

15. Restando coerente alla teoria delle cause del *De Praxi medica*, Baglivi ritiene inutile, dal punto di vista dell'attività clinica, tentare di individuare le cause prime dei morbi e di rimuoverle per mezzo di rimedi specifici (questi sono ammessi, in casi molto limitati, solo per le malattie croniche). Gli sforzi del medico dovranno piuttosto esser rivolti a ristabilire il naturale equilibrio fra i moti oscillanti dei fluidi e dei solidi, intervenendo direttamente su di essi. La patologia solidista da lui proposta giustifica quindi la terapia ippocratica, che agisce sull'organismo nella sua complessità. Dopo aver ripetutamente condannato l'abuso di sostanze farmacologiche, Baglivi consiglia rimedi esterni quali i bagni, i massaggi, le ustioni, gli impiastri, i vescicanti, ma anche la dieta equilibrata, la ginnastica (soprattutto l'equitazione) e la musica, i quali agiscono in modo meccanico sul solido, ristabilendone le oscillazioni naturali che, propagandosi al fluido, provocano l'evacuazione delle particelle morbose e creano un nuovo equilibrio di moti, vale a dire lo stato di salute. Baglivi accenna anche all'utilità dell'agopuntura e della moxibustione In: *De fibra...* p.130
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Correspondence should be address to:
Federico Di Trocchio, Via Rubicone 27- 00198 Roma, I.

Articoli/Articles

THE METHODUS MEDENDI INNOVATION
IN GIORGIO BAGLIVI'S WORK

MARIA VIDAL
Istituto Professionale, Udine, I

SUMMARY

THE METHODUS MEDENDI INNOVATION IN GIORGIO BAGLIVI'S WORK

The need to overcome the critical situation in the medical art of his time and to establish a unifying foundation for medicine urged Giorgio Baglivi to write his De praxi medica. His innovative methodus medendi was achieved by reinstating Hippocrates and adopting Francis Bacon's scientific method. A comparison with T. Sydenham's work evidences further aspects of Baglivi's complex method, in which skepticism towards theoretical medicine is overcome and mechanist theories are embraced. In his solidistic work of physiopathology, De fibra motrice et morbosa, Baglivi goes deeper into the matter, applying to medical knowledge the new scientific concepts of Galilei, Bellini, Borelli, Torricelli, Mayow and Boyle.

Among the letters of the copious correspondence¹ that Giorgio Baglivi kept up with doctors and intellectuals of his time, a considerable number regard the publication of *De praxi medica*. Above and beyond the customary rhetorical expressions suitable to the occasion, the view unanimously expressed was that Baglivi was a true son of Hippocrates' and a restorer of medicine and his work was not only an excellent manual of medical practice, in that it was a collection of numerous *historiæ morborum* complete with relative therapeutic indications, but also achieved a much more ambitious and necessary end, that of renewing and refounding the methodological principles of medicine. In the medical scenario of the second half of the 17th century, dominated by disputes between those who supported theories repropounding the traditional Galenic system, by that time in decline, and the aggressive followers of the pro-Paracelsian me-

Key words: Methodus medendi - Neo-Hippocratism - Practical and theoretical medicine - Mechanist philosophy

dicina nova, as well as by the more recent models of mechanist biology, a comprehensive revision of medicine appeared indispensable to the future progress of the art. There had, in fact, been widespread criticism involving its very foundations. 1681, for example, saw the publication in Naples of *Parere del signor Lionardo di Capoa Divisato in otto Ragionamenti, ne' quali partitamente narrandosi l'origine, e 'l progresso della medicina*, chiaramente l'incertezza della medicina si fa manifesta. The title itself is explicit about the conclusions reached by the author after an extensive historical reconstruction of the evolution of medical knowledge from its origins to the first half of the 17th century: medicine is an art devoid of indisputable fundamentals, and the presence of conflicting theoretical systems does nothing but confirm the inexistence of absolute principles². In his *De dignitate et augmentis scientiarum* (Ellis et al., 1590) Bacon had instead stressed the purely speculative and repetitive character of medicine, setting it against the success of technical knowledge, associated with direct intervention in nature.

Baglivi's criticism of the medicine of the age³ springs from similar reflections on the situation of circularity and inefficiency, from a practical point of view, of the abstract disputes among the different schools. What the Galenic doctrine of the humours, the metaphysical systems of the spagyrist or alchemists and, in some cases, the mechanist hypotheses of animal physiology have in common is that they all consider medicine as an *a priori* science in which, given several absolute principles *imagined* by the human *mind* and therefore empirically impossible to prove (the qualities of the four humours, the *tria prima*), it is possible to obtain the diagnoses, curative precepts and therapy by means of deduction. The observation of the sick individual is, in reality, limited to a superficial analysis which is, in any case, conditioned by the categories of the theoretical system followed; clinical study is practically non-existent and is fundamentally used to confirm diagnostic and therapeutic schemes established in advance. To overcome such a situation, Baglivi states, a radical break with the accepted medical tradition is required, a break which is not to be seen as the global rejection of the knowledge acquired in the course of centuries,

but rather as the reinterpretation of the role of the two foundations of the art: practical medicine and theoretical medicine. All the evils of medicine⁴, in Baglivi's opinion, are in fact attributable to the confusion between medical theory and practice, and above all to the ascendancy of the former over the latter. His programme of methodological renewal therefore calls for a precise definition of the roles of medical theory and practice: the task of theory is to supply plausible causal explanations for the pathological phenomena, while the role of practice is to collect the *historiæ morborum* and examine every element that may be verified empirically. Although experience and theory are indissolubly connected and mutually interact in making the diagnosis and prescribing the therapy, there nonetheless exists a definite priority: clinical observation, and not theory, must be the fundamental principle of the art; it is therefore necessary to go back, above and beyond the different doctrines, to the medical knowledge of the origins, that of Hippocrates⁵, the father of medical practice. Baglivi's study of Hippocrates is not associated with any rhetorical intent or philological interest, the latter widespread at the time; he does not address the problem, already debated in ancient times, of the relation between the figure of Hippocrates and the *Corpus Hippocraticum*, indistinctly attributing to the Divine Old Man the various works of the *Corpus*⁶. His concern is of a methodological nature: he states that it would, in fact, be absurd to replace the previous systems with a new theoretical one founded on different, but equally abstract, metaphysical principles. The only way out of the vicious circle of speculative medicine is represented by a return to the direct experience of medical practice, to the collection of data in the *historiæ morborum*, clinical pictures that faithfully refer the phenomena observed. Hippocrates was, in fact, the first to theorise the importance of observation in medicine, to ground the art on the collection of the evidence observed, to reject a philosophical medicine, claiming the independence of medical knowledge from principles extraneous to it⁷. Medicine is not a science derived from absolute postulates or from dogmatic preconceived principles, but a *techne* born of actual human needs and of experience; it is a cumulative form of knowledge, the

fundamental principle of which must be a formal unity of method. In the medicine of the origins⁸, there is no break between empirical observation and the logical-categorical construction of the information deriving from the observation itself. The validity of the spatial and temporal categories of environment, anamnesis, prognosis, regimen and of the notions of the progress and crisis of diseases is guaranteed by their continuous collation with experience, by their capacity to contain and interpret the experience itself, while the isolated empirical datum loses its fragmentary character, becoming meaningful precisely within such a rational system. The Hippocratic *historiæ morborum* are the voice of nature because in them observation constitutes the structure of science and the basis of the curative method. The original indissoluble balance between the two poles of experience and reason was, however, shattered, Baglivi claims, by the rise of two medical schools: first the Empiricists and then, in reaction to them, the Rationals⁹. He provides a historical reconstruction¹⁰ (Ch. X *De variis Medicinæ ætatibus, ejusdemque Progressibus*) of the evolution of the relation between theoretical and practical medicine, identifying the principal stages of that which he considers the progressive distortion of the role of the foundations of the medical art: a first distinction between ratiocinative and observant medicine took place when Galen founded his own school, to curb the mistakes of the Empirical faction. It was then the corrupting Arabs who instituted a distinct separation, never again to be superseded, between speculative and practical medicine, almost exclusively privileging the former. After a brief period of renewed interest in practical medicine, further impediments to its progress came from the development of Paracelsus' and van Helmont's spagyric medicine and, successively, from the various philosophies excogitated in the course of the 17th century: Cartesian, Democritean, Physical-Mechanical and many others¹¹. Baglivi's criticism of these different medical doctrines does not, however, involve the contributions they made to practical knowledge; his opinion of the chemical *remedia* introduced by Paracelsus and van Helmont is positive, as is his view of the immortal patience of observation of ancient Galenic medicine. With regard to the

precepts applied by the different schools of medicine, Baglivi adopts a conciliatory attitude, which he felt indispensable to the progress of the art: frequent observation of the actual efficacy of the different *remedia* guarantees their validity, independently from the theoretical system that justifies their use. The consistency of medical knowledge is not to be sought - as others had maintained¹² - in the unity of its theoretical grounds, but in the patrimony of practical precepts and therapies common to the different schools, as well as in the knowledge contained in the ancient Hippocratic texts, the validity of which could not be minimally challenged.

This return to Hippocrates' empiricism and the revaluation of clinical observation as the foundation of the medical art find further support, taking on new elements and arguments, in Baglivi's adhesion to Francis Bacon's scientific methodology¹³. While it is likely that the interpretation offered by Baglivi of Bacon's works has been filtered through his readings of authors like Sydenham and Morton, it is nonetheless evident that he addresses these themes in a much more analytical and original manner, in his intent to adapt the English philosopher's great plan for reform to the specific need for renewal of the *methodus medendi*. A comparison between the beginning of *Novum Organum* and that of *De praxi medica* can provide an idea of how Baglivi felt about Bacon's works:

Homo, Naturæ minister et interpret, tantum facit et intelligit quantum de Naturæ ordine re vel mente observaverit, nec amplius scit aut potest. (Novum Organum, Ellis et al. 1.119).

Medicus naturæ Minister, & Interpret, quicquid meditetur & faciat, si naturæ non obtemperat, nature non imperat. (De praxi medica, p. 1).

This is only one of many passages¹⁴ in which Baglivi undertakes a direct transposition of Bacon's statements from the general context of *Novum Organum* to the particular context of medicine.

From the English philosopher's work he draws a number of elements, all of which, however, serve the purpose of solving a single central problem, the method to be followed by clinical observation both in order to take its place as the fundamental

principle of medical knowledge and to lead to efficacious curative results. In developing these themes, Baglivi uses Bacon's writings not only as a source of theoretical content, but above all as a model the formal structure of which is perfectly suited to the polemical, didactic ends of *De praxi medica*. He in fact organizes his own work by distinguishing the *pars destruens* (Ch. III-X of Book I), dealing with the criticism of the impedimenta that thwarted the practice and development of clinical observation, from the *pars adstruens* (Ch. I-IV of Book II), which deals with the method by means of which the data observed is to be collected in order to compile the *historiæ morborum*.

In this context, both Bacon's theory of the idola and that of new induction undergo profound mutations: Baglivi's criticism is not turned towards general categories of phantasms deforming the mirror of the human mind, but towards very specific attitudes and prejudices, directly concerned with the activity of the clinician¹⁵. Particularly significant are Baglivi's reflections on a particular type of *idola*: the use, in medicine, of principles and theories drawn from other sciences. To clarify the relation that should exist between the medical art and other areas of knowledge, Baglivi introduces the distinction between *medicina prima*, or clinical observation, the result of which is the case history, and *medicina secunda*, which consists in the actual treatment of the diseases. Clinical observation, the cornerstone of the art, is a purely descriptive form of knowledge, which is not to be conditioned in any way by laws and principles proper to other sciences. These may - or rather, must - be utilized only in the successive stage of research, aimed at discovering, from a causal point of view, the nature of the disease and establishing the diagnosis and prognosis. In Baglivi's view, therefore, the revaluation of Hippocratic clinical medicine does not represent a rejection of the principles and theoretical knowledge that may turn out to be useful for medicine. His project is not imperious to the new scientific discoveries of the age, but he constantly stresses the need for medicine to remain anchored to its own empirical and practical origin.

In the following chapter, given up to the topic of *argumentatio a simili*, Baglivi deals with the problem of the role of mathe-

matics in medical knowledge. In order for any similitude to be correctly concluded, he says, it is necessary for it to be set up among objects classified under the same genus¹⁶. This is the case, for example, of the method used in comparative anatomy, thanks to which the most important anatomical and physiological discoveries of the century were made. He goes on to say that it is, however, possible to set up analogies between the structure of a living being and the physical behaviour of inanimate beings, and this logic is justified by the fact that all natural phenomena, however different, may be reduced to orderly, proportioned movements of material corpuscles and that the human body itself, in its structure and in the effects that depend on it, *numero, pondere et mensura procedit*. In this Baconian context, Baglivi declares his support for the fundamental theses of Galilean science, those of the mathematical structure of reality and of the ontological character of mechanist theory, citing two authors whose theories will constitute the foundations of *De fibra motrice*: Bellini and Borelli.

He points out, however, that mathematics and mechanics are not able to account for the biological phenomena that escape empirical observation. It is precisely for this reason that it is necessary to employ *argumentatio a simili* in the investigation of nature: a rational theoretical model, set up according to the physical/mechanical laws, can offer a causal - even if only hypothetical - explanation of the phenomena evidenced. At the very start of *De praxi medica*, therefore, the theoretical suppositions that Baglivi will develop in his future research have already been delineated; these will lead to the hypothesis of the anthropoid machine in *De fibra* and to the mechanical models based on the analogies between macro- and microcosm in *Dissertatio V*.

Not to be neglected, then, are Baglivi's comments regarding the last *impedimentum*, *Intermissum studium tractandi de Morbis aphoristice*, in which he addresses the problem of the linguistic structure that medical knowledge must present in order not to become a sterile verbal construction removed from any collation with reality. He in fact stresses the static, immutable character of general theoretical systems, which, precisely because

of the image of order and completeness that they mean to ensure, impede the development of practical research and the progress of the art. To these Baglivi opposes the non-dogmatic and non-systematic order of the Hippocratic aphorisms, the doctrinal content of which may continually be modified, on the basis of actual experience and the development of theoretical knowledge, while the basic categories of the method remain formally valid¹⁷. To demonstrate the practical utility of aphoristic exposition, in *De praxi medica* Baglivi devotes considerable space to brief treatises describing numerous diseases, closely following the structure of the Hippocratic Epidemics and Sydenham's works on fevers. The whole of *De praxi*, on the other hand, has been structured in obedience to a non-systemic criterion: methodology is alternated with the narration of the *historiæ*, the study of particular diseases and the relative therapy to be prescribed, and with quotations drawn from the most authoritative masters of medical practice - Hippocrates, Aurelian, Mercurial, Martian and Duret. The same topics are repeatedly dropped and taken up again by Baglivi, considered from different points of view and continuously enriched with new elements; the unity of the work is, however, guaranteed by the theme of the role of clinical observation in medicine, which serves as the leit motif of every treatise.

The first chapters of the second book of *De praxi medica* are given up to the problem of the method to be used to collect the data of experience and draw up the *historiæ morborum*, that is, to the *pars adstruens* of the work. It is, in fact, the lack of such a method, according to Baglivi, that comprises a further cause of the failure of medical practice to progress. The natural history of medicine of the past (with the obvious exception of that of Hippocrates and a few of his followers) abounds, as Bacon teaches¹⁸, with peculiar details, authoritative quotations, sterile controversies and rhetorical ornamentation, but is scanty in content. Medical practice, instead, requires a clinical history that is terse and objective, but above all rich in significant data that is useful for the diagnosis, enabling the nature of the disease to be identified. To this end, Baglivi takes Bacon's new induction method as his own, duly adapting it to medical knowledge,

and confirming that the theoretical instruments adopted are the same as those employed by Hippocrates himself, but which the latter refrained from formulating explicitly¹⁹.

In reality, only the basic concepts of the original theory of new induction remain: the general axioms are not drawn directly, but through gradual transformations; induction is not, as prescribed by Aristotelic theory, a superficial enumeration, enabling a general proposition to be obtained from individual propositions: it is not only generalization, but *interpretatio naturæ*, that is, the discovery of actual principles, on the basis of which the data of experience may be organized. This lettered induction proceeds by exclusion to the identification of the form of the phenomena. Baglivi does not make use of the unnecessarily complicated system of Bacon's *tabulæ*, but rather organizes the information according to the categories established by Hippocrates. As in Bacon, in Baglivi, too, the determination of the essences is seen in qualitative and not quantitative terms and is seen in terms of Man's intervention in nature.

Inspired by the project of the house of Solomon and consistent with the concept of medicine as cumulative knowledge is Baglivi's plan to establish scientific Academies in which to promote medical practice by means of history and observations²⁰. To uncontrolled research and discoveries due to chance or the individual stroke of genius, to scanty experiments leading to hasty, simplistic generalizations, Baglivi opposes a rigorous collective organization of medicine in Academies of science. In these Academies, the lettered member is charged with collecting the *historiæ morborum* compiled by the doctors of every nationality and period of history, while the task of the practical member is to effect new observations and draw up new *historiæ*. The two work in close collaboration, under the direction of censors (the oldest, the most learned, mature in judgement and highly skilled through extensive experience), dedicating their entire lives to the study of a single kind of disease.

In the 17th-century scenario of medical thought, the plan for methodological renewal that Baglivi suggests does not stand alone. The medical works of Thomas Sydenham (1624-1689) - in particular, his *Observationes medicæ circa morborum acuto-*

rum historiam & curationem (1676) - are an important precedent which Baglivi himself refers to constantly. To Baglivi, Sydenham incarnates the model of the modern physician, totally devoted to a practice derived from direct observation of clinical cases, highly polemical towards any philosophical medicine, reduced to the art of making words rather than healing. In effect, as with Baglivi, the program for the reconstitution of medicine proposed by Sydenham called for the art to be founded on Hippocratic medical practice and on the principles of Bacon's scientific method. There is, however, a fundamental difference between his Hippocratic *historiæ* and those of the English doctor, a difference which reveals Sydenham's different concept of illness. True to his purpose of not impoverishing the symptomatic framework by fixing it in the abstract with names, Hippocrates does not classify the disorders he analyses²¹; disease is an abstraction, the name of which simply indicates the symptoms as a whole, a theoretical scheme enabling the phenomena observed to be organized and made significant and putting them in spatio-temporal categories corroborated by experience itself. Sydenham is instead in favour of an ontological conception of disease²² and therefore affirms the need to classify the diseases according to their different species, just as botanists classify the species of vegetables. The absolute order of the development of pathological phenomena allows the physician to arrive, by means of Bacon's inductive method, at the identification of the essence of the disease. The knowledge of these natures is not, according to Sydenham, knowledge of a causal type, but exclusively descriptive, historical, analogous to that supplied by the taxonomic operations of the botanists. Causal knowledge, which has always been the foundation of medical knowledge, is limited to the determination of the immediate causes, that is, those which may be perceived by the senses, while the first causes are conceived according to Fernel, as occult forms or forces. Sydenham also declares his skepticism regarding the use of instruments, such as the microscope, which can augment the human power of observation²³. The separation between theoretical and practical medicine is therefore definitive with Sydenham: any progress in the art is entrusted exclusively to the

addition of new clinical pictures that may further increase the heritage of knowledge accumulated in the course of time.

The English physician's influence on Baglivi is considerable²⁴, but only as far as the methodology of clinical observation is concerned; it is precisely with regard to the theory of the causes that Baglivi differs decidedly from Sydenham's skeptical attitude towards theoretical medicine. Baglivi supports a concept of illness that is very similar to that of Sydenham²⁵; the disease exists as a specific essence even before it establishes itself in the organism. When this happens, the symptoms of the disease are different, while the essential nature of the disease itself remains identical. The definition of the essence of the disease and its classification by genus and specific difference, Baglivi states, must therefore precede any sort of intervention on the patient. Knowing the clinical history of a disease, however, is not enough to be able to identify its nature. Baglivi places the handling of the history and division of the causes among the principal desiderata of medical knowledge and devotes abundant space to it in his *De praxi medica*²⁶. Differently from Sydenham, Baglivi does not forego the rational study of the causes that are not susceptible to sensory perception: research must start from the observation of the pathological phenomena and, by means of special techniques²⁷, attempt to trace the first cause of each disease. Microscopic and comparative pathological anatomy, too, if guided by clinical knowledge, are indispensable, in Baglivi's opinion, in the search for the causes. He therefore goes beyond Sydenham's skeptical attitude towards theoretical medicine, asserting the continuity and strict interconnection among clinical observation, anatomical research, physiology, pathology and knowledge drawn from other sciences.

A certain medical historiography therefore errs in postulating the existence of a basic contradiction²⁸ between *De praxi medica*, given over to the reevaluation of clinical observation, and the successive treatise on solidistic physiopathology, *De fibra motrice et morbosa*²⁹, based on iatrophysical theories, in that it does not consider two factors. The first of these, as specified above, is that Baglivi feels that the case history alone, and

not the whole of medical practice, must be comprised of knowledge independent of any theorization whatsoever; the second is that every theoretical system is of a probabilistic - and not absolute - nature. The fundamental principle of this concept is a thesis of skeptical Ockhamist mould that was widespread in the 17th century and usually connected with the empiristic attitude that got the new science under way³⁰: only God may possess in its entirety any *per causas* knowledge of phenomena, because He is the Creator of everything. Man may know with absolute certainty only that which he is given in the form of factual evidence, through sensory perception; in the physical and natural sciences, any causal explanation is only a hypothetical construction, supplied with greater or lesser likelihood³¹. The scientific model that medicine should imitate is therefore, Baglivi argues, that of astronomy: the coexistence and contemporaneous validity in predicting the heavenly phenomena of the Ptolemaic, Tychoonic, semi-Tychoonic and Copernican systems³² attest both the arbitrary character of every theory and the possibility of achieving an absolutely objective form of observation, on the basis of which the different theoretical systems are created.

In the case of the biological sciences, the formulation of a scientific research method is even more problematic, due to the complexity of living organisms. The theoretical model that was most widespread, beginning with the 17th century, was undoubtedly the Cartesian anthropoid machine³³. The *automaton*, like the entire reconstruction of the world carried out by Descartes, is only a story-tale, a necessary working hypothesis enabling mechanist-type explanations of animal physiology to be made. The anthropoid machine theorized by Baglivi in his *De fibra motrice et morbosa* also presents itself as a fanciful reconstruction of the animal organism, as a hypothesis, founded on the principles of the new physical sciences, that was created for the purposes of medical practice. Without going into an analysis of *De fibra* and Baglivi's *automaton*³⁴ in this context, it is nonetheless necessary to highlight several characteristics strictly connected to the innovation of the *methodus medendi*. First of all, the fact that the physiology of *De fibra* springs from medical practice - Baglivi says that he drew his hypothesis of meningeal

oscillation from clinical observation and vivisection - and is presented by the author himself as the theoretical completion of *De praxi medica*. It is significant that the work, published for the first time in Perugia in 1700, was in reality begun a number of years earlier: in a 1693 letter³⁵ Baglivi writes that *ultimam manum dabo thesibus nonnullis [...] de fibra motrice et morbosa*, but already in a letter dated 1692, mention is made of it; it may therefore plausibly be concluded that, from a genetic point of view as well, *De praxi medica* and *De fibra* were written simultaneously, and that Baglivi's adoption of iatrophysical theories is not subsequent to his conceptions regarding practice.

He furthermore explicitly declares the advantages of the mechanist concept of physiopathological phenomena: the principles of matter and movement may be imagined and tested practically, differently from the ancient metaphysical notions (the qualities of the four humours, the *tria prima*), the experimental control or even simple empirical verification of which is impossible, even in principle. For this reason, the sensory-motory and physiopathological phenomena in Baglivi's machine are ascribed to the oscillatory movements of the solids of the organism, the state and the movements of which are entirely determinable; the laws that regulate these movements are those of Galilean physics, especially those of Borelli's *De vi percussiois* (1667) and *De motionibus naturalibus a gravitate pendentibus* (1670), as well as the laws of elasticity and the pressure of fluids expounded by Torricelli, Mayow, and Boyle.

Baglivi's study of vital phenomena conducted within a mechanist framework - and this is the true *scientia propter potentiam*, the one that is meaningful and useful for Man - coexists with an admission of the existence of something that cannot be associated, not even from a theoretical point of view, with physical/mechanical or chemical laws³⁶: if the physiopathological processes depended exclusively on the solids, their causes could be determined absolutely, because the movements and alterations of a solid body may be described by the rational models of the anthropoid machines. But the prime causes of these processes are to be found, Baglivi admits, in the fluids themselves³⁷, the nature of which may not be entirely defined even by chemi-

cal analysis, whether spagyric or mechanist-inspired. This is the limit to which both medical knowledge and, more generally, the biological sciences must submit.

For the purpose of medical practice, however, the knowledge of the prime causes is an end to be aspired to, but not indispensable: Baglivi's mechanical man is not so much a theoretical construction enabling organic phenomena to be reduced to the laws of mechanism as, first of all, a guide for the clinician, created to serve as a basis for the Hippocratic diagnosis and therapy. Fibre, the constituent unit of the *automaton*, may, in fact, be affected by two opposite disorders: *strictum et laxum*, the former being a constricted condition of the solid particles, from which the acute diseases derive, and the latter being a relaxed condition of the same, from which the chronic diseases derive³⁸. Therapy, therefore, is no longer to focus on replacing the corrupt humour, nor on eliminating the *spina infixa* by means of specific remedies, but on recreating well-balanced movements, by means of *remedia* that are chiefly external and act on the organism as a whole: those of the Hippocratic tradition. After repeatedly condemning the abuse of pharmacological substances, Baglivi recommends external remedies such as baths, massages, burns, poultices and vesicants³⁹, but also a well-balanced diet, physical exercise (especially riding) and music⁴⁰, which have a mechanical effect on the solid, re-establishing its natural oscillations which, in spreading to the fluid, bring about the evacuation of the pathological particles and create a new balance of movements, that is to say, a state of good health.

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1. Baglivi's abundant correspondence includes: 173 letters (dated 1677-1698) belonging to the collection of Sir William Osler, presently preserved at McGill University in Montreal and published in 1974 by SCHULLIAN D. M., in her work *The Baglivi Correspondence from the Library of Sir William Osler*. Ithaca and London, Cornell University Press 1974; 193 letters (dated 1679-1704) belonging to the collection of Dr. Erik Waller, presently preserved in the Waller Samling at the Universitetsbibliotek "Carolina Rediviva" in Uppsala, the catalogue of which was published by: TOSCANO A., *Catalogo delle Carte di Giorgio Baglivi conservate nella Waller Samling presso l'Universitetsbibliotek "Carolina Rediviva" in Uppsala*. Nuncius 1994;2:683-738; 15 letters collected in *Opera omnia medico-practica et anatomica...* first published in Lyon in 1704. With regard to public reception of *De praxi medica*, first published in Rome in 1696, cfr. SCHULLIAN D., *Op. cit.*, letters 116, 119, 120, 127, 132, 134, 135, 137 and *Opera omnia....* letters III, V, VII, XIV.
2. Cfr. DINI A., *Filosofia della natura, medicina, religione*. In: PORZIO L., Milano, 1985, pp.59 foll.
3. Cfr. *De praxi medica*. p. 6. The quotations that appear in this work are all taken from the 1754 Venice edition of the *Opera omnia*.
4. Cfr. *De praxi medica*, p. 64.

5. On Baglivi's Hippocratism, cfr. MÜLLER I.W., *Der Hippokratismus des Giorgio Baglivi*. Med. Hist. 1991;26:300-314.
6. The main works of Hippocrates mentioned in *De praxi medica* are: *Aphorismi, Epidemias, De arte, De locis in homine, De humoribus, De diæta, Coacæ prænotiones, De Diebus iudicatoris*.
7. Cfr. the beginning of *De veteri medicina*. (Li., 1.570).
8. Baglivi never mentions the medical sects that existed prior to and during the development of Hippocrates' theory; the medicine of the origins is, generically, what is included in the works of the Corpus.
9. In reality, the contraposition between dogmatism and empiricism characterizes the two most ancient sects of medicine, the Italic and Cnidian schools, the influence of which is present in many of the works of the *Corpus Hippocraticum*. The importance and originality of several works of the Collection (*De veteri medicina, De ære, aquis et locis, De diæta, sive de victus ratione*) lie in their having theorized a new model of science that overcomes both the dogmatism of the Italic school and the radical empiricism of Cnidian medicine. Baglivi refers instead to the Galenic distinction between the rational and empirical schools in *De sectis ad eos qui introducuntur*. Cfr. VEGETTI M. (introductions to), *Opere di Ippocrate*. Torino, UTET 1976, and *Opere scelte di Galeno*. Torino, UTET 1978.
10. Histories of medicine had existed since Humanist times (Giovanni Tortelli, Gian Giacomo Bartolotti), but the first classic works appeared in the 1700's: FREIND J., *The History of Physick*; from the time of Galen to the beginning of the sixteenth century. London 1725; ELOY N.F.J., *Dictionnaire historique de la Médecine ancienne et moderne*. 3, Mons 1778.
11. This opinion of Baglivi's stresses the abstract character of the 17th-century mechanist physiologies, the deductive structure of which may prevent any real attention from being paid to the empirical data. The evaluation of mechanist philosophy he supplies in the following pages is entirely a different matter.
12. For the debate between supporters of traditional and spagyric medicine, cfr. ZANIER G., *Medicina e filosofia fra '500 e '600*. Milano, Franco Angeli 1983.
13. Baglivi does not dwell upon Bacon's specific observations and theses with regard to medical knowledge, but makes general use of the scientific method elaborated by the English philosopher. For Bacon's position in relation to medicine, cfr. HERPIN A., *Essai sur Francis Bacon. Ses opinions sur la médecine*. Paris 1947. Bacon's view of Hippocrates is to be remembered: *Primum [shortcoming of medicine] est, intermissio diligentiae illius Hippocratis, utilis admodum et accuratæ, cui moris erat narrativam componere casuum circa ægrotos specialium; referendo qualis fuisset morbi natura, qualis medicatio, qualis eventus*. (*De dign. et aug. sc.*, Ellis et al. 1.591). In his *Temporis Partus Masculus*, (Ellis et al. 3.534), however, Bacon criticizes Hippocratic empiricism as being methodless.
14. Other significant passages may be found on pp.85-86 of *De praxi medica*, where Baglivi adapts Bacon's polemics against sophistical, empirical and superstitious false philosophy (cfr. *Novum Organum*. Ellis et al. 1.169-178) to a criticism of the different medical schools, that is to say, the rationalist, empirical and spagyric schools. These same pages contain his criticism of hasty induction and methodless observation (Ivi, pp.169-190). On p.67 of *De praxi medica*, to illustrate the situation of medical knowledge, Baglivi uses Bacon's famous comparison of ants, spiders and bees (cf. *Novum Organum*, p.201). Particular expressions drawn from *Novum Organum* recur constantly in *De praxi medica*.
15. Cfr. *De praxi medica*, pp.4-5.
16. The polemic is once again against the *chymici*, whose analogies, in Baglivi's opinion, are wrong because they are extended to objects not belonging to the same ge-

- nus, such as minerals and living things. In particular, he attacks the analogies adopted by van Helmont in his theory of fevers. In: *Dissertatio V De morborum. & naturæ analogismo. De vegetatione lapidum...* published in the first edition of the *Opera omnia* (Lyon 1704), Baglivi once again takes up the theme of the analogismus, introducing important changes in it.
17. *Novum Organum*, cfr. note 14, p.194.
 18. Cfr. *De dignitate et augmentis scientiarum*. Note 13, p.501; the passage is quoted both by Baglivi and, in a similar context and with an analogous meaning, by: SYDENHAM T., *Opera medica*. Vol.I, Patavii 1725, p.XIII.
 19. Cfr. *De praxi medica*, p.87.
 20. *Op. cit.*, p.90.
 21. *Opere di Ippocrate*. Note 9, p.319. Cfr. also *De victus ratione in morbis acutis*. In: É. Littré, *Œuvres complètes...*, 2.192.
 22. Cfr. *Opera medica*. Note 18, pp.18-20; for the ontological concept of disease cfr: PAGED W., *Harvey and the Modern Concept of Disease and Van Helmont's Concept of Disease*. In: *From Paracelsus to van Helmont*. London, Variorum Reprints, 1986, pp.496-509 and pp.419-454; FOUCAULT M., *Nascita della clinica. Il ruolo della medicina nella costituzione delle scienze umane*. Turino, Einaudi 1969.
 23. Cfr. WOLFE D.E., *Sydenham and Locke on the Limits of Anatomy*. *Bull. Hist. Med.* 1961; 3:193-220; DEWHURST K., *Locke and Sydenham on the Teaching of Anatomy. Med. Hist.*, 1958;II:1-12.
 24. In *De praxi medica*, countless expressions and passages have been taken from Sydenham's works, often without quoting the author. Besides the entire *Tractatus de Podagra* cfr. *Opera medica*. *Op. cit.*, vol.II, pp.496 foll.; *De praxi medica*, pp.94 foll., which Baglivi follows almost word for word, the reader should compare *Opera medica*. *Op. cit.*, vol.I, pp.9-10, 21, 142, vol.II, p.571 and *De praxi medica*. PP. 102, 104-5, 85, 68.
 25. Cfr. *De praxi medica*. PP.3, 92, 93.
 26. *Ibidem*, pp. 101, 102.
 27. Baglivi lists some of these techniques: the determination of the causes that may be perceived through the senses, with particular attention to the symptoms (immediate causes); the chemical analysis of the substances that are secreted or retained; the *ab juvantibus* & *lædentibus* method, also similarly based on a chemical analysis of the substances that are useful and harmful for the organism (once the nature of the particles of a certain remedium has been defined, it is possible, following the principle of *contraria contrariis*, to arrive at the nature of the particles of the infected fluid); the observation of the evolution of a disease in another similar or different species; the observation of the alteration of the principal organic functions and of the concomitant symptoms. Cfr. *De praxi medica*, p. 106.
 28. Cfr. the histories of medicine: DE RENZI S., *Storia della medicina in Italia*. Naples 1846, vol.IV, pp.282, 284; CASTIGLIONI A., *Storia della medicina*. Milan 1948, vol.I, pp.476, 479, 488; PREMUDA L., *Metodo e conoscenza da Ippocrate ai nostri giorni*. Padua, CEDAM 1960, p.43; and the monographic studies: CASTIGLIONI A., *Di un illustre medico raguseo*. *Rivista di storia critica delle scienze mediche e naturali* 1921;9-10; GRMEK M., *Osservazioni sulla vita, opere ed importanza storica di Giorgio Baglivi*. *Atti del XIV Congr. Int. di Storia della Medicina*, Rome 1960, pp.429-430; IDEM, headword "Baglivi" in the *Dictionary of Scientific Biography*. CRESPI M., headword "Baglivi" in the *Dizionario biografico degli italiani*.
 29. ...*De fibra motrice et morbosa, nec non de experimentis ac morbis salivæ, bilis et sanguinis. Ubi obiter de respiratione, et somno. De statice æris, et liquidorum per observationes barometricas, et hydrostaticas ad usum respirationis explicata. De circulatio-*

- ne sanguinis in testudine, eiusdem cordis anatome. Epistola ad Alexandrum Pascoli* was first published in Perugia in 1700. The second edition, *Specimen quatuor librorum de fibra motrice, et morbosa...* different from the first (although there are no changes in the fundamental concepts of the solidistic theory), was published in Rome in 1702. The part denominated *De fibra motrice et morbosa...* in the first edition, was successively published, unchanged, in the *Opera Omnia* (1704) under the title *Dissertatio I De anatome fibrarum, de motu musculorum ac de morbis solidorum...*
30. Cfr. GREGORY T., *Scetticismo ed empirismo, studio su Gassendi*. Bari 1961, pp.22 foll.
 31. Particularly clear is the methodological formulation elaborated in Risposta del Dottor M. Malpighi alla lettera intitolata "De recentiorum medicorum studio dissertatio epistolaris ad amicum". Cfr. Risposta in: *Opere scelte*. Turin, UTET 1967, pp.512-513.
 32. Cfr. SCHOFIELD C. J., *Tychonic and Semi Tychonic World Systems*. New York 1981.
 33. Cfr. DESCARTES, *L'homme*. Adam & Tannery, ll.119-121, 130-131, 165. Letter to Mersenne dated 25th February, 1630, ivi, ll.115-124 and *Le monde*. ll.31-36.
 34. Baglivi compared it to an *horologium oscillatorium* - a probable reference to the work of Christian Huygens, *Horologium oscillatorium, sive de motu pendulorum ad horologia aptato demonstrationes geometricæ* (Paris 1673) - a machine incessantly traversed, both in its solid and fluid parts, by ondulatory movements of different origins, both internal or external, but in any case exclusively dependent on the structure of matter. These elastic vibrations are the cause of every physiopathological phenomenon; it was thus that the Galenic notion of health as a balance of humours was replaced with that of health as a balance of movements. For a treatise on the subject, cfr. VIDAL M., *Giorgio Baglivi tra osservazione clinica e speculazioni iatromeccaniche*. *Acts of the Centro di Ricerche Storiche-Rovigno*, 1990; 20:159-194.
 35. Cfr. SCHULLIAN D., *The Baglivi Correspondence...* Note 1, letters 51 and 53.
 36. Cfr. *De fibra...*, p.129; *De praxi medica*, p.3.
 37. The problem of the role of fluids in the solidistic system is very complex; suffice it to say that the second book of *De fibra*, which was to have dealt with the question, is missing altogether; and that, on the other hand, three of the *Dissertationes* collected in the *Opera omnia* are respectively devoted to the chemical analysis of saliva, bile and blood.
 38. *Tensio* and *laxus* are fundamental notions in the medicine of the Methodists which, in the first century A.D., was set against the Galenic theory of the humours. It is, in fact, against the Methodists that many of Galen's arguments in *De sectis...* are directed. Baglivi emphasizes the continuity between methodic medicine and solidistic theory. Cfr. *De praxi medica*, p. 100.
 39. One of the dissertations collected in the *Opera omnia* is given over to the use of vesicants (*De usu et abusu vescicantium*, pp. 322 foll.). Baglivi also mentions the usefulness of acupuncture and moxibustion (*De fibra* p. 130), demonstrating his familiarity not only with *De medicina ægyptiorum libri quatuor* by Prospero Alpino, but also the theories of Wilhelm ten Thyne, although he does not quote his work, *Dissertatio de Arthritide; Mantissa Schematica; De Acupunctura et Orationes Tres*. On attitudes towards oriental medicine in Europe, cfr. LU GWEI DJEN and NEEDHAM J., *Aghi celesti. Storia e fondamenti razionali dell'agopuntura e della moxabustione*. Turin, Einaudi 1984, pp.321-352.
 40. Particularly interesting is *Dissertatio VI De anatome et morsu et effectibus tarantularum*, pp. 303 foll., in which musicotherapy is indicated as the most appropriate remedy for spider bite. The oscillatory impulse transmitted to the air by the musical instruments is propagated to the skin and, from this, to the fibres, blood and cere-

bral meninges. The rhythmical oscillations of music dissolve the clots caused by the tarantula's poison and stimulate the patient into a dance, the shaking movements of which bring about the expulsion of the semen of the poison. It should be noted how the therapy prescribed by Baglivi does not employ remedia specifica to expel the semen, but acts upon the organic solids and fluids as a whole. It is particularly important that the therapeutic effects of music, traditionally held responsible for the modification of the affectiones animi, are connected by Baglivi to a mechanist scheme. For a bibliography on the subject, cfr. SCHULLIAN D., note 1, p.127, notes 19 and 30, and TURCHINI A., *Morso, morbo, morte. La tarantola fra cultura medica e terapia popolare*. Milan, F. Angeli 1987.

Correspondence should be addressed to:
Maria Vidal, Via Sebenico, 39 - 33100 Udine, I

Appendice/Appendix

GIORGIO BAGLIVI (1668-1707)

Giorgio Baglivi (George Armenius Baglivius - Gjuro Armen Baglivi) was born on September 8, 1668, in Ragusa-Dubrovnik, from Vlaho Armen, a merchant, and Anica Vukovic, a daughter of Jakov Vukovic, a tailor. The mother died after the delivery of the second son (Jakov-James) and the father Vlaho at once. George and James were first provided for by their uncles, then by Jesuits in their *Collegium* of Dubrovnik. Michele Mondegai (1649-1716) was the Rector of the *Collegium*, Raffaele Tudisi (1645-1732) was the tutor of the two children and Rafo Tudisevic and Ardelio Dellabella were their teachers in the humanistic education. With a notary act issued on march 5, 1687 George and James were adopted by the doctor Pietro Angelo Baglivi (1624-1704), who addressed George to study medicine in Naples and Salerno, whereas James was embarked on the ecclesiastical career. George continued his studies and training in experimental and clinical research in the best Italian Universities (Padua, Bologna, Ferrara, Venice, Pavia, Florence, Perugia) under the tutorship of the great physician and scientist Marcello Malpighi (1624-1694), who directed the young Baglivi to the functional investigation by using the systematic microscopic anatomy, so that in just a few years the pupil became famous in the scientific world. When Malpighi was invited in Roma by the pope Innocent XII (1691), Baglivi too moved to Rome (1692) as secretary of Malpighi and clinical assistant of Giovanni Maria Lancisi (1654-1720), Professor of Anatomy and Medicine in the Sapienza Archigymnasium. Baglivi appointed the position of Professor of Anatomy, then of Medicine, in recognition of his experimental works, in which he applied the Galileo's principles of mathematics-mechanics on living organisms, and originated the so-called solidar pathology and experimental physiology, as response to the whole conceptualization of the diseases derived from the Galenic medicine. He wrote *De praxi medica* (1696) on the importance of the hippocratic bed-side medicine (the holistic view was for him the true heritage of Greek medicine) and the risks of