instruction. It is not surprising then that their approaches and conceptions of medical education are being taken up in part by the Practical Medicine movement (7, 8, 40), although Practical Medicine has been talked about for some time past (41).
- We believe that this review of it, which upholds its significance, is warranted and apropos. This type of historical/educational studies of academic documents, such as doctoral theses, should be undertaken in order to comment on the origins of medical topics, institutions, and human groups, in the case of women physicians (42, 43). Consequently, old theses are scientific-medical and pedagogical documents and at the same time micro topics of research in ME (44).
- We have striven to do so, grappling with the additional difficulty of undertaking a complicated work of multilingualism, combining three languages at the same time: German, Spanish and English. An additional challenge was posed by the eminently cultural and idiosyncratic nuances of a text written in a certain language forming part of a certain culture during a certain historical period, which are somewhat alien to us. The use of specifically German terms adds a further complication; for example, being able to differentiate between terms such as *Mediziner*, *Arzt*, *Medicinalrath*, *Leibmedikus*, *Oberwundarzt*, *Volksarzt*, *Physicus*, *Klinischer*, *Heilkünstlet*, *Kreisarzt* and *Afterarzt*, all akin to "physician," entails the mastery of subtle linguistic nuances transcending our general mastery of German language and German culture. Listen, German colleagues, take note of this subject!
- Advances of this review relevant to ME are suggested. A comparative education study would be admissible by comparing the multiple multicultural meanings of a medical term (here, for example, the multiple German meanings of *physician*) as an exercise in socio-

medical nosology. Another possible development along the lines of this study would be to investigate Bongard's short thesis (3), an almost hermetic text for us, which perhaps others better equipped might be able to make sense of.

- Three core contributions can be inferred from this study in brief:
 - 1. A German doctoral thesis published in 1807 is analyzed. It is probably the world's first doctoral thesis in the field of medical education.
 - 2. The text addresses a series of perennial dilemmas encountered by medical professionals in their education and practice.
 - 3. The thesis offers a series of considerations and pedagogical recommendations about medical education that are still relevant today.
- We conclude by making a recommendation: a facsimile edition of the thesis glossed here could be welcomed.

Funding: The present research has not received specific grants from public sector agencies, commercial sector or non-profit entities as financial support for the research, authorship, and/or publication of this article.

Declaration of conflict of interest: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Author contributions: The four authors were similarly involved in the study without a differentiated specialization. All authors reviewed and approved the manuscript in its final form before submission.

6. References

1. Aristotle. *Metaphysics*, Books I-IX, H. Tredennick, translator. Harvard (MA), Harvard University Press, 1933, p. 12.
2. Arias-Rivera EE, Colmenares-Rivera C, Alarco JJ, Chacón-Torrío H. Association between scientific production of the advisor and publication of medical theses in indexed journals. *Rev Esp Educ Med*. 2024. 3, 613051. <http://doi.org/10.6018/edumed.613051>
3. Horsch PJ. *Über die Bildung des Arztes als Klinikers und als Staatsdieners* (On the Education of Physicians as Clinicians and Civil Servants), doctoral dissertation. Würzburg, JJ. Stahel, 1807. <https://digital.zbmed.de/urn/urn:nbn:de:hbz:38m:1-47283>
4. Guba, EG. Criteria for assessing the trustworthiness of naturalistic inquiries. *Educ Commun Technol J*. 1981. 29, 75-92. <https://cecas.clemson.edu/cedar/wp-content/uploads/2016/07/3-Guba1981-30219811.pdf>
5. Bongard JH. *Was kann eine gut eingerichtete klinische Schule dem Staate nuetzen?* (What can a well-equipped clinical school do for the state?), doctoral dissertation. Hagen, University of Landshut, 1803. <https://digital.zbmed.de/zbmed/urn/urn:nbn:de:hbz:38m:1-52684>
6. von Engelhard D. *Medizin in Romantik und Idealism*, Vol. 3. Stuttgart, Fromman-Holzboog, 2023. <http://doi.org/10.5771/9783772836534>
7. Kinzelbach A, Neuner S, Nolte K. *Medicine in Practice: Knowledge, diagnosis and therapy*. In *Medical Practice, 1600-1900*, Vol. 96. Amsterdam, BRILL-Clio Medica Online. 2016, pp. 99-130. https://doi.org/10.1163/9789004303324_006
8. Neuner S, Nolte K. Medical Bedside Training and Healthcare for the Poor in the Würzburg and Göttingen polyclinics in the first half of the nineteenth century. In: *Medical Practice, 1600-1900*, Vol. 96. Amsterdam, BRILL-Clio Medica Online, 2016, pp. 207–229. https://doi.org/10.1163/9789004303324_011
9. Schwab R. Über die Bedeutung des Juliusspitals für die Entwicklung der Inneren Medizin (On the importance of the Julius Hospital for the development of internal medicine). In: *Das Juliusspital Würzburg in Vergangenheit und Gegenwart: Festschrift aus Anlaß der Einweihung der wiederaufgebauten Pfarrkirche des Juliusspitals* (The Juliusspital Würzburg in the past and present: Commemorative publication on the occasion of the inauguration of the rebuilt parish church of the Juliusspital). Würzburg, Verlag Oberpflegeamt des Juliusspitals, 1953, p. 14–24.
10. Baumgart G, Horsch, Philipp Joseph. In: Gerabek WE, Bernhard D, Haage BD, Keil G, Wegner W, editors, *Enzyklopädie Medizingeschichte* (Encyclopedia of the history of medicine). Berlin, De Gruyter,

2007, pp. 619-620.

11. Gerabek WE, Ackermann, Jacob Fidelis. In: Gerabek WE, Haage BD, Keil, G, Wegner W, editors, *Enzyklopädie Medizingeschichte* (Encyclopedia of the history of medicine). Walter de Gruyter, Berlin, 2011, p. 6.
12. Horsch PJ. *Belehrung und Beruhigungsgründe in Hinsicht der Gefahr des gelben Fiebers in Deutschland, zunächst für die Bewohner meines Vaterlandes entworfen* (Instruction and reassurance regarding the danger of yellow fever in Germany, initially designed for the inhabitants of my fatherland). Arnstadt, Langbein und Klüger, 1805.
13. Horsch PJ. *Versuch einer Topographie der Stadt Würzburg, in Beziehung auf den allgemeinen Gesundheitszustand und die dahin zielenden Anstalten* (Attempt at a topography of the city of Würzburg, in relation to the general state of health and the institutions aimed at it). Arnstadt, Langbein und Klüger, 1805.
14. Horsch PJ. *Beobachtungen über die Witterung und die Krankheiten in Würzburg im Jahre 1807; nebst einer ausführlichen Nachricht von der klinisch-technischen Bildungsanstalt des Arztes als Kliniker und als Staatsdiener* (Observations on the weather and diseases in Würzburg in 1807; together with a detailed report on the doctor's clinical-technical educational institution as a clinician and public servant). Rudolstadt, Klüger, 1808.
15. Horsch PJ. *Handbuch der allgemeinen Therapie: als Leitfaden zu seinen Vorlesungen* (Handbook of general therapy: as a guide to its lectures). Würzburg, Joseph Stahel, 1811.
16. Horsch PJ. *Annalen der klinisch-technischen Schule zur Bildung des Arztes als Kliniker und als Staatsdiener* (Annals of the clinical-technical school for the education of physicians as clinicians and public servants), 3 Vols. Rudolstadt, Klüger, 1809-1812. Würzburg, Joseph Stahel, 1812.
17. Horsch PJ. *Einleitung in die Klinik und die damit zu verbindenden Untersuchungen über die herrschende Konstitution; als Leitfaden seiner klinischen Vorlesungen* (Introduction to the clinic and the associated investigations into the prevailing constitution; as a guide to its clinical lectures). Würzburg, Joseph Stahel, 1817.
18. Bynum W. Medicine in the hospital. In *The History of Medicine: A very short introduction*, Chapter 3. Oxford, Oxford Academic, 2013, p. 43-67. <https://doi.org/10.1093/actrade/9780199215430.003.0004>
19. Horsch PJ. Rede über das studium der Medizin in Universität. In *Annalen der klinisch-technischen Schule zur Bildung des Arztes als Kliniker und als Staatsdiener*, Vol 1. Rudolstadt, Klüger, 1809, pp. 1-26.
20. Gerabek WE, Bernhard D, Haage, BD, Keil G, Wegner W, editors. *Enzyklopädie Medizingeschichte* (Encyclopedia of the history of medicine). Berlin, Walter de Gruyter, 2007.
21. Manger, B. *Johann Lucas Schönlein und die Geburt der modernen Medizin* (Johann Lucas Schönlein and the birth of modern medicine). Heidelberg, Springer Verlag, 2023.
22. Gerabek WE. Der Würzburger physiologieprofessor und stadttarmenarzt Johan Joseph Dömling (1771-1803) - ein fast vergessener pionier der romantischen heilkunde (The Würzburg professor of physiology and medical offer for the poor Johann Joseph Dömling (1771-1803) - an almost forgotten pioneer of the romantic medicine). *Würzburger Medizinhistorische Mitteilungen*. 2003, 22, 21-29.
23. Mettenleiter A. Das Juliusspital in Würzburg (The Juliusspital in Würzburg). In *Medizingeschichte* (Historia de la medicina), Vol. III. Würzburg, Verlag Juliusspital, 2001, p. 123.
24. Furrer D. *Ignaz Paul Vital Troxler (1780-1866). Der Mann mit Eigenschaften* (A man with qualities). Zürich, Verlag Neue Zürcher Zeitung, 2010.
25. Dannenberg KA, Stroben F, Schroeder T, Thomas A, Hautz WE. The future of practical skills in undergraduate medical education - an explorative Delphi-Study. *GMS J Med Educ*, 2016. 15, 33(4), Doc62. <http://doi.org/10.3205/zma001061>
26. Larrubia JJ, Peláez C, Rodríguez-Capitán J, Pavón FJ, Miguel Romero-Cuevas M, Jiménez-Navarro MF. Evaluation of the acquisition of competences in the cardiovascular system in Medicine: self-perception, class attendance and academic performance. *Rev Esp Educ Med*. 2023, 1, 36-46. <http://doi.org/10.6018/edumed.548881>
27. Reyes-Rojas M, Rodríguez-Navarro D. Perception of clinical tutors belonging to family health centers in Chile about the barriers for clinical teaching in primary care. *Rev Esp Educ Med*. 2025. 2, 645591. <https://doi.org/10.6018/edumed.64559>

28. Ramón y Cajal S. *Los tónicos de la voluntad: Reglas y consejos sobre investigación científica*. Madrid, Austral, 1898.
29. Morabia A. In defense of Pierre Louis who pioneered the medical approach to good medicine. *J Clin Epidemiol*. 2009. 62(1), 1-4. <https://doi.org/10.1016/j.jclinepi.2008.07.007>
30. Fernández-Guerrero IM, Torralbo M, Fernández-Cano A. A forerunner of qualitative health research: Risueño's Report against the use of statistics. *Qual Health Res*. 2014, 24(1), 124–135. <http://doi.org/10.1177/1049732313519707>
31. Ackermann, JF. *Nachricht von der Organisation und den Gesetzen der Kurfürstlichen Poliklinischen Anstalt* (News of the organization and laws of the prince elector's polyclinic). Heidelberg, Shwan und Isötz, 1805, 8 vols.
32. Thoman JN. *Annales Instituti medico-clinici Wirceburgensis* (Annals of the Medical-Clinical Institute of Würzburg), Vol. 1 & 2. Würzburg, JJ. Stahel und Sohn, 1801-1802.
33. Thoman JN. *Annalen der klinischen Anstalt in dem Julius-Hospitale zu Würzburg* (Annals of the clinical institution in the Julius Hospital in Würzburg), Vol. 3-5. Würzburg, Gebrüder Stahel, 1803-1805.
34. OMC-Organización Médica Colegial de España. *Observatorio Nacional de Agresiones a Médicos y Médicas (Internet)*. 2024 bate el récord de agresiones a médicos/as. Madrid, OMC, 2024. <https://www.cgcom.es/observatorios/agresiones>
35. Ramírez SM. *The Balmis expedition, the first model for the global fight against pandemics*. Madrid, Consejo Superior de Investigaciones Científicas, 2023. http://libros.csic.es/product_info.php?products_id=1680
36. Tuells J, Echániz-Martínez B. Francisco Xavier Balmis (1753-1819): formación y práctica como cirujano de emergencia. *Emergencias*. 2021, 33, 229-233. https://revistaemergencias.org/wp-content/uploads/2023/08/Emergencias-2021_33_3_229-233-233.pdf
37. Orio de Miguel B. Leibniz y la Philosophia perennis. *Estudios Filosóficos*. 2022, 36(101), 29–58.
38. Bridges DR, Davidson RA, Odegard PS, Maki IV, Tomkowiak J. Interprofessional collaboration: three best practice models of interprofessional education. *Med Educ Online*. 2011, 16. <https://doi.org/10.3402/meo.v16i0.6035>
39. Zavlin D, Jubbal KT, Noé JG, Gansbacher B. A comparison of medical education in Germany and the United States: from applying to medical school to the beginnings of residency. *Ger Med Sci*. 2017, 15, Doc15. <https://doi.org/10.3205/000256>
40. Alagappan R. *Manual of Practical Medicine*, 7th ed. Nueva Dheli, IN, Jaypee Brothers Medical Publishers, 2023.
41. Carter AH. *Elements of Practical Medicine*, 5th ed. Londres, H.K. Lewis, 1888.
42. Fernández-Cano A, Fernández-Guerrero IM, Fernández-Guerrero C. Hispanic women in doctoral medical education in 19th century. *Educ Medica*. 2016, 17(4), 152-157. <https://doi.org/10.1016/j.edumed.2016.03.002>
43. Fernández-Guerrero IM, Fernández-Guerrero C, Fernández-Cano A. Tesis doctorales de Medicina defendidas por mujeres pioneras en España (1882-1954). *Educ Medica*. 2019, 20(1), 60-66. <https://doi.org/10.1016/j.edumed.2018.01.003>
44. Fernández-Guerrero IM, Fernández-Guerrero C, Fernández-Cano A. An interpretative review of a Spanish pioneering doctoral thesis (1855) about the need of travels to complement medical education. *Rev Esp Educ Med*. 2024, 5(4), 645591. <https://doi.org/10.6018/edumed.634761>

