

GIORGIO BAGLIVI

The Italian Work of an armenian Physician Born in Croatia

(Ragusa [Dubrovnik] 8.IX.1668 - Rome 17.VI.1707)

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In 1999, the publication of the Correspondence kept in the Waller Collection¹ allowed the reconstruction of the theoretical path of one of the most interesting figures of the 17th-century

¹ A. Toscano (Ed.), Giorgio Baglivi *Carteggio (1679-1704). Conservato nella Waller Collection presso la University Library <<Carolina Rediviva>> di Uppsala*, "Archivio della Corrispondenza degli Scienziati Italiani", 14, Firenze, Leo S. Olschki, 1999.

The Catalogue of Baglivi's Papers belonging to the collection of the Swedish surgeon Erik Waller kept in the Uppsala Universitetsbibliotek was first published in 1994 in the second issue of the journal of the history of science, "Nuncius": *Catalogo delle Carte di Giorgio Baglivi conservate nella Waller Samling presso Universitetsbiblioteket <<Carolina Rediviva>> di Uppsala*, in "Nuncius", a. IX (1994), fasc. 2, pp.683-738.

On Waller Collection see: H. SALLANDER, *Bibliotheca Walleriana. The Books illustrating the History of Medicine and Science Collected by Erik Waller and bequeathed to the Library of the Royal University of Uppsala*, 2 voll., Uppsala 1955 (New York 1991); M. BERETTA, *A History of Non-Printed Science. A Select Catalogue of the Waller Collection*, Acta Universitatis Upsaliensis, Uppsala University Library 1993; <http://www.theeuropeanlibrary.org/tel4/collection/a1059>, <http://www.ub.uu.se/en/Search/Manuscripts/>

During the 11th International Congress of the History of Medicine, held in Zagreb in 1938, in the special session focusing on Giorgio Baglivi which took place in [Dubrovnik], Dr. [Erik Waller], describing its imposing collection of medical autographs, had focused his attention on a particular section of his important collection constituted by the Correspondence that Baglivi had with physicians and naturalists of his time. Baglivi's letters owned by Waller actually constituted an interesting source of information on the medical debate in Italy at the end of the 17th century, and originally formed, together with the collection of Baglivi's letters belonging to Sir William Osler, inherited by the McIntyre Medical Science Building of the McGill University of Montreal, a single body. Around 1880, the original correspondence in its entirety had belonged to the Roman collector and antique dealer Gian Carlo De Rossi. Arbitrarily divided into two parts, it had then been purchased at an auction by Sir William Osler and by Dr. Erik Waller. The missives in the Baglivi collection owned by the [Uppsala] University Library cover in fact the last years of Baglivi's life and hence are therefore to be considered the logical continuation and the completion of the correspondence kept in Montreal, whose publication was edited in 1974 by Dorothy M. Schullian with a massive, fundamental work of historical reconstruction and transcription which defined the structure of the collection comprising 173 autograph letters (from and to Giorgio Baglivi) dating from between 1677 and 1698: D. M. SCHULLIAN (ed.), *The Baglivi Correspondence from the Library of Sir William Osler*, Cornell University Press, Ithaca and London 1974

See: A. Toscano (Ed.), Giorgio Baglivi *Carteggio (1679-1704). Conservato nella Waller Collection presso la University Library <<Carolina Rediviva>> di Uppsala*, Firenze, Leo S. Olschki, 1999, pp. 5-10

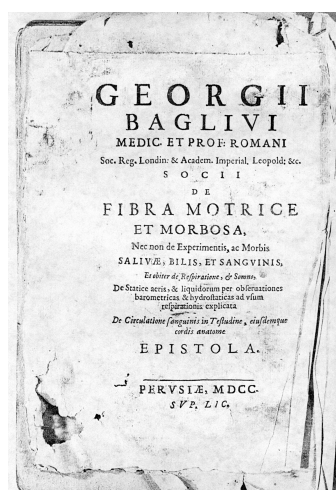
scientific scene, the Dalmatian physician, of an Armenian family, naturalized Italian, Giorgio Baglivi (1668-1707).

The Baglivi correspondence kept in Sweden allowed adding another tessera to the reconstruction of Italian scientific culture in the second half of the 17th-century, providing a, far from being negligible, further example of the deep relations and penetrations of Italian science into the European scientific world, which had indeed one of its major reference models precisely in the medical-biological sector. The development of Italian science at the end of the 17th century is in fact linked to the exchange of scientific news with other European scholars whose documents related to the correspondence acquire particular importance to redefine the multifaceted picture of mutual relations and influences existing between Italian science and the European one.

In the Baglivi collection belonging to the Waller Samling it was possible to clearly discern the actual importance that Baglivi's production had within the international scientific community. A production that, ranging from the *De praxi medica* to the *De fibra motrice*, spread far and wide in the medical world of the time exerting a deep influence on the writings of Friedrich Hoffmann, Herman Boerhaave and Albrecht von Haller, allowing the reconstruction of the privileged transmission channels along which the exchange of news and information, in the European scientific panorama at the end of the 17th century, took place.

His Work

"Movement as the Universal Drive"



As it have already pointed out ², one of the most interesting sectors of historiographic research, namely the reconstruction of the ways in which scientific ideas were transmitted in the European cultural context between the second half of the 17th century and the first half of the 18th century, consists in the analysis of private papers and correspondence, that in the most various manner, were exchanged among the exponents of the culture of that time.

² A. Toscano, *Mirabilis Machina. Il "perpetuum mobile" attraverso il 'De statice aeris' e il 'De fibra motrice et morbosa' di Giorgio Baglivi*, 2 voll., Cosenza, Edizioni Brenner, (2004) 2013, Vol. I, pp. 137-151 ; Vol. II, pp. 6-14

The circulation of Baglivi ideas also followed this golden rule. Even though there is no doubt that the fundamental contribution to their dissemination was given by the various editions that Baglivi works had in the most important European centres of those years and beyond³.

The second half of the 18th century witnessed the dawn of a brand new panorama for physiology leading to the reformulation of reference parameters adopted until then to study living matter. However, Baglivi ideas continued to be influential and were constantly cited in European scientific and non-scientific literature from the second half of the 18th century and the first half of the 19th century. Although distant in time and with ideas different from Baglivi, the new protagonists of research on the structure of living matter, considered him their authoritative point of reference, to whom they could turn when presenting their speculations.

Towards the second half of the 18th century, the notion of living fibre studied by Glisson⁴ and that of motive fibre formulated by Baglivi aroused special interest in the field of research on living organisms. Different as to solutions and implications from the mechanism present in France and in the Low Countries, the Italian iatromechanism, with its Galilean legacy and its opening to corpuscularism, had allowed, in Baglivi formulation, the interpretation of vital phenomena according solely to the laws of motion, to which the entire nature appeared to be subject, thus explaining the origin and continuation of life in the uninterrupted action of movement in every single minimal part of the body.

Supplementing Baglivi programme of a reformation of clinical medicine of Hippocratic inspiration and with a solidistic approach, his studies on the properties of fibres met with the favour of the exponents

³ If we skim through the high number of reprints and translations of his treatises, we find that: the last reprint of the *De praxi medica* dated from 1793 in German-speaking countries (*De praxi medica libri duo*, Editio nova, Praefatus est E. G. Baldinger ..., Marburgi, in officina nova libraria Academiae, 1793, 8°, 16 + 386 pp); the *Opera Omnia*, translated into German in 1756 (*Abhandlung vom Erdbeben ... Als ein Auszug aus einem. Tractat dieses grundgelehrten Schriftstellers bei Gelegenheit des jetzo so erschrecklichen u. fast allgemeinen Erdbebens ... übers. Von Friedrich Gerhard Constantini, Stadthagen, Althans, 1756*), was still being published in 1827-28 (*Opera omnia medico-practica, et anatomica*. Editionem reliquis omnibus emendatiorem et vita auctoris auctam, curavit C. Gottl. Kühn, Lipsiae, Voss., 1827-1828, 2 voll. [Scriptorum classicorum de praxi medica nonnullorum opera collecta, 2-3]); and that in 1757, and, also later, in 1851, the *De praxi medica* was still being published in French (*Maladie traduit du latin. Auxquelles on a ajouté des remarques et des observations fondées sur la théorie la plus claire & la plus reçue, & sur la plus saine pratique*, Par M. G. D'Aignan, Paris, chez la veuve Delaguet, 1757, 12°, 340 pp.; *De l'accroissement de la médecine pratique*, Traduction nouv. Par J. Boucher, précédée d'une introduction sur l'influence du Baconisme en médecine, Paris, Labé, 1851). Included in the *Opera Omnia* as far back as 1704, the *Specimen*, continued to be printed as an *Epistola* contained in *Il corpo umano* by Alessandro Pascoli until 1774 (*De fibra motrice, et morbosa; nec non de experimentis, ac morbis salivae, bilis, et sanguinis. Ubi obiter de respiratione, & somno. De statice aeris, & liquidorum per observationes barometricas, & hydrostaticas ad usum respirationis explicata. De circulatione sanguinis in testudine, ejusdemque cordis anatome. Epistola ad Alexandro Pascoli*, in A. PASCOLI, *Il Corpo umano: o Breve storia, dove con nuovo metodo si descrivono in compendio tutti gli organi suoi, e i loro principali ufizi, per istruire a bene intendere, secondo il nuovo sistema, la teorica e pratica medicinale*, Perusiae, apud Costantinum, 1700; [Venetiis, apud Andream Poletti, 1712, 1724, 1727, 1739, 1742, 1750, 1772]; *De fibra motrice, et morbosa; nec non de experimentis, ac morbis salivae, bilis, et sanguinis. Ubi obiter de respiratione, & somno. De statice aeris, & liquidorum per observationes barometricas, & hydrostaticas ad usum respirationis explicata. De circulatione sanguinis in testudine, ejusdemque cordis anatome. Epistola ad Alexandro Pascoli*, in A. PASCOLI, *Il Corpo umano: o Breve storia, dove con nuovo metodo si descrivono in compendio tutti gli organi suoi, e i loro principali ufizi, per istruire a bene intendere, secondo il nuovo sistema, la teorica e pratica medicinale*, Venetiis, apud Andream Poletti, 1774).

See: A. TOSCANO, *Mirabilis Machina* [...], op. cit., *Bibliografia*, Vol .I, pp. 188-190

⁴ See A. TOSCANO, *Mirabilis Machina* [...], op. cit., Chapter 2, First Part, Vol .I, p. 69 and following

of the Montpellier medical school⁵, who were amongst the major contributors to the *Encyclopédie* and introduced Baglivi into the temple of Enlightenment⁶.

His *De praxi medica*, a work published in 1696, contains the programmatic lines of his system which was a benchmark for several generations of European clinicians.

Drawing on the experimentalism of the *Corpus Hippocraticum* and to the inductive method of [Francis Bacon], Baglivi maintained the pre-eminence of experience in medicine, although without refusing mechanistic physiology, and pointed out the methodological error of former therapeutics.

He intended to free clinical medicine from all doctrines and prejudices which had hampered its progress by anchoring it to “experimental philosophy”⁷.

Through an original synthesis, Baglivi combined the line of iatromechanical research with that elaborated by Francesco Redi, whose results in the medical field, although showing the untenability of a large part of classic therapeutics, had not however been able to give rise to a sounder substitutive one. Even though they achieved fundamental results in the field of biology – see for example Lorenzo Bellini’s and Marcello Malpighi’s studies on lungs and kidneys - both the iatromechanical tradition and Redi’s research model seemed to be totally inadequate in the medical field as to explaining functional alterations of the organism. All this had placed the most conscious advocates of the new scientific concepts in a weak position against the criticism of traditionalists, who maintained the uselessness of the anatomical-physiological approach in medicine⁸.

Baglivi recognized the utility of doctrines inspired by mechanics in medicine, but refused to carry the same approach to extremes in the practice of it, in the certainty that it was above all the observation of the actual course of the illness which should characterize the work of a physician.

He considered observation the cornerstone of the art of medicine, the thread that physicians were to follow in their speculations⁹.

Even though he declared himself sceptical about the possibility of identifying the origin of pathological phenomena, Baglivi nevertheless deemed the geometrical-mathematical model as the most appropriate to explain the operations and functions of the human body.

In his opinion, the structure of the body and the effects depending on it were submitted to the dominion of number, weight, and measure; this is why philosophers and mechanical physicians had to devote themselves to studying the living body according to the principles of statics, hydraulics and the

⁵ For more on the Montpellier medical school and its relations with Italian medical science between the late 17th century and the early 18th century, see A. TOSCANO, *Mirabilis Machina* [...], op. cit., Chapter 3, Part Two, *Il Movimento delle Idee. Una non conclusione*, Vol. I, pp. 139-142 and the related notes.

⁶ See A. TOSCANO, *Mirabilis Machina* [...], op. cit., Chapter 3, Part Two, *Il Movimento delle Idee. Una non conclusione*, Vol. I, pp. 139-142; Vol. II, First Part, *Il movimento delle idee: Giorgio Baglivi tra le voci dell’Encyclopédie*, pp. 5-14; Vol. II, Part Two, *Le voci dell’Encyclopédie*, pp. 19-132.

⁷ According to Baglivi, theoretical medicine had made great strides from Galen’s time to the 17th century, but the progress of practice had not followed that of theory. In a passage of the [*De praxi medica*, lib. I, cap. XII, par. I] he wrote: << [...] puto eidem [medicinae et scientiarum magna opera] non eventurum, quod ventis solet, qui cum vehementissimi sint undè oriuntur, ad longinquas tamen regiones fracti ferè, debilitatique perveniunt; sed quod ingentibus, & peramplis fluminibus, qui cum ab ortu ipso magna sint, perpetuo tamen aucta, & tumefacta progressu, eo majores undas volvunt, eo amplioribus ferentur alveis, quo à fontibus suis longius recesserunt>>.

⁸ According to them, symptoms or “phenomenological data” were not in fact to be confused with microanatomical ones, which they considered irrelevant at the macroscopic level of the disease progression. Such an interpretative line, which alluded to precise difficulties of the biological mechanism during the therapy, brought into being a long-lasting controversy on the certainty of medicine that, in Italy and elsewhere, resulted in remarkable developments. Various exponents of scientific culture, including Baglivi himself, took part in this controversy whose developments became manifest in the first twenty years of the 18th century in the opening lectures of exponents of the medical school of Padua, listed in A. FAVARO, *Saggio di bibliografia dello studio di Padova. I: 1500-1840*, “Miscellanea di storia veneta”, XVI, 1922.

⁹ Baglivi in fact defined a physician as the [“minister and interpreter of nature”] and medicine as an art progressively built up through the description of the different types of diseases.

motion of heavy bodies, to which, after all, the solutions, sublimations and precipitations studied by chemists were also referable.

Although aware of the difficulty of elaborating a clinical medicine which could exploit the knowledge acquired through the new anatomy and physiology, Baglivi nevertheless tried to build up a clinical practice which would encompass listening to and observing the patient as well as analyzing the illness from the depths of the body, by observing under the microscope the structure of internal organs as well as their "smallest parts".

The mechanistic and mathematical-geometrical approach of his system also explained the structure and function of muscle fibres in physical terms.

A disciple of Marcello Malpighi, of whom he was a pupil during his stay in Bologna, he followed him to Rome when Malpighi was appointed archiater by Innocent XII. Baglivi then became an advocate of a "solidist" theory of health, conceived as the optimal state of the solid parts of the body, and in particular of fibres, which he studied through Malpighi's particular anatomy by means of fine dissections and microscopic observations of smooth and striated muscles.

Baglivi's studies on the structure of muscles and membranes, in particular the theory of the pulsations of the *dura mater*¹⁰, contained in the *De fibra motrice* and mentioned in the *Philosophical Transactions* of the Royal Society¹¹, had a wide circulation within 18th-century physiology: in this sense [Boerhaave]'s and [Haller]'s works drew directly on the morphological-structural approach elaborated by Baglivi.

Precisely the circulation in Italy and in various other European countries of the *De fibra motrice* is the object of the exchange of letters part of the Baglivi Correspondence kept in the Waller Samling¹².

As it have already remarked¹³, when it saw for the first time the over 400 sheets forming Giorgio Baglivi collection of papers kept at the Erik Waller Samling in the Carolina Rediviva University Library of Uppsala, it could not foresee where their study would then lead the research.

Complementing the collection of Baglivi correspondence kept in Sir William Osler's library in Montreal¹⁴, the 193 "Swedish" letters dating from between 1690 and 1704¹⁵ with their miscellaneous nature seemed to be a reasonable point of departure for research. This research perhaps would not yield any surprises, but undoubtedly, as the correspondents who signed a large part of those letters were men of note, could certainly confirm the reconstruction of the Italian scientific milieu in the second half of the 17th century also providing further evidence of the mutual relations and inferences that Italian science had with the experimental European world, which indeed found one of its major reference models in the Italian medical-biological world.

¹⁰ On the concept of *Dura Mater* in Baglivi, see A. TOSCANO, *Mirabilis Machina* [...], vol. I., *Introduzione* e Capitolo Secondo, Parte Seconda, *Una Mirabile Macchina Contesta di Fibre*, T. I, pp. 9-11, pp. 112-123, together with the references contained in the notes to the text. See also: A. TOSCANO (ed.), *Giorgio Baglivi, Carteggio (1679-1704). Conservato nella Waller Collection presso la University Library "Carolina Rediviva" di Uppsala*, "Archivio della Corrispondenza degli Scienziati Italiani" Leo S. Olschki, Firenze 1999, *Introduzione*, pp. 13-21; A. TOSCANO, *In natura non esiste nulla di più antico del moto". Dal moto armonico del Cosmo alla meccanica dei fenomeni vitali: G. Baglivi ed il 'De statice aeris'*, presentata all'International Seminar *History of Mediterranean Medicine – Giorgio (Duro) Baglivi, (Commemorating the 300th anniversary of Giorgio (Duro) Baglivi death)*, Dubrovnik, 28-30 june 2007, organized by: University of Zagreb; Centre for Mediterranean Studies – Dubrovnik; History of Medicine and Health Institute - University of Geneva; Medical School - University of Zagreb, in A. TOSCANO, *Perpetuum Mobile. The Baglivi 'De fibra Motrice et Morbosa' and The Baglivi 'De Statice Aeris' in the European Scientific Community between Galilaeism and Enlightenment*, Cosenza, Brenner Editore, 2013, pp. 43-65.

¹¹ *Philosophical Transactions of Royal Society*, vol. XXIII (1702-1703)

¹² See: A. Toscano (Ed.), *Giorgio Baglivi Carteggio (1679-1704). Conservato nella Waller Collection presso la University Library <<Carolina Rediviva>> di Uppsala*, Firenze, Leo S. Olschki, 1999

¹³ A. TOSCANO, *Catalogo delle Carte di Giorgio Baglivi* [...], Op. cit.

¹⁴ A. TOSCANO (Ed), *GIORGIO BAGLIVI Carteggio (1679-1704)* [...], Op. cit.

¹⁵ D. M. SCHULLIAN (Ed), *The Baglivi Correspondence* [...], Op. cit.

However that part of the epistolary, which at first glance might have looked like a simple collection of common everyday letters by a doctor from the end of the 1600s, revealed a detail that turned out to be a valuable aid for research. Indeed, a large section of this collection of letters was “destined” to promote, both in Italy and in the rest of Europe, Baglivi *De fibra motrice et morbosa* as well as its enlarged version. The latter was published by the author in 1702, two years after the first edition, under the title *Specimen de fibra motrice et morbosa*, thanks to the help of important people of that time¹⁶.

These letters allowed to cast new light on Baglivi entire speculative system, urging to backdate the genesis of the *De fibra motrice* to about ten years before its publication, that is to say to the period of Baglivi “grand tour” in the major Italian study centres, when, during his apprenticeship with Marcello Malpighi¹⁷, he was finishing his *De Praxi Medica* (published in 1696).

The backdating of the *De fibra motrice et morbosa* raised doubts on the interpretation that the most accredited historiography had given until then of Baglivi entire oeuvre, belying what had been maintained about the formulation of Baglivi physiological system, hypothesized, even by the most recent critical contributions, to have taken place only after the publication of the *Praxi* and only after Baglivi presumably turned away from his training as a doctor¹⁸.

Not only did the Swedish collection of letters enable to ascertain that as far back as 1690, Baglivi was developing his physiological system, when the *De fibra motrice et morbosa* was still his brainchild circulating in the correspondence of half of Europe as study notes, but, also and above all, that the ideas stated first in the *De fibra* and then in the *Specimen* - the hinges around which Baglivi built his physiological system - had in the *De Praxi Medica* their practical formalization in clinical medicine and their theoretical completion in the *Canones de Medicina Solidorum*, passing through the speculative elaborations contained in the dissertation *De Historia, Anatome, Morsu, & Effectibus Tarantulae*¹⁹; in

¹⁶ Antonio Magliabechi, Guido Grandi, Lorenzo Bellini, Antonio Vallisnieri, Antonio Maria Valsalva, William Sherad, William Cole, Walter Harris, Jean-Jacques Manget, Lucas Schröck, Nicolas Andry, Philippe Hecquet.

¹⁷ On relationship between G. Baglivi and M. Malpighi see Chapter 2 note 13

¹⁸ See M. D. GRMEK, *Gjuro Armeno Baglivi, “Medicinar”*, 1, 1946, pp. 39-42; Idem, *Osservazioni sulla Vita, opera ed importanza storica di G. Baglivi*, in *Atti del XIV Congresso Internazionale di Storia della Medicina*, Roma-Salerno 1954; Idem, *Hrvatska medicinska bibliografija. Bibliographia Medica Croatica. Pars I, vol. I: 1470-1875*, Zagreb, Jugoslavenska akademija, 1955, pp. 32-34; Idem, *Baglivi*, in *Enciklopedija Jugoslavije*, Zagreb, Leksikografski Zavod, 1955, vol. I, pp. 281-282; Idem, *Zitovni put dubrovackog liječnika Gjura Baglivija*, “Lij. Vjesnik”, 79, 1957, pp. 606-610; Idem, *Osservazioni sulla vita, opera ed importanza storica di Giorgio Baglivi*, in “Atti del XIV Congresso Internazionale di Storia della Medicina, Roma-Salerno 1954”, Roma, 1960, vol. I, pp. 423-435; Idem, *Baglivi*, in *Medicinska Enciklopedija*, 2 ed., Zagreb, Leksikografski Zavod, 1967, vol. I, pp. 406; Idem, *Réflexion sur les interprétations mécanistes de la vie dans la physiologie du XVIIème siècle*, “Episteme”, I, 1967, pp. 17-30; Idem, *Giorgio Baglivi*, in *Dictionary of scientific biography*, New York, 1970 -, vol. I, pp. 391-392; Idem, *La notion de fibre vivante chez les médecins de l'école iatrophisque*, <<Clio Medica>>, 5, 1970, pp. 297-318; Idem, *La notion de fibre vivante*, in *La première révolution biologique*, Paris, Payot, 1990, pp. 159-188; Idem, *La vita e l'opera di Giorgio. Baglivi, medico raguseo e leccese (1668-1707)*, in G. CIMINO et AL. (Eds), *Il nucleo filosofico della scienza*, Galatina 1991, pp. 93-111; Idem, *Bagliviana: catalogo delle pubblicazioni di Giorgio Baglivi e saggio di bibliografia sulla sua vita, opera e importanza storica*, in G. CIMINO et AL. (Eds), *Il nucleo filosofico della scienza*, Galatina 1991, pp. 113-139; Idem, *Baglivi i liječenje rana u Hrvatskoj (Baglivi et le traitement des plaies en Croatie)*, in <<Dubrovnik>>, 3, 1992, 125-129; Idem, *Il concetto di malattia*, in M. D. GRMEK (Ed), *Storia del pensiero medico occidentale*, Roma-Bari, Editori Laterza, 1996, 3 voll, Vol. II, *Dal Rinascimento all'inizio dell'ottocento*, pp. 259-289; Idem, *Il ‘De fibra motrice et morbosa’ di Giorgio Baglivi*, *Atti del Convegno: Alle origini della biologia medica. Giorgio Baglivi tra le due sponde dell'Adriatico*, in “Medicina nei secoli”, n.s., vol. 12, n. 1 (2000), pp. 19-27

¹⁹ In G. BAGLIVI, *De praxi medica ad priscam rationem observandi, libri duo. Accedunt dissertationes novae, I. De historia, anatome, morsu, & effectibus tarantulae; Ubi obiter de ovis ostrearum detectis, & examinatis. Et de natura, lapidis serpentina, vulgò cobra de capelo, specifici in extrahendis venenis. II. De usu, & abusu vesicantium. III. Esperimenta varia anatomico-infusoria. IV. De circulatione sanguinis in rana. V. Historia morbi, et sectionis cadaveris Marcelli Malpighi archiatr. Pontif. VI. Appendix de apoplexiis, feré epidemicis, proximé elapso biennio in Urbe, & per Italiam observatis &c.*, Lugduni, sumptibus Anisson, & Joann. Posuel, 1699

the *De progressionem Romani Terremotus*²⁰; in the *De Sistemate & Usu Motus Solidorum in Corpore Animato*²¹; in the *De Vegetatione Lapidum et Analogismo Circulationis Maris ad Circulationem Sanguinis*²²; to culminate in the *De Statice Aeris, & Liquidorum per Observationes Barometricas & Hydrostaticas ad Usum Respirationis Explicata*²³.

Even though the formulation elaborated by Baglivi of a theory on the physiological role of the *dura mater* would be soon superseded, it is undeniable that his ideas and his observations had an important role in the field of muscular and nervous physiology between the 17th and 18th centuries, especially as regards the distinction made by Baglivi between “membranaceous” fibres and “motive” fibres that he considered endowed with that “inclination to motion” through which living bodies were kept alive.

Baglivi discovered the physical principle of the *motus fibrarum*, that acted in living structures as the point of origin and principle of conservation of life, demonstrating its existence through experiments, and establishing its anatomical bases. Such a discovery resolved the antinomy related to the image of living matter long before animism.

As far back as the early 1690s, when the structure of living things was not believed to be subject to the inevitable intrinsic principle that ensured the functioning of the single parts which formed the machine of nature, Baglivi was one of the first advocates of the idea that life resided in the single parts of the body, identifying the *fibra motrice* as the primary vital element.

A careful observation of a foetus in the first days of gestation constituted the evident demonstration of his affirmations. The movements of the smallest parts of the body, that could be detected already in an embryo and had in the heart and in the cerebral membranes their propelling organs, seemed to explain the phenomenon of life.

Although arbitrary, perfunctory and imprecise, Baglivi theory of the *De fibra motrice et morbosa* paved the way to a study of the structure of living matter devoid of any finalistic implications making therefore possible, as had happened for physiological phenomena, an interpretation in toto of the phenomenon of life solely through mechanical principles.

If until that moment the application of Galileism and corpuscularism to medico-biological disciplines had permitted a clear explanation of all those metabolic and physiological phenomena that lent themselves to quantitative considerations and to geometrical-deductive demonstrations (such as those related to muscular movement and blood circulation), then vital functions, generation itself, and all of those physiological processes for which the mechanical models were not fit, could be investigated through the application to the living structure of the physical studies on motion transmission and a vacuum carried out after the demonstrations by Evangelista Torricelli and Robert Boyle, as Baglivi actually proved through physics experiments in his *De Statice Aeris, et Liquidorum per Observationem Barometricas, et Hydrostaticas, ad Usum Respirationis Explicata*²⁴.

Dating from July 1700, this work was the physical-theoretical background against which Baglivi constructed the *De fibra motrice et morbosa* and the *Specimen* and whose subject he again discussed in two following works. In them he made more evident the analogy existing between the laws of motion, which seemed to govern the geological structure, and those which presided over the biological

²⁰ In G. BAGLIVI, *Opera Omnia medico-practica et anatomica*, Edizione Anisson et J. Posuel, 1704

²¹ Ibidem

²² Ibidem

²³ In G. BAGLIVI, *Specimen quatuor librorum de fibra motrice et morbosa ...*, Roma, 1702

²⁴ See A. TOSCANO, *Mirabilis Machina* [...] op. cit., Chapter 2, First Part: *Fibre, Vuoti e Movimenti*, pp. 74-91

structure. He also stressed the similarities between them also as regards the changes resulting from earthquakes, by comparing them to illnesses arising in living beings, which he considered as alterations in the body mass.

Moreover, already in his 1695 *Historia, Anatome, Morsu, et Effectibus Tarantulae*, Baglivi had outlined the complex system of actions and relations between the physical world, subject to the laws of motion, and that of living beings, themselves also subject to the same rules discovered by Galileo Galilei and his followers.

The impulse to observe derived from the barometric experiments started by Torricelli, making clearly manifest the action of the air's weight in fluid mechanics (pumping water, siphoning water, the difficulty of separating perfectly smooth surfaces) had blazed the trail to be followed to ground the experimental research on the nature of living matter in Galileo's laws of hydrostatics.

In his *De statice aeris* in fact Baglivi described respiration as the "physical-mechanical" means through which the circulation of blood and fluids in the body occurred and was favoured by the movement that air could impart to the lungs, a movement that enabled the entire body, formed by a particular fibrillar structure, to remain in that permanent *vivida vibratione* that made it possible to guarantee the performance of vital functions, thus ensuring the continuation of life. Thus the fleshy fibres of muscles obeyed more easily the motive impulses propagated by the heart and the membranaceous fibres responded more quickly to the pulsations through which the *dura mater* imparted motion to the nerves.

The discovery, in the various smallest parts of the body, of an internal motion, the possibility for each and every movement to be transmitted from one organ to another thanks to the particular fibrillar structure of which the body itself was made up, all seemed to lead to thinking that the principle of life continuation lay precisely in the movement of solid and fluid parts.

The Baglivi "Discoveries" (two different types of fibres that, along with the humours, made all living beings; the reconstruction of the genesis of the fleshy and membranaceous fibres, occurred by examining both human and animal embryo tissues under a microscope; the description of the related different functions and the indication of motion of a reflexiva and systaltica nature for membranes and as *vis insita* or *tormentum* for motive fibres, as well as the attribution of pathologies to faults in the fibrillar structure), required a theoretical and observative system that exceeded the conceptual limits within which it has been so far confined until today.

The intramuscular origin of a living mechanical force acting as irritability within the muscular system, and in the brain, through the membranes, as oscillatory motion that was transmitted to the nerves, thanks to the continuity and homogeneity of the fibrillar structures and to the rhythmic contractions of the *dura mater*, ensuring a regular circulation of the nerve juice, from the periphery to the centre and vice versa, was the nerve centre of Baglivi system of motive and nervous fibres, which has so far received little attention, but which was, as it pointed out in essay published in 2004 (and reissued in 2013) with the title *Mirabilis Machina. Il "perpetuum mobile" attraverso il 'De statice aeris' e il 'De fibra motrice et morbosa' di Giorgio Baglivi*²⁵, the pivot used to anchor the entire mechanism of the living matter to the sole mechanical forces of nature.

²⁵ A. TOSCANO, *Mirabilis Machina* [...] op. cit.

The Italian Life of an armenian Physician Born in Croatia

Giorgio [Gjuro o Đuro in Croatian] Baglivi was born on September 8th, 1668 in Dalmatia, in the town of Ragusa - present-day Dubrovnik - from the merchant of an Armenian family Vlaho Armen, son of the merchant Gjuro, and from Anna [An] daughter of ser Iacopo de Lupis (Jakov Vuković).

Left an orphan at the age of two, together with his younger brother Giacomo he was brought up by an uncle. When his uncle died, Maria Dragisić, a peasant woman who had already been serving the Armeno family, fostered the nine-year-old Giorgio and his brother.

As the two Armeno brothers, while growing, showed uncommon talent, they were sent to a Jesuit boarding school to be educated

When Giorgio was fifteen years old, the Boarding School received a request from Lecce, in Apulia, Italy, both by the physician Pietro Angelo Baglivi and by his brother Oronzo Polidoro, to each adopt a talented boy attending the school. The Jesuit fathers of Ragusa chose Giorgio and his brother Giacomo: thus Giorgio was adopted by the physician Pietro Angelo, whereas Giacomo by the canon Oronzo Polidoro.

It was Pietro Angelo who imparted to Giorgio the first elements of medical art, thus initiating him into his future university studies. Giorgio studied in Naples and then in Salerno, the former seat of the prestigious *Schola Medica*²⁶, where, in 1688, he graduated in medicine and philosophy.

At the beginning of the last decade of the 17th century, the young Baglivi undertook his long "specialization" path. Driven by a will to complete his medical training, he attended those Italian study and research centres where, in the field of medical-biological disciplines, the most direct influence of Galileo's thought, side by side with the new mechanist and corpuscular vision of the world, was stronger and prevailing.

Even though hardly outlined, it was thanks to his letters kept in the Osler and Waller²⁷, collections that it was possible to retrace the "knowledge paths" that Baglivi followed between about 1689 and 1692, the year when, following in the train of his master Malpighi, he took up his abode in Rome for good. Padua, Florence, Pisa and especially Bologna opened Baglivi the doors of their homes, laboratories and anatomical theatres frequented by the best-known figures, in the medical milieu and beyond, of the time. It is through the letters dating from those years that we learn how Baglivi got in touch with leading figures of European scientific culture of the time, who were to become solicitous correspondents as well as enthusiastic disseminators of his works during his years of teaching at La Sapienza in Rome²⁸.

²⁶ See: *La regola sanitaria salernitana*, premessa storica di Cecilia Gatto Trocchi, introd. di Roberto Michele Suozzi, Roma, Newton Compton, 1993; *La scuola medica salernitana e i suoi mestieri*, Andrea Sinno, a cura di Marcello Napoli, Avellino, Edizioni Ripostes, 2002; *Trotula: un compendio medievale di medicina delle donne*, a cura di Monica H. Green; traduzione italiana di Valentina Brancone, Firenze, SISMEL - Edizioni del Galluzzo, 2009; *La scuola medica salernitana: gli autori e i testi*: Convegno internazionale, Università degli studi di Salerno, 3-5 novembre 2004, a cura di Danielle Jacquart e Agostino Paravicini Bagliani, Firenze, SISMEL-Edizioni del Galluzzo, 2007; Danielle Jacquart, *Médecine et philosophie naturelle à Salerne au XIIe siècle*, in *Salerno nel XII secolo: istituzioni, società, cultura*, Atti del Convegno internazionale, Rasito di Vietri sul Mare, 16-20 giugno 1999, a cura di Paolo Delogu e Paolo Peduto, Salerno, 2004; *La Collectio Salernitana di Salvatore de Renzi*, Convegno internazionale, Università degli studi di Salerno, 18-19 giugno 2007, a cura di Danielle Jacquart e Agostino Paravicini Bagliani, SISMEL-Edizioni del Galluzzo, 2008; *Fiore di Medicina ovvero Regola Sanitaria Salernitana*, premessa, traduzione, note a cura di Gianfranco Lotti e Ilaria Lotti Peyron, Genova, Il Nuovo Melangolo, 2013

²⁷ See: D. M. SCHULLIAN (ed), *The Baglivi Correspondence [...]*, Op. cit. and A. TOSCANO, *G. Baglivi. Carteggio (1679-1704) [...]*, Op. cit. See: A. TOSCANO, *Mirabilis Machina [...]*, Vol. I, Cap I n. 1, pp. 21-22

²⁸ Antonio Magliabechi, Lorenzo Bellini, Bruno Tozzi, Guido Grandi, Antonio Vallisneri, Antonio Maria Valsalva, Pirro Maria Gabrielli, Alessandro Pascoli, Bernardo Ramazzini, Giuseppe Del Papa, Giovanni Fantoni, Luca Tozzi, Lelio Tronfetti, Dmenico Guglielmini, Gottfried Caspar Osterchamp, William Musgrave, William Sherard, Petrus Hotton, William Cole, Walter Harris,

On April 26th, 1692, Baglivi reached Rome, where he was to dwell permanently from 1694 onwards. In March 1692, Marcello Malpighi had summoned him to the Eternal City, ensuring him a future as his assistant. Along with his own body for dissection²⁹, Malpighi also bequeathed him the task of carrying the progress made by anatomical-physiological research to extremes in explaining the laws which, according to the model presented by physics, seemed to govern each and every natural phenomenon.

A member of the: Royal Society, Academia Caesarea Leopoldino-Carolina Naturae Curiosorum, Arcadia, (with the name of Epidauro Pirgense) and Accademia dei Fisiocritici³⁰, as well as "membre d'honneur" of the Académie Française, Baglivi was papal Archiater of Innocent XII Pope Antonio Pignatelli whom he had met in Lecce, getting into his good graces, when Pignatelli was bishop of the town) and of his successor Clement XI Pope Giovanni Francesco Albani.

In 1696, Giorgio became a lecturer of *surgery and anatomy* at the *Prima hora vespertina* (or first evening hour), at La Sapienza University of Rome, a chair that he would hold until 1701. In 1702, he then changed over to teaching *theoretical medicine extra ordinem* at the *Prima hora matutina* (or first morning hour), a chair that he would hold until his death which took place in Rome on June 17th 1707. His body reposes in the Roman Church of S. Marcello al Corso.

The Armenian presence in Italy

There have been numerous contacts between Italy and Armenians which date back to Roman times: for example, Nero is said to have invited King Tiridates I to Rome in 66 A.D. to solemnly crown him in the Forum.

Such relations were at times cultural and at others commercial. Armenians certainly had cultural and commercial relations with the towns of Venice, Leghorn, Taranto, Bari, and Rome.

The earliest certain traces of a reliable presence in Medieval Italy of citizens of the Byzantine Empire of Armenian origin are found in the Byzantine Exarchate of Ravenna. Some of the exarchs were Armenians, such as the famous patrician Nerses (541-568), and Sahak (625-644). Furthermore, an army for the defence of the town, mostly composed of Armenians and hence called *Numerus Armeniorum*, was stationed in Ravenna. For the same reason also the quarter where the soldiers lodged, the *Classis*, in the coastal area of the town was called "Armenia". This area of the town of Ravenna can rightly be considered as the first Armenian colony in Medieval Italy.

As well as these groups of soldiers and officers there were also tradesmen who reached the northern coasts of Africa sailing across the Adriatic sea and enriching Sicily, Apulia, and Calabria with their presence.

As far back as the 6th century, not only did the numerous Armenian soldiers recruited by the Byzantine army reach northern Italy but also the southern part of the peninsula. Among the governors of Sicily,

Lucas Schröck, Johann Gottfried von Berger, Nicolas Andry, Philippe Hecquet, Jean-Jacques Manget, Guichard Joseph Duverney, Melchisédech Thévenot.

²⁹ G. Baglivi, *De circulatione sanguinis in rana. V. Historia morbi, et sectionis cadaveris Marcelli Malpighi archiatr. Pontif.* in G. BAGLIVI, *De praxi medica ad priscam rationem observandi, libri duo. Accedunt dissertationes novae, I. De historia, anatome, morsu, & effectibus tarantulae; Ubi obiter de ovis ostrearum detectis, & examinatis. Et de natura, lapidis serpentini, vulgò cobra de capelo, specifi in extrahendis venenis. II. De usu, & abusu vesicantium. III. Esperimenta varia anatomico-infusoria. IV. De circulatione sanguinis in rana. V. Historia morbi, et sectionis cadaveris Marcelli Malpighi archiatr. Pontif. VI. Appendix de apoplexiis, ferè epidemicis, proximè elapso biennio in Urbe, & per Italiam observatis &c.*, Lugduni, sumptibus Anisson, & Joann. Posuel, 1699

³⁰ See: A. TOSCANO, *G. Baglivi. Carteggio (1679-1704) [...]*, Op. Cit., pp. 41-42 n.3; pp. 96-98

Mushegh, of the house of Mamikonian, who came to Italy in 832, was quite famous. In Sicily, a castle of the Armenians, *Qal'at' al 'Armanîn* (the *Rocca degli Armeni*, stormed in 861, is also recorded.

Around the end of the 9th and all through the 10th century, with the re-establishment of Byzantine power in Italy, there was again a frequent presence of Armenian soldiers and authorities on the political scene of the Peninsula. As far back as the early decades of the 9th century, Arshak (Arsaces), ambassador of Nikephoros I at the court of Charlemagne, was in Italy and went to Venice to judge the doge Obelerio.

At the time of Basil I, Armenians fought in Italy under the command of Nikephoros Phokas the Elder, who founded an Armenian community in Calabria, maybe of Paulicians.

In the early 11th century (1008-1010), Bari had an Armenian catapan: John of the famous house of the Gurgen (Curcuas). It was another Armenian, the strategist Leo Tornikios (T'ornik, T'ornikian), nicknamed Kontoleon for his being tall, who, in 1011, along with the catapan Basil Argyros, surnamed Mesardonites, re-annexed Bari to Byzantium.

Armenians had a privileged relation with the inhabitants of Apulia because of its being a bridge land between East and West. Such a deep bond had been established ever since the Middle Ages, when Bari, acting as the capital of Byzantine possessions in southern Italy, was a veritable melting pot of cultures, religions, languages and ethnic groups, all living peacefully together (Greeks and Lombards; Christians, Muslims and Hebrews; eastern and western peoples - among which, of course, were Armenians as well).

Even though undergoing many alterations, in Bari there still exists today the *Quartiere armeno*, where stands the Church of *San Gregorio l'Illuminatore*, already recorded, along with the presence of the abbot and rector Meles - of probable Armenian origin - in a document dating from 1015.

Also the historic centre of Taranto, another important Apulian town, boasts an Armenian church dating from 1353, *Sant'Andrea degli Armeni*, and in Lecce, the town where Giorgio Baglivi spent his adolescence, one of the gates to the old town centre is dedicated to Saint Blaise - bishop, in the 4th century, of the town of Sebastea, in Armenia. The cults of the Armenian Saints Blaise and Gregory are so deeply rooted in Apulia that they are the patron saints of many an Apulian town: in Bari a church was dedicated to them and still in the 13th century it was referred to as *Sanctus Georgius de Armenis*; and another church, *Sanctus Andrea de Harmenis*, was recorded in Taranto.

Traces of the Armenian presence in Apulia are clearly visible also in many placenames as well as in numerous surnames. In Bari and its surroundings, particularly in Ceglie, on the Trajan way, the presence of numerous Armenian families and of mixed marriages, is attested by documents as far back as the 10th century.

The most recent historical news about the Armenian presence in Italy emphasize how this was concentrated in the following regions: a) in the Po plain, on both banks of the river, in Padua, Parma, Ferrara, and Bologna; b) on the Adriatic coasts, in Venice, Rimini, Ancona, and Manfredonia; c) in the major towns of central Italy such as Florence, Siena, Perugia, Lucca, Orvieto, and Viterbo; d) on the Tyrrhenian coasts or in nearby towns such as Genoa, Pisa, Rome, and Naples.

Such scattered communities show that the dissemination of Armenian immigrants in Italy followed three main directions: the Tyrrhenian coasts, the Adriatic coasts, and the Po basin. A minor fourth direction, that is to say that of central Italy which involved especially the towns of Tuscany, must be added to the aforementioned three ones.

Armenians had settled down also in the hinterland of the central-southern Italian province, such as in Matera, where a rupestrian church, maybe a monastic centre, already in the 11th century was referred to as *Sancta Maria de Armeniis*.

According to data provided by the most recent studies, between 1240 and 1350, there were 22 Italian towns which boasted an Armenian church, and in some of them, such as Rome, Bologna, and Venice, the active presence of more than a church is confirmed. Next to the temple, many of these churches had special inns, also called "hospices," where Armenian pilgrims passing through the town stayed.

There are other burghs about which, even though we know about the existence of Armenian churches, we have no news as regards their date of foundation or their number, as is the case with Civitavecchia, Forlì, Imola, and Pesaro. In the 16th century also Leghorn played host to an Armenian community. After examining the entire documentation we have reached the conclusion that in the 13th and 14th century, the Armenian colonies in Italy were thriving and flourishing and in the mutual relationship with the Italians also factors exceeding purely economic interests were involved: feelings of mutual esteem and gratefulness, as well as cultural and spiritual interests. A significant example of all this can be found in the history of the Armenian community in Venice. The 18th century however marked the age of the decline of such Armenian colonies, with the exception of those in Rome, Venice, Trieste, and Leghorn, whose colony survived until the Second World War.

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