

ENTRE MÉCANISME ET TÉLÉOLOGIE
Anatomie, physiologie et philosophie des fonctions à la Renaissance

Président de séance : Roberto Lo Presti (Université de Palerme)

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Une grande variété de contributions savantes a depuis longtemps été consacrée à l'étude et à l'analyse des fondements théoriques et épistémologiques des descriptions du cœur faites à la Renaissance, de leurs relations avec les modèles anciens – notamment avec la physiologie aristotélicienne du cœur -: elles ont mis en avant le rôle de ces théories soit dans la construction d'une image mécaniste du fonctionnement du corps humain soit dans l'affirmation de la 'première révolution biologique' entre la fin du 16^e et le début du 18^e siècle. Les choses sont sensiblement différentes en ce que concerne le discours anatomique, physiologique, philosophique et littéraire sur les autres organes traditionnellement chargés des fonctions vitales, animales et cognitives, notamment le cerveau, le foie, les poumons. La contradiction se lit tout d'abord en deux faits : 1) la description physique et fonctionnelle de ces organes, spécialement la description du cerveau et du système nerveux, a posé des difficultés techniques et intellectuelles importantes à des générations d'anatomistes ; 2) un héritage très riche d'anciennes théories médicales et philosophiques fournissait des représentations littéraires fort connues et utilisées comme modèles de référence par les médecins et les philosophes de la Renaissance. La séance que je propose vise à accueillir des contributions offrant un regard nouveau sur les discours médical, anatomique, philosophique ou littéraire portant sur les fonctions vitale, sensitive, cognitive et sur leurs interactions ; on se posera surtout la question du passage de la théorie aristotélicienne des trois âmes (végétative, animale, rationnelle) à la notion 'moderne' de fonction, du conflit et des interactions éventuelles entre paradigmes mécanistes et téléologiques en anatomie et physiologie, ainsi que la question des représentations du 'corps-machine' et du développement et diffusion de la notion de 'automaton' dans le discours médical de la Renaissance. L'enquête ouvrira ainsi sur les processus d'imitation, rejection, assimilation et réinvention de la tradition médicale gréco-latine à la Renaissance.

BETWEEN MECHANISM AND TELEOLOGY

Anatomy, physiology, and philosophy of functions at the Renaissance

A great variety of scholarly contributions have been consecrated for last decades to studying and analyzing the theoretical and epistemological foundations of Renaissance physiological and anatomical accounts of the heart, their relations with the Ancient and in particular the Aristotelian accounts of the heart function, as well as the impact that these accounts and the debate that aroused around them had on the rise of a mechanistic view of the human body and of what has been defined as the first biological revolution between the end of the sixteenth and the early beginning of the eighteenth century. A far lesser attention has been generally paid to investigating into the anatomies, physiologies, philosophies and literary representations of the other organs traditionally endowed with cognitive/vital/animal functions, namely the brain, the liver, and the lungs, and this in spite of at least two facts: 1) the physical description and the functional account of these organs, especially that of the brain and the nervous system, proved to be among the most technically onerous and intellectually demanding tasks for generations of anatomists; 2) there was an extremely rich heritage of Ancient (medical and philosophical) theories and literary representations concerning the anatomy and physiology of these organs as well as the connections between respiration and cognition, theories and representations which Renaissance physicians, anatomists, philosophers had to take into account, and which they actually dealt with. The special session that I propose intends to collect papers that aim to shed new light into Renaissance medical/anatomical, philosophical, literary accounts of the vital/sensitive/cognitive functions and their reciprocal connections/interactions, by especially focusing on the processes of imitation, rejection, assimilation and reinvention of tradition. Dedicated papers should also address the question of the passage from the Aristotelian theory of the three souls (vegetative, animal, rational) to the 'modern' concept of 'function'. The panel will welcome also contributions investigating into the differences and the eventual interactions between mechanistic and teleological paradigms in anatomy and physiology, as well as into the first representations of the 'body-machine' and consequently into the birth of the modern concept of 'automaton' and its use in medical contexts.

Résumés des communications

THE BODY OF THE SOUL. LUCRETIAN ECHOES IN THE RENAISSANCE THEORIES ON THE PSYCHIC SUBSTANCE AND ITS ORGANIC REPARTITION.

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It has been often remarked that Lucretius' influence on the rise of atomism in the sixteenth and seventeenth century is impressively huge and prominent (see Meinel 1988 or Stückelberger 1972). One usually highlights the importance of the *De rerum natura* as a source for corpuscular physics and its consequent applications in kinetics or gnoseology. But it should be pointed out more precisely, at the same time, how the teaching of Lucretius strongly influenced innovative aspects of the Renaissance physiology such as the development of a biological - or even mechanic - view of the soul. In this paper I will specifically analyze the *Fortleben* of a quite well-known Lucretian argument, the description of the moving parts of a snake which has been chopped up (*DRN* III, 634-669). This image is used by the poet in order to demonstrate the materialistic repartition of the psychic substance through the whole body of living beings. Although Lucretius' doctrinal exposition firmly goes back to Epicurus' psychology, it is very likely that his vivid imagery, in this specific case, refers to the Aristotelian tradition. Similar zoological argumentations, in fact, are repeatedly employed in Aristotle's treatise *On the Soul* (I, 4, 409a 7-10; I, 5, 411b 19-22; II, 2, 413b 16-21). Renaissance thinkers and scientists like Telesio, Doni or Bacon creatively resume Lucretius' and Aristotle's speculations on cut moving animals, conceiving theories on the nature of the soul and the distribution of vital faculties in the body which variedly try to combine atomistic mechanism and Peripatetic teleology.

Basic References:

- BERETTA M., "Gli scienziati e l'edizione del *De rerum natura*", in Beretta M. - Citti F. (eds.), *Lucrezio, la natura e la scienza* (Firenze: 2008) 177-224.
- CITTI F., "*Pierio recubans Lucretius in antro*: sulla fortuna umanistica di Lucrezio", in Beretta - Citti (eds.), *Lucrezio, la natura e la scienza* 97-139.
- GAMBINO LONGO S., *Savoir de la nature et poésie des choses. Lucrèce et Épicure à la Renaissance italienne* (Paris: 2004).
- GEMELLI B., *Aspetti dell'atomismo classico nella filosofia di Francis Bacon e nel Seicento* (Florence: 1996).
- JOHNSON M. - WILSON C., "Lucretius and the history of science" in Gillespie S. - Hardie Ph. (eds.), *The Cambridge Companion to Lucretius* (Cambridge: 2007) 131-148.
- MEINEL CH., "Early Seventeenth-Century Atomism. Theory, Epistemology, and the Insufficiency of Experiment", *Isis* 79 n. 296 (1988) 68-103.
- STÜCKELBERGER A., "Lucretius reviviscens. Von der antiken zur neuzeitlichen Atomphysik", *Archiv für Kulturgeschichte* 54 (1972) 1-25.
- Id., (ed.), *Antike Atomphysik. Texte zur antiken Atomlehre und zu ihrer Wiederaufnahme in der Neuzeit* (Munich: 1979).

**BETWEEN MECHANISM AND TELEOLOGY: NEW LIGHT ON THE CONCEPT OF *FABRICA*
(HUMANI CORPORIS) IN VESALIUS' ANATOMICAL WORK**

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Abstract

It has been long acknowledged by historians of medicine that Vesalius' masterpiece *De humani corporis fabrica* (1543) represents a foundational text of scientific anatomy as well as a cornerstone of modern medicine, but also one of the most striking intellectual achievements of Western culture ever, for it revolutionized the way of looking at and conceiving the human body, its structure and functions. A key-concept, through which such revolutionary approach finds expression, is of course that of *fabrica*, which concept Vesalius puts in evidence in the title, so deliberately breaking a well-established tradition that prescribed, since Mondino onward, to use for the title of the anatomical treatises terms like 'Anatomia', 'Dissectio', 'Historia' (that is, terms referring to the cutting and the material inspection of the body).¹

For its part, the term *Fabrica* intuitively connotes a 'construction' or 'composition' rather than a division and dismembering; it therefore patently lays greater stress on the result of the anatomist's intellectual activity of comprehension of the body rather than on the manual activity by which such comprehension is preceded and on which it is founded, in fact. Moreover, as a consequence of translating the notion of *fabrica* as 'structure', many historians have thought to be in the presence of a most decisive textual proof of Vesalius' contribution to the 'mechanization of body'. This point of view, however, has been convincingly questioned by Jackie Pigeaud, who has shown its nature of historiographical commonplace rather than of historical truth, and has argued for a direct Ciceronian derivation (*De natura deorum*) and an active/passive meaning of the term *fabrica* as it is used by Vesalius (to the eyes of Pigeaud, *fabrica* would indicate both Nature's teleological activity of fabricating the body and the very result of this fabrication and, in this respect, as it has been suggested to me by Vincent Barras, its semantic would be similar to that of the Greek *kataskeue*).

In this paper, taking Pigeaud's analysis and Barras' suggestions as point of departure and further developing them, I shall try to demonstrate that the term *fabrica*, far from implying a 'structural' or even 'mechanistic' view of the body, must be intended as the term that Vesalius deliberately chose, even independently of its actual or supposed Ciceronian derivation, to give a literal translation of the concept of *kataskeue* as he found it in Galen. The concept of *fabrica* must be therefore understood as the expression of Vesalius' theoretical indebtedness to Galen as well as of his *explicit* will of acknowledging and, in fact, perfecting Galen's teleological account of the bodily functions by emending his material and conceptual mistakes in the dissection, inspection and description of the body.

¹ This is the list of the chief Pre-Vesalian anatomical writings: Hieronymo Manfredi, *Anothomia* (1490); Gabriele Zerbi, *Anatomiae Corporis Humani et Singulorum Illius Membrorum Liber* (1502); Alessandro Benedetti, *Anatomice, sive Historia Corporis Humani* (1502); Antonio Benivieni, *De Abditis Nonnullis ac Mirandis Morborum et Sanationum Causis* (1507); Alessandro Achillini, *Annotationes Anatomicae* (1520); Berengario da Carpi, *Commentaria...super Anatomia Mundini* (1521)/*Isagogae Breves* (1522); Andrés de Laguna, *Anatomica Methodus, seu De Sectione Humani Corporis Contemplatio* (1535); Nicolò Massa, *Liber Introductorius Anatomiae sive Dissectionis Corporis Humani* (1536); Johannes Guintherius, *Anatomicarum Institutionum secundum Galeni...libros Quattuor* (1536); Johannes Dryander, *Anatomiae...pars prior...quae ad caput spectant* (1537); Giovanni Battista Canano, *Musculorum Humani Corporis Picturata Dissectio* (1541?); Charles Estienne, *De Dissectione Partium Corporis Humani Libri Tres* (1545). For a historical survey of these and other anatomical works antecedent to Vesalius's *Fabrica* see Lind 1975, pp. 3-19.

HELKIAH CROOKE AND THE ANATOMICAL SOUL IN *MIKROKOSMOGRAPHIA* (1615)

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This paper explores the blending of religious and anatomical theories evident in *Mikrokosmographia*, Helkiah Crooke's compendious English anatomical text. In particular, I focus on Crooke's discussions of the soul as an anatomical part that is given the same consideration as the heart, lungs, and brain in his text. Crooke struggles with how to represent this intangible yet extremely important feature of the subject and focuses significant attention on the relationship between the body and the soul. He devotes particular attention to the mediation of the so-called 'animal spirits,' the paradoxically tangibly intangible bridge between body and soul comprised of blood and vapour. The critic Gail Kern Paster describes this perception of the animal spirits as "material but invisible, [and] hence dangerously hybrid," but I would characterize this hybridity as necessary and even comforting for Renaissance thinkers. The anatomist might not be able to see the spirits, but the presumed dual nature of them avoids the risk of further distancing the soul from the body that understanding them as purely physical or purely ethereal would entail. For Crooke, as with many English Renaissance anatomists, the soul is an integral part of the anatomical body that not only provides meaning to the corporeal self but is also responsible for the mechanics of motion and sense. Critics have often sought to trace the emergence of mechanical theories of anatomy and subjectivity during this period and, as a result, have frequently overlooked the centrality of the soul to those discourses, an oversight that this paper will engage with through an examination of *Mikrokosmographia*.

Anatomie du corps et de l'esprit chez Francis Glisson

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Comme il est bien connu, dans son *Anatomia hepatis* de 1654 et surtout dans son *Tractatus de ventriculo et intestinis* de 1677, Glisson introduit la notion d'irritabilité pour rendre compte de l'idée d'une perception naturelle présente en toutes choses. Par là, il identifie un principe de vie, premier, et en un sens, tout à la fois antérieur à toute organisation et l'expliquant. Or, c'est guidé par la même exigence qu'il mobilise la même démarche, dans son manifeste théorique de 1672 *Tractatus de natura substantiae energetica, seu de vita naturae*. Constatant l'inadéquation des concepts aux choses, c'est en disséquant les objets de la perception qu'il parvient à identifier un principe actif en toutes choses (*internum principium percipiendi, appetendi atque se movendi*). Si l'on peut, en première analyse, inscrire la pensée de Francis Glisson dans la tradition aristotélicienne et galénique, nous aimerions montrer que Glisson met en place un dispositif porteur d'une grande modernité, à savoir un mécanisme d'intelligibilité qui conduit à identifier un principe "énergétique" à l'oeuvre dans toute la nature et doté d'une finalité : la vie qui préside à l'organisation et à la diversité présente dans la nature.

L'ILLUSION DES AMPUTÉS: LA TRADITION CHIRURGICALE DE LA RENAISSANCE ET L'EXPLICATION MÉCANISTE DE LA DOULEUR DANS L'ANATOMO-PHYSIOLOGIE CARTÉSIENNE DES NERFS ET DU CERVEAU

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La tradition médicale de la Renaissance a souvent fait mention de l'illusion des amputés ou douleur des membres fantômes comme cas clinique très difficile à expliquer sinon inexplicable. Mentionnées dès *La grande chirurgie* de Guy de Chauliac (1363), les conséquences des amputations ont été finement décrites par le chirurgien Ambroise Paré, qui dans la seconde moitié du seizième siècle a diffusé en France les planches de Vésale et son idée de la science anatomique comme révélation de l'admirable *fabrica* du corps humain, produit d'une *Natura artifex*, douée de volonté et d'intentions. En qualifiant l'illusion des amputés comme un paradoxe « faux sentiment ». Paré remarque qu'il s'agit d'une « chose digne d'admiration, et quasi incroyable à gens qui de ce n'ont pas expérience ». Au principe du siècle suivant le maître d'Harvey, Fabrice d'Aquapendente, dans ses traités de chirurgie fournit une explication de la douleur des amputés par le « sentiment exquis » des nerfs et par « la grande sympathie qu'ils ont avec le cerveau ». Par rapport à ce contexte médical et chirurgical, l'explication mécaniste proposée par Descartes de la douleur et de l'illusion des amputés fournit une analyse inédite, qui permet de résoudre certaines apories inscrites dans la tradition médicale, grâce au rôle privilégié accordé aux filets des nerfs – conçus comme cordes en tension qui transmettent automatiquement au cerveau la même impulsion, quel que soit l'endroit d'où celle-ci a été élançée -, et à la glande pinéale, élue à centre de convergence des mouvements intra-cérébraux et « siège principale » de l'âme.