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Geoscience or spatial dynamics of knowledge: The intellectual trajectory from Physiognomy to Phrenology

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Davide Viggiano¹



Figure 3. The painted decoration of the ceremonial hall of the Academy of Athens is the work of the Austrian painter Christian Griepenkerl (1839-1916), a student of the great painter Karl Rahl (1812-1865) who was Professor of the Academy of Fine Arts in Vienna. The iconographic ensemble that took place in the two years 1878-1880 has as its theme Prometheus Bound of Aeschylus and is related to the idea that prevailed in the 19th century about the Academies as carriers of wisdom and light.

Abstract

This study examines the idea that the spatial dynamics of knowledge production are critical for fostering innovative breakthroughs. To illustrate this idea, we trace the intellectual transition from physiognomy to phrenology, charting its origins from Naples to Germany. In Naples, a hub of academic innovation under various regimes, Giovanbattista della Porta's 16th-century work on physiognomy, *De Humana physiognomonica* set the stage for future explorations in the body-personality relation, notably invoking Saturn to characterise melancholic traits.

In England, Sir Thomas Browne's *Religio Medici* and in Germany, Johann Kaspar Lavater's *Essays on Physiognomy* drew from Della Porta's work. Lavater's emphasis on the relationship between facial features and personality paved the way for the phrenological theories of Joseph Gall and Johan Spurzheim, who shifted focus to cranial morphology as indicative of personality traits and identified the 'organ' of melancholia beneath the parietal bones. This shift engendered a renewed interest in mind-body relations back in Naples, notably through figures such as Miraglia, though reception was mixed and ultimately resistant. While influential for a time, phrenology's influence waned as attention turned, under figures like Bianchi, towards the brain's internal structures rather than its external contours. This dynamic of the knowledge production flying away from its birthplace and then returning back to it is beautifully captured by the epigram inscribed above the door of the Aula at the Athens Academy: "*The Muses, living in Freedom, wandering for long time abroad, returning back to the much desired Greece, they dispense again to the Greek youths gifts close to their hearts*", which evokes the return of ideas to their native soil after circulating through diverse intellectual landscapes.

Key Words: Intellectual trajectory, Physiognomy, Phrenology

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Introduction

The history of medicine offers valuable insights into the mechanisms underpinning discovery and the conditions required within a community to foster revolutionary ideas or breakthroughs. Traditionally, timelines of scientific discovery have emphasised factors such as scholarly networking -collaboration, communication, and interdisciplinarity - as well as technological advancements that facilitate new modes of exploration. Other frequently cited elements include funding capacity, the nation's economic power, and prevailing cultural conditions that may enable or constrain certain developments.¹

Little attention is usually paid to the geographical dimension of intellectual thought, as though all scholars live within a single, economically privileged locus that naturally attracts talent. Yet, what if scientific thought requires geographical mobility? One might hypothesise that scholars, when confined to a particular locale, become entrenched in limited methodologies or themes. Consequently, a site once distinguished by a major discovery may ossify into an unchallenged 'cathedral', thereby stifling further innovation. If this hypothesis is correct, then the movement of ideas and scholars across regions - rather than their stagnation in a dominant hub - becomes critical for intellectual breakthroughs.

This phenomenon reveals a fascinating paradox: when an idea returns to its geographical origin after evolving elsewhere, it often arrives as something fundamentally transformed, sometimes unrecognisable from its initial conception (Figure 1). The original cultural context that sparked the idea may no longer be receptive to its evolved form, having itself transformed in the meantime. This suggests that scientific development is not merely a function of time, but rather a complex interplay between temporal progression and geographical translation.

Consider how quantum mechanics, with roots in German-speaking academia, saw crucial developments in Copenhagen, the United States, and Japan, each location contributing distinct philosophical and practical approaches to its evolution.²

This geographic dimension of scientific development suggests that the ecology of ideas requires diverse environments for optimal growth, much like biological evolution benefits from varied ecological niches. The implication for contemporary scientific practice is significant: rather than viewing the geographical dispersion of research as a logistical challenge, we might better understand it as a necessary condition for the full development of scientific concepts.

In this study, we illustrate this theory by analysing the transition from physiognomy to phrenology, which

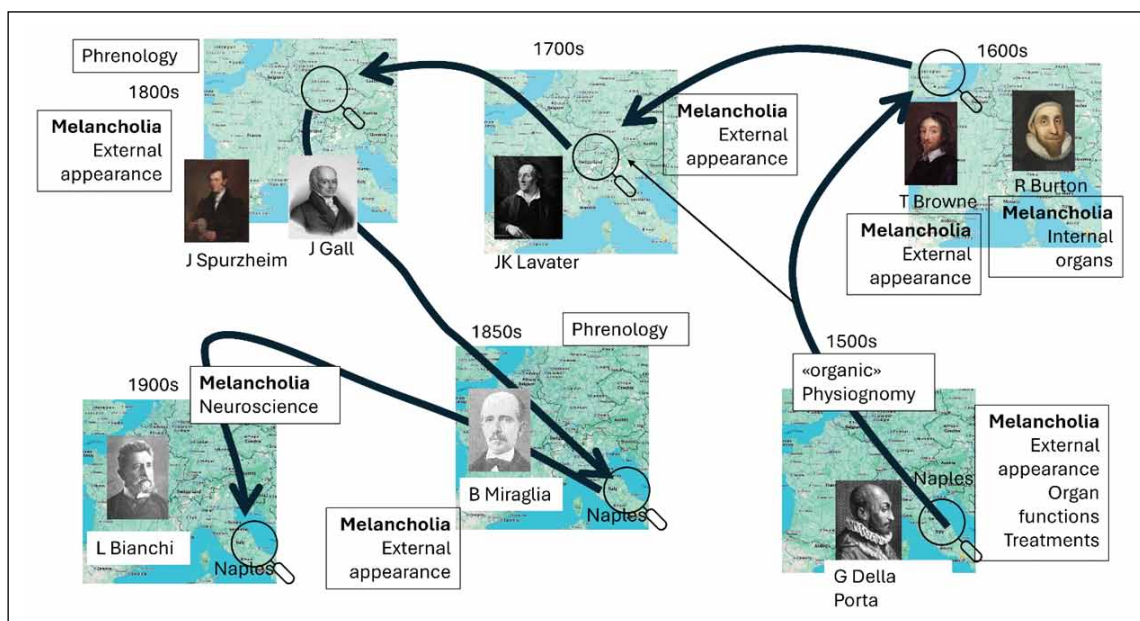


Figure 1. The intellectual trajectory from Physiognomy to Phrenology. The image exemplifies how scientific ideas need to mature far from their birthplace, following geographic and temporal trajectories. When these concepts return to their origin, they are typically transformed and may no longer resonate with the original context, suggesting that scientific development requires both spatial distance and time to reach full maturation.

represents a significant shift in the study of human character and mental faculties.

We examine the intellectual trajectory from physiognomy to phrenology, tracing its path from Naples to Germany. The transition - from physiognomy, which assesses personality based on facial features, to phrenology, which interprets mental faculties through the shape of the skull - constitutes a major shift in both scientific and pseudoscientific thinking. This evolution reflects broader changes in European intellectual thought during the 18th and 19th centuries, especially in the fields of medicine, philosophy, and anthropology.

Our case study

In the late 16th century, Neapolitan scholar Giovan Battista della Porta (1535 – 1615) revitalised the ancient practice of physiognomy - the art of discerning character from facial features. His seminal work, *De humana physiognomonica* (1586), sought to establish a systematic correlation between human appearance and inner qualities, laying a foundation for future explorations into the relationship between physical form and psychological traits.³

Della Porta's physiognomy, initially rooted in the classical tradition, was disseminated widely and influenced subsequent writings, such as the *Religio medici* by Sir Thomas Browne (England, 1605-1682).⁴ Della Porta is also cited by Robert Burton (England, 1577-1640) in the *Melancholiae anatomen* (1621).⁵

One century later, Della Porta's work inspired the *Essays on physiognomy* by Johann Kaspar Lavater (Switzerland, 1741-1801),⁶ a highly influential book translated into English and French. Lavater's work in found fertile ground in Germany, inspiring the localisation theories of Joseph Gall (Germany, 1758–1828), and transforming physiognomy into phrenology by the early 19th century.

Indeed, building upon the interest in linking physical attributes to mental faculties, German physician Franz Joseph Gall (1758–1828) developed the discipline of craniology in the late 18th and early 19th centuries. Gall proposed that each region of the brain corresponded to specific aspects of personality and behaviour, asserting that the contours of the skull could reveal these traits. This marked a shift from facial to cranial analysis.⁷

Gall's collaborators, particularly Johann Gaspar Spurzheim (1776–1832) and Giovanni Antonio Lorenzo Fossati (1786-1874), played a crucial role in popularising phrenology.⁸ Fossati was an Italian physician from Milan who moved in Paris at the age of 34

and worked there with Gall.

While Spurzheim diffused phrenology across Europe and the United States, Fossati attempted to disseminate it in Italy.

In northern Italy, Gall's theories found fertile ground in the work of criminologist Cesare Lombroso (1835-1909), who came to know them either during his studies in Paris or through the works of Spurzheim. Lombroso built upon phrenological traditions by proposing that criminal predisposition could be discerned from inherited physical and cranial anomalies. In his *Biological Theory of Criminology* (1876), Lombroso asserted that “born criminals” exhibited atavistic traits, such as pronounced cranial prognathism, asymmetrical skulls, or distinct facial features, which echoed Lavater's emphasis on the face and Gall's organology but applied them to the new domain of criminal anthropology. By mapping moral and behavioural propensities onto specific morphological markers, he extended the body-mind relational framework of physiognomy to phrenology, while illustrating how cultural and geographic contexts shape scientific innovation.

He was preceded by C. Morelli e Gatteschi in 1806 in Tuscany, and by J. Mayer in Naples in 1808,⁹ the latter making some references to Della Porta's work. Furthermore, a translation concerning phrenology by Friedlander appeared in the *Giornale Enciclopedico di Napoli* in 1807.

However, these ideas were already becoming outdated, encountering resistance in Bologna from A. Moreschi in 1807 (*Sul sistema cranioscopico*), and from Vincenzo Mantovani (1773–1832) in Milan in 1808 and Naples in 1809.¹⁰

In 1825, Fossati found a receptive intellectual environment in Naples. During his visit to the Incurabili Hospital, he met Luigi Chiaverini (1777–1834), who held the Chair of Materia Medica and General and Therapeutic Nosology. Chiaverini, a former pupil of Lamarck, had previously met Gall in 1815 and had written a commentary on Spurzheim's *Observations su la follia*¹¹. During the same visit, Fossati also met Biagio Miraglia, with whom he maintained correspondence. Miraglia would later become director of the Aversa mental asylum. Fossati also made contact in Naples with Giuseppe Saverio Poli (1746–1825), a physicist and zoologist.

In 1844, the English phrenologist George Combe came to Naples, where he met Luigi Ferrarese (1795-1855), a psychiatrist at the Aversa mental asylum near Naples and author of a treatise on phrenology.¹²

Thus, the evolution of Della Porta's thoughts re-

turned to Naples via a complex and circuitous route from Germany. However, by this time, phrenology was already in decline. The influence of Della Porta's initial ideas waned, with later Neapolitan scholars such as Leonardo Bianchi and Antonio Cardarelli moving away from Gall's theories.

The timeline reasoning

Physiognomy - the science of assessing a person's personality based on their outer appearance - was not an invention of Giovan Battista Della Porta. In his treatise, Della Porta extensively discusses two earlier authors: Polemon and Adamantius, and frequently refers to Aristotle.

The earliest known treatise on the subject is likely *Physiognomonics*, attributed to pseudo-Aristotle and dated to the 4th or 3rd century BC. The topic may have been addressed even earlier, but this represents the first extant account. It was followed by similar works, including treatises in Greek by Polemon of Laodicea (*De Physiognomonica*, 2nd century AD) and Adamantius (*Physiognomonica*, 4th century AD), as

well as a Latin text (*De Physiognomonica*), attributed to an anonymous author from the same period.

Following a period of translation into Arabic (see Table 1), there was a long interval without new contributions to the field. This gap ended with *Liber physiognomiae* by Michael Scot in the early 13th century. A list of these historical treatises is presented in Table 1.

Then, in 1586 we finally have *De humana physiognomonia* by Della Porta.¹³ His treatise is a transition point between the magical culture of the 1500s and the rationalistic thought of the 1600s. Della Porta travels extensively in Europe and, for two years after his return to Naples, dedicates himself to writing work on physiognomy.

However, an external constraint made the treatise notably distinct from its predecessors. The Bull of 1586 issued by Pope Sixtus V prohibited the practice of magical arts and even the possession of books on such subjects. As a result, Della Porta was compelled to exclude any reference to magical notions, including astrology, which had been central to earlier physiognomic texts. Paradoxically, this act of censorship was

Table 1. Treatises on physiognomics before Della porta

Year	Country	Author	Title
4th century BC	Greece	pseudo-Aristotle	Physiognomonics
2nd century AD	Greece	Polemon of Laodicea	de Physiognomonica
4th century AD	Greece	Adamantius	Physiognomonica
4th century AD	Rome?	Anonymous	de Physiognomonica
9th century AD	Abbasid Caliphate	Hunayn ibn Ishaq	Kitab al-Firasa (Book of Physiognomy)
10th century AD		Al-Razi (Rhazes)	Kitab al-Firasa (Book of Physiognomy)
12th century AD	Spain	Abu al-Qasim al-Zahrawi (Albucasis)	Kitab al-Tasrif
12th century AD		Fakhr al-Din al-Razi	Al-Firasa
About 1209 (printed 1477)	Scotland	Michael Scot	Liber physiognomiae
1474	Italy	Pietro D'Abano	Liber compilationis physionomiae
1503	Italy	Alessandro Achillini	De chyromantie principii et physionomie
1504	Italy	Bartolomeo della Rocca (Cocles)	Chyromantiae ac Physiognomiae Anastasis
1573	Switzerland	Paracelsus (Theophrastus von Hohenheim)	De Natura Hominis (On the Nature of Man)
1522	Germany	Johann von Hagen (de Indagine)	Physiognomia et Chiromancia
1544	Italy	Michelangelo Biondo	De cognitione hominis per aspectum
1551	Italy	Luca Gaurico	Aristotelis physiognomia Adamantio interprete
1558	Italy	Gerolamo Cardano	Metoposcopia
1586	Italy	Giovanbattista della Porta	De humana physiognomonia

necessary to produce original thought. In fact, Della Porta would not have had an important part in this story without censorship, since he was drawn by the medieval magical/divinatory aspect of physiognomy (as demonstrated by his treatise *Coelestis physiognomoniae* in 1603),¹⁴ even though he declared himself against astrology. Deprived of astrological references, Della Porta turned instead to zoomorphism, already present in previous treatises, as an element of systematic study: The notion that a person's facial resemblance to a specific animal might indicate analogous traits or behaviours became a key element of his system, opening the way for empirical inquiry and subsequent experiments.

De humana physiognomonia is an extensive analysis of the observations of Polemon and Adamantius, who are cited more than 500 times throughout the text. For comparison, Hippocrates is mentioned 50 times, Galen over 100, and Aristotle fewer than 50.

Its major point of originality was a reference to internal organs, which were not reported in previous books on physiognomy by pseudo-Aristotle, Polemon, and Adamantius, all of whom are acknowledged in Della Porta's work. This innovation may have stemmed from medieval influences, particularly alchemical and magical notions concerning the 'secrets' of nature. Meanwhile, astrology was not only banned but also undergoing a transformation into astronomy, a shift facilitated by the telescope, which was perfected by both Della Porta and Galileo.

In summary, classical timeline reasoning shows that an idea travels over time from one scientist to another, with modifications during the rewriting process. When an idea cannot be passed along - whether due to the loss of written sources or a lack of intellectual heirs - it is forgotten. A clear example is Egyptian hieroglyphics, which became indecipherable for centuries during the late Roman, Medieval, Renaissance, and Romantic periods, only regaining intelligibility in the late 1700s to early 1800s.

While timeline reasoning helps us understand how ideas are transmitted and altered over time, it does not, on its own, explain the conditions required for a radical transformation in those ideas.

Geoscientific reasoning

Geoscientific reasoning hypothesises that when an idea enters a cultural environment markedly different from those in which it previously developed, it is more likely to undergo a significant transformation. This approach requires careful analysis of the contextual

conditions that foster the emergence of new ideas.

Regarding the case study of Della Porta's physiognomy, three elements are relevant:

1. The proliferation of "academies" or cultural circles in Italy
2. The creation of "hospitals for incurable people", which drew attention towards phenomena pertaining to mental illness
3. The need among painters to depict human emotions through visual representation

Naples, with its rich academic tradition - including the Academy of Secrets, the Academy of Investigators, the Academy of Sciences - and its University, experienced periods of scientific innovation under various regimes, notably during the Kingdom of Sicily *citra farum* (1302-1816), the Kingdom of the Two Sicilies (1816-1861) and later, the Kingdom of Italy.

Numerous academies were established in Naples from the sixteenth century onwards (Figure 2).

Giovanbattista della Porta himself founded the first scientific academy in Europe: the Academy of Secrets (1560), as cited by Girolamo Ruscelli.¹⁵

This proliferation of what we would call today "clubs" reflected a broader cultural trend across Italy, as reported in Figure 3. These academies were numerous, though typically short-lived due to a lack of organisation and structured programmes - with a few notable exceptions. They served as alternatives to universities, eschewing Latin in favour of the vernacular, and addressing topics, methods, and lines of inquiry not typically covered in academic institutions. Thus, they were not in direct competition with universities; rather, they often complemented specific university disciplines.

Joining an academy was akin to joining a club: it offered an appearance of prestige, access to networks, support for publishing, and potential career advantages. Many required initiation rites reminiscent of Masonic traditions. Some established branches in several cities across different states; for example, the Partenia Academy (founded in 1560) had chapters in Siena, Naples, Ferrara, Milan, and Rome. Typically, a wealthy aristocrat would sponsor and lead the academy's activities. It would be of interest for future research to investigate why this proliferation of academies began to decline by the nineteenth century. Perhaps the phenomenon did not disappear entirely, but rather persisted under different names, particularly in the Anglo-Saxon world, while the term "academy" itself fell out of favour.

Alongside the founding of Academies, private collections of "marvellous" items also began to emerge.

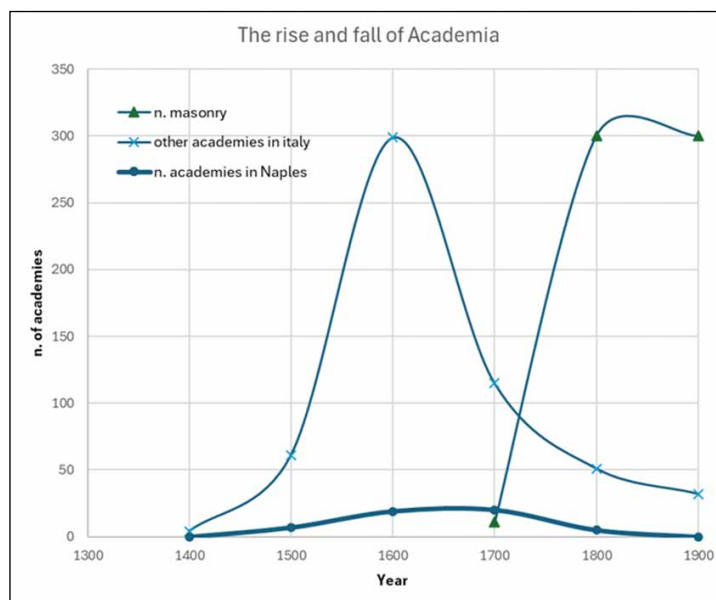


Figure 2. The rise and fall of academies in Italy and in Naples.

In Naples, a notable example was the collection of Ferrante Imperato (1525–?), in the Santa Chiara Square. This collection reflects the scholarly travels of the time, particularly to Frankfurt, home to the seventeenth century’s most important European book fair. Imperato’s motivations may have been linked to his profession as an apothecary or pharmacist, seeking ingredients for medicinal preparations.

From this large collection, one book of the herbarium survives at the National Library in Naples. Imperato’s personal museum enjoyed great success and attracted important visitors such as B Maranta (*Della theriaca et del mithridato, libri due, Venezia 1572*, p. 35), NA Stigliola, F Cesi, F Colonna, T Campanella, G Donzelli, MA Severino, Johann Faber (1574–1629) and GB Della Porta himself.

In addition to the academies, which promoted intellectual exchange and the circulation of ideas, two further developments in Naples are of interest: the establishment of an institution to house melancholic and mentally ill individuals, the Incurabili Hospital, and the emergence of small private museums.

The Hospital of Saint Mary of the Incurable People (*Santa Maria degli Incurabili*) in Naples was founded in 1519 by the noblewoman Maria Lorenza Longo (1463–1539), originally from Lleida, Catalonia.¹⁶ It is important clarify that the term hospital (*hospitāli*) at that time was used with the meaning of *hospes*, meaning a place of hospitality rather than a centre of medical treatment; a more accurate modern translation would be “hostel”.

This institution reflected a broader trend in Italy of private initiatives for founding hospitals/hostels to shelter the poor (*ospedali dei poveri*) or the chronically ill. Similar establishments for “incurable people” were founded in several Italian cities: the Ospedale di San Giacomo degli Incurabili in Rome (1339), the Ospedaletto in Genoa (1499), the Santissima Trinità degli Incurabili in Florence (1520), and an institution in Venice (1522) to house sufferers of syphilis (then known as the “Naples disease”), leprosy, and the plague. Saint Gaetano Thiene (Vicenza, 1480 - Naples, 1547) was involved in the founding of the Naples, Rome, and Venice hospitals.

Finally, the Renaissance in Italy witnessed a revival of interest in physiognomics, driven in part by the needs of painters and artists. To represent emotions and character convincingly in visual form, artists required some theoretical framework. This demand likely contributed to the renewed attention paid to earlier physiognomic treatises in Italy, where artistic production was flourishing.³

This dynamic of the knowledge production flying away from its birthplace and then returning back to it is beautifully captured by the epigram inscribed above the door of the Aula at Athens Academy: “*The Muses, living in Freedom, wandering for long time abroad, returning back to the much - desired Greece, they dispense again to the Greek youths gifts close to their hearts*”, which evokes the return of ideas to their native soil after circulating through diverse intellectual landscapes.

ΠΕΡΙΛΗΨΗ

Η χωροταξική δυναμική της γνώσης: Η διανοητική μετάβαση από τη Φυσιογνωμική στην Φρενολογία

Davide Viggiano

Η μελέτη εξετάζει την ιδέα ότι η χωροταξική δυναμική της παραγωγής γνώσης είναι κρίσιμη για την προώθηση καινοτόμων ανακαλύψεων. Για να απεικονίσουμε αυτή την ιδέα, εντοπίζουμε τη διανοητική μετάβαση από τη φυσιογνωμία στη φρενολογία, χαρτογραφώντας την προέλευσή της από τη Νάπολη στη Γερμανία. Στη Νάπολη, έναν κόμβο ακαδημαϊκής καινοτομίας υπό διάφορα καθεστώτα, το έργο του Giovanbattista della Porta του 16ου αιώνα για τη φυσιογνωμία, *De Humana physiognomonia*, έθεσε τις βάσεις για μελλοντικές εξερευνήσεις στη σχέση σώματος-προσωπικότητας, κυρίως επικαλούμενος τον Κρόνο για να χαρακτηρίσει μελαγχολικά χαρακτηριστικά. Στην Αγγλία, το *Religio Medici* του Sir Thomas Browne και στη Γερμανία, τα *Δοκίμια* για τη Φυσιογνωμία του Johann Kaspar Lavater αντλήθηκαν από το έργο του Della Porta. Η έμφαση του Lavater στη σχέση μεταξύ των χαρακτηριστικών του προσώπου και της προσωπικότητας άνοιξε το δρόμο για τις φρενολογικές θεωρίες του Joseph Gall και του Johan Spurzheim, οι οποίοι μετατόπισαν την εστίαση στην κρανιακή μορφολογία ως ενδεικτική των χαρακτηριστικών της προσωπικότητας και προσδιόρισαν το «όργανο» της μελαγχολίας κάτω από τα βρεγματικά οστά. Αυτή η μετατόπιση προκάλεσε ένα ανανεωμένο ενδιαφέρον για τις σχέσεις νου-σώματος πάλι πίσω στη Νεάπολη, κυρίως μέσω μορφών όπως ο Miraglia, αν και η υποδοχή ήταν μικτή και αντιμετώπισε ισχυρή αντίσταση. Ενώ επηρέασε για κάποιο διάστημα, η επιρροή της φρενολογίας εξασθένησε καθώς η προσοχή στράφηκε, κάτω από μορφές όπως ο Bianchi, προς τις εσωτερικές δομές του εγκεφάλου και όχι προς τα εξωτερικά περιγράμμά του. Αυτή η δυναμική της παραγωγής γνώσης που πετάει μακριά από τη γενέτειρά της και στη συνέχεια επιστρέφει πίσω σε αυτήν αποτυπώνεται όμορφα στο επίγραμμα που είναι χαραγμένο πάνω από την πόρτα της Αίθουσας Τελετών στην Ακαδημία Αθηνών: «Οι Μούσες, ζώντας στην Ελευθερία, περιπλανώμενες για μεγάλο χρονικό διάστημα στο εξωτερικό, επιστρέφοντας πίσω στην πολυπόθητη Ελλάδα, μοιράζουν και πάλι στους Έλληνες νέους δώρα κοντά στην καρδιά τους», το οποίο παραπέμπει στην επιστροφή των ιδεών στην πατρίδα τους μετά την αποδημία τους σε ποικίλα πνευματικά τοπία.

Λέξεις Κλειδιά: Δυναμική της παραγωγής γνώσης, Φυσιογνωμική, Φρενολογία

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