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How to Write the History of Modern Surgery in the Arab and Muslim World?
Methodological Problems and Epistemological Issues

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Having been asked to write a synthetic chapter on the history of contemporary surgery in the Arab and Muslim world (excluding Iran) for the Medical Encyclopedia of Islam, I took the challenge. In completing the article[2], I met with some material difficulties and methodological problems I would like to share with the academic community, in particular with Iranian scholars.

Writing a short and comprehensive chapter, as I anticipated, was a daunting task. No model was available, there was no authoritative version of the events, in the concerned countries or emanating from the outside, no clues to the places, institutions, important people... I had to localize sources and documents, assess, check and hierarchize information, invent periodisation, identify the prevailing trends, the main issues at stake, the scientific obstacles and the ethical dilemmas, describe the pending questions and the offered solutions, in short set up the frame, the actors and the plot, and write the play.

Yet, it was not a fiction, it was supposed to be real history, as such full of human wisdom and folly, trials and errors, successes and failures. It was also supposed to yield insight into medical science, investigating always further into the intimacy of human bodies. Anatomy and dissection (two meanings that are expressed by the single Arabic word *taṯhrīḥ,* still currently provide metaphors for conceptual analysis. Moreover, while today surgery is supposed to follow universally admitted procedures, in conformity with the tenets of a well-established rational science, yet surgeons clearly operate in a

1. Centre d'Études et de Documentation Économiques, Juridiques et Sociales.
2. Moulin, A.M., *The history of surgery in the Arab and Moslem World*, Encyclopedia of Islam, Tehran, forthcoming.

local context, responding to individual and social demands framed by law, supervised by academic institutions and involving human bodies.

Positing myself in History

Roger Cooter has claimed that there is no consensual methodology in medical history and even perhaps no real debate on the subject, and that most historians adopt an ethnographic style in their accounts inasmuch they dig out material and feel authorized to put forth interpretations of their own.[1] I admit that I led my investigations in a personal manner, and assembled my material gleaned in a piecemeal fashion in a largely improvised way. Yet, despite this empirical bend, when starting to work, I felt myself immediately confronted with two sets of methodological postulates, and had to choose between different views of what history is, which I first considered as contradictory and ultimately tried to reconcile.

The first position is illustrated by what we call in France the School of *Annales*, after the name of the journal inspired by this school, a respected publication in the field up to present times. Annals or chronicles usually refer to historical accounts given by eye witnesses or sources contemporary of the events. The School was led between the two World Wars by historians such as Marc Bloch and Lucien Febvre. Bloch wrote a famous book on the alleged power of Western Kings to perform cures in some maladies, from the Middle Ages to the French Revolution.[2] Lucien Febvre raised the issue of religious beliefs in the times of the prolific writer and physician François Rabelais during the European Renaissance (the 16th century AD).[3] Both historians strongly urged the necessity of understanding scientific ideas in their context, and assessing the intellectual armamentum available at the time, not to be confused with out of place controversies and be contaminated with later concerns and practices. Anachronicism was the main danger, and "mentalities" had to be explored, thanks to the extensive use of local and contemporary

1. *The History of Medicine and its Western methodologies*, this issue of *Majalleh-ye Tārīkh-e 'Elm*.

2. Bloch, M., *Les rois thaumaturges* (1924), Gallimard, Paris, 1983.

3. Febvre, L., *Le problème de l'incroyance au XVIème siècle. La religion de Rabelais*, Albin Michel, Paris, 1942.

sources.

This view of history singled out periods, spanning one or several generations. Some historians tried to characterize these periods by specific features shared by the people adhering to a common "vision of the world" (a translation from the German "*Weltanschauung*"), a vision that, because of its compelling internal logic, turned out to be incommensurable, as a "structure", with anterior or posterior visions of the world[1]. There could be no smooth transition from one period to another, and the shift between them was necessarily marked by a sharp turn, cleavages, ruptures, which made it impossible for people belonging to the next epoch, not unlike Orpheus, standing on the threshold of Inferno in Greek mythology, to have a comprehensive gaze on a past vanished for ever ("the world we have lost", to quote the British historian Peter Laslett[2]). Accordingly, scholars were invited, while studying "mentalities", to be well aware of the lenses they were wearing when they depicted the realities of any chosen period of time.

These considerations paved the way to an aggressively discontinuist epistemology, emphasizing the advent of "scientific revolutions" and "paradigm shifts", which abruptly transformed the landscape of science. Alexandre Koyré described such a revolution in physics[3], Gaston Bachelard advertised the necessity of "epistemological breakthroughs" (*ruptures*) for the march of knowledge,[4] and Thomas Kuhn popularized the idea of scientific revolutions in a famous book, published in 1960,[5] which has remained as a reference up to this day in academic circles and beyond.

While the School of *Annales* dealt with representations of all kinds, epistemologists of sciences came from the study of mathematics, physics and chemistry, rather than from biology and medicine. The

1. Illustrated later by works such as: Lucien Goldman, *Le dieu caché*, Gallimard, Paris, 1956, on Blaise Pascal and the Jansenist approach to mundane and divine sciences.

2. Laslett, P., *The World we have lost*, Methuen, London, 1963.

3. Koyré, A., *Etudes galiléennes,* Hermann, Paris, 1966.

4. Bachelard, G., *La formation de l'esprit scientifique*, Vrin, Paris, 1938.

5. Kuhn, T.S., *The structure of scientific revolutions*, Chicago University Press, Chicago, 1962.

cases of relativist theories in physics and non Euclidian geometries, among others, were classical examples of radical theoretical transformations, how science was turned up down. At first sight, the birth of bacteriology or even the rise of molecular biology (*The Eighth Day of Creation*)[1] do not seem to offer such clear examples of sweeping changes in both theory and practice.

However, in the West, the idea of scientific revolutions in medicine made its way into the doctors' minds at the beginning of the 19th century. The term revolution, having for centuries referred to the cyclic movement of the stars, was invested with new meanings, after the French Revolution was celebrated by its supporters as a model of the radical changes required by societies. Accordingly, physicians and surgeons in the romantic period following the Revolution and the first French Empire started to preach the adoption of novel theories and subversion of obsolete systems, in short advocated scientific revolutions in their own fields. The English obstetrician James Blundell, who tried in the 1830s to introduce blood transfusion in the treatment of post-partum hemorrhages in women, advertised such dramatic changes in surgery and gave the use of human blood, for long banned in Europe from surgical practice (since the end of the 17th century), as a good example of what such revolutions should be.

From this time on, romantic terminology was frequently used by the scientists advocating eradication of routine ideas and practices. Louis Pasteur, clearly a conservative in political and social matters, adopted such revolutionary parliance when he urged surgeons to follow strict rules of cleanliness in the operating room, and the chemist Emile Duclaux, Pasteur's colleague and first successor at the head of the Pasteur Institute in Paris, is reported to have declared, around 1900, that, had he been a doctor, he would have eagerly pulled down medicine like a ruined wall, to rebuild the true foundations of modern medicine.[2]

Following this discussion, it is clear that the move is easy from a

1. The imaginative title given by Horace Judson to his account of the founding years of molecular biology.

2. Mary Robinson (Mme Duclaux), *Vie de Emile Duclaux*, Laval, Barnéoud, 1906, p 161.

methodological warning of paying attention to the context, to a theorization of incommensurability between systems (or structures or "visions of the world"). Accordingly, when dealing with the history of surgery, the issue of revolutionary changes has to be addressed; when and where did they occur, and what is their nature?

On the other hand, my own field experience of medical practice as recurring trials and errors encouraged me to pay more attention to the long term perspective, in order to challenge or at least complement the prevailing epistemology with an emphasis on discontinuity. As suggested by Roger Cooter, showing how writing medical history is shaped by personal background, my medical practice in the clinic and in the laboratory[1] has influenced me and led me to distrust the alleged irreversible and one-way march of progress.

I was encouraged in this direction by the teachings of contemporary sociology of science. Sociologists following the "strong program" advertised by David Bloor, Barry Barnes, the Edinburgh school and others,[2] put the emphasis on scientific practices as a corpus in its own right, clearly diverging from theoretical discourses. They suggested that a new style of investigation, centered on the analysis of practices, either at the bench or at the bedside, yielded original prospects and results. The followers of the "strong program" dismissed the reality of "facts" which they preferred to consider as a hypothetical construct, and unraveled the complex processes of "framing" and "inscribing" data, by which descriptions of the so-called facts are made canonic by scholars' communities and networks.[3] They also gave precedence to the study of debates and controversies over the

1. For examples of the influence of historical practice on medicine and reciprocally, see Duffin, J., *Clio in the clinic*, *History in Medical Practice*, Toronto University Press, 2005 and my chapter: The "crise", 89-91.

2. A good example in the history of medicine was provided by *The problem of medical knowledge*, Wright, P. and Treacher, A. (eds.), Edinburgh University 1982, and their analysis of transient nosological categories such as the young maiden's chlorosis or the miners' nystagmus, in both cases pathological categories overdetermined by gender or professional extrinsic characteristics.

3. For a presentation of the school, see Latour, B. and Woolgar, S., *Laboratory Life*, *The construction of scientific facts*, Sage, London 1979, and for a caustic appraisal of postmodernist time, Gellner, E., *Postmodernism, Religion and Reason*, Routledge, London 1992.

celebration of discoveries and attempted to introduce the principle of symmetry, meaning a fair treatment for both assumedly "true" and "false" theories, a war machine against what they dubbed conservative or "whiggish" kind of history.

As my research progressed, I found that contemporary practice bore more analogies than currently admitted, with ancient medicine, from Hippocrates to Rāzī and up to modern times. For example, I came to strongly disagree with those who dismissed the ancient theory of miasmas as absurd and devoid of any coherent signification or who scorned the 19th century supporters of anticontagionist doctrines[1] as people blind to any kind of logical evidence, and I could easily discern antiquated theories under the cover of alleged radical or revolutionary transformations.[2] This posture led me to privilege an interpretation of medical works and deeds from a long-term perspective, as a tentative answer not so much to health and disease per se than to mental and physical sufferings, anxiety and bodily damage. For example I observed that the humoral theory of the bodily constitution was remarkably persistent throughout centuries, although of course with modifications and adaptations, and that this persistence might explain the exceptional duration of cupping and blood letting as a therapy, in Europe[3] as well as in countries influenced by the Greek, Arab and Persian medical traditions. The language of humors has also been remarkably resilient: we still discuss today humoral versus cellular immunity.

Other factors may explain the longevity of humoral theories, such as their permeability for the patient. Despite the general recognition of sophisticated expert knowledge, patients and doctors must share at least, to a certain extent, an understanding of the main events of illness

1. It means for example those who said that plague is not contagious from man to man and opposed quarantine. Dr. Tholozan in Persia and Dr. Clot in Egypt for example, were inclined to anticontagionism.

2. Dr. Clot, head of the Egyptian medical school in the early 19th century, supported the humoral theories, wrapped in a new garment. See Moulin, A. M., "L'esprit et la lettre de la modernité égyptienne, L'enseignement médical de Clot bey", *Cahier des Annales Islamologiques*, pp. 119-134, IFAO, 2002, 22.

3. Beauchamp., C., *Le sang et l'imaginaire médical. Histoire de la saignée au 17e et 18e siècles*, Desclée de Brouwer, Paris, 2000.

and the ways of curing malady and actually do. I disagree with the American sociologist Charles Rosenberg[1], when he says that modern medicine introduced a decisive distance between the doctor's judgment and the patient's views, even if I admit that the dialogue is often problematic[2]. The humoral theory supported the idea of restoring health by giving vent to corrupted blood or fluids of all kinds and could fit most surgical treatments, from abscess evacuation to tumor amputation. Medicine, in clear, even considering the rapid pace of technology, so far as it is applied to the care of individuals, has to be, at least minimally, made mentally palatable to the patient and requires some kind of adhesion, belief and trust. Acknowledging that surgery has to address the patients' needs somehow, clearly did not mean to overlook radical transformations of the craft, but shaped my sensitivity to an underlying continuity in practices.

Another example of a recurring trend in the history of medicine at large, is the vicinity between religion and medicine, which has been dealt with by Hormoz Ebrahimnejad in the Iranian case[3]. The relationship of medicine to religion has varied according to the period. It has sometimes taken the guise of an acute antagonism and even a mutual exclusion. In most Western countries, for example, at the end of the 19th century, a strong anticlerical movement developed among positivist-oriented doctors and resulted into the expulsion of the nuns and the clerics from hospitals. In other periods, the religious and the medics have coexisted more peacefully, with a clear-cut labor division and marks of mutual respect between the experts of both sides when dealing with people's sufferings.

Religion in its various guises, inasmuch as it provides psychological solace to the patients, and keys to the individual destiny and the world history, remains a companion to medicine. Today, in

1. Rosenberg, C.E., Medicine meaning and social change, in Vogel, M.J. and Rosenberg, C.E. (eds.), *The Therapeutic Revolution, Essays on the social history of American medicine*, Philadelphia, University of Pennsylvania Press, 1970.

2. Moulin, A.M, *Le dernier langage de la médecine*, Presses Universitaires de France, Paris, 1991.

3. Ebrahimnejad, H., "Religion and medicine in Iran, from relationship to dissociation", *History of Science*, 2002, 10, 1: pp. 91-112.

Europe, the religious question, which had been discarded in the lay sanctuaries of medical science, has resurfaced. Firstly related to the care of the dying[1], it is associated to the numerous moral issues linked to biological innovations such as sophisticated reproductive technology[2], the use of genetic prenatal diagnosis, gene or stem cell cloning, multiple organ transplantation and so on[3]. Contemporary bioethics has carved a new niche where representatives of both medicine and religions have a seat side by side in the various committees established everywhere.

The fact that medicine is not easily polarized in systems, as Roger Cooter phrased it, plays a role in the frequency with which patients zigzag eclectically in their so-called "therapeutic itineraries". Medical pluralism is the rule in most societies, either in a subdued ways in Western countries. Homeopathy is widely recognized in Germany, Samuel Hahnemann homeland, and Chinese acupuncture has made its way into many European medical schools. Newly independent countries, among which China and India stand prominently, have favored, beside "Western" biomedicine, the development of national brands such as Ayurvedic or Chinese medicine (a local variant in Viêt-Nâm is the "Sino-Annamite" medicine).

When compared with many other countries in Africa and Asia, the Arab world stands as an exception: its countries did not feel, when the time of independence came, a crying need for asserting a distinct scientific identity, sometimes because of the preexistence of modern schools, for example in the Middle East (differing in that from Tunisia and Morocco, where medical schools waited for the end of colonial rule to be opened), but overall because they all referred to a source of knowledge common with the West, the celebrated Greek-Arabic medieval tradition.[4] The plea for a specific Islamic brand of medicine

1. Elias, N., La solitude des mourants dans la société moderne, *Le Débat*, 1981, 12, 83-104.

2. Chneiweiss, H., et Nau, J-Y, *Bioéthique, Avis de tempête. Les nouveux enjeux de la maîtrise du vivant*, Alvik, Paris, 2003.

3. See on the website of the French CRAC, Tehran, the Persian version of my paper delivered to the first Congress of bioethics in Tehran, 25 November 2004.

4. Moulin, A.M., "L'héritage vivant de la médecine arabe", *Santé Publique et Sciences Sociales*, Oran, 2000, 6, pp. 26-52. Haq, Syed Nomanul, "Western approaches to the→

has only recently surfaced and is not rooted in a claim for separate scientific foundations of medical knowledge[1], it is rather related to the way medicine is practiced and addresses the believers' specific demands.

Anthropology of medicine also illustrates the possibility of relaxing the constraints of periodization and chronology. For example, the anthropologist Marie-Christine Pouchelle, after having written a book on the life and work of Guillaume de Mondeville, surgeon to the King of France at the end of the Middle Ages[2], shifted to fieldwork on the caretakers in the operating room and transplantation wards and ran a large program of anthropology on four hospitals which were being closed in Paris.[3]

Coming back to the history of surgery in the Arab world, this discussion means that I have attempted to associate and even interweave two threads, one of radical changes and rejection of previously accepted truths, and one of recurring questions and concerns.[4] An example of the latter is the continuous fight against surgical infections, periodically animated by a messianic hope of eradicating them[5], be it with ointments, antiseptics, asepsis, or antibiotics. At intervals, this hope is regularly frustrated, as illustrated by the present rise of hospital or nosocomial infections in surgical wards, associated to germ resistance to antibiotics as well as laxity in enforcing the rules of cleanliness aiming at the prevention of

←scientific legacy of Islam", from appropriation to evaluation, *Islamic thought and scientific creativity*, 1996, 7, 1, pp. 23-36.

1. Rahman, Fazlur, *Health and Medicine in the Islamic Tradition, Change and Identity*, 1989; *The Touch of Midas. Sciences, values and environment in Islam,* Sardar, Ziauddin (ed.), Manchester University Press, 1984.

2. Pouchelle, M.C., *Corps et chirurgie à l'apogée du Moyen-Age*, Paris, Flammarion 1983.

3. Pouchelle, M.C., *Regards sur l'hôpital Broussais*, AP-HP, Paris, 1999. See also Moulin, A.M. and Contrepois, A. (ed.), *De l'hôpital des Incurables à l'hôpital Laennec*, Hervas, Paris, 2001.

4. For an exemplary treatment of both similarities and differences between medical schools, namely the Greek and the Chinese traditions, see Kuriyama, S., *The expressiveness of the Body and the divergence of Greek and Chinese medicine*, pp. 205-228, Zone Books, New York, 1999.

5. Moulin, A.M., L'éradication des maladies, remède à la globalisation?, *Qu'est-ce que la Globalisation* ?, Micheau, Y., éd., Odile Jacob, Paris, 2004.

contamination.[1]

Having defined two seemingly contradictory but in fact complementary agendas, one with an emphasis on the importance of temporal specificity in scientific tools and concepts, and one imbued with the sense of continuity in a profession currently confronted with disease and death, how did I proceed and orient myself in research on the contemporary history of surgery ?

I will characterize my efforts as a "tinkering", a term borrowed from the anthropologist Lévi-Strauss, to distance myself from a program inspired by global hypotheses on the march of scientific progress and an a priori vision of what such history should be. I largely improvised the way I identified my materials and tried to make sense of it.

Identifying sources

Trying to locate bibliographical sources and historical presentations, I found myself confronted with the scarcity of global overviews of the subject.[2] Most texts available on the net, for example, were speeches delivered for anniversaries and reflected institutional or national agendas more than in-depth historical investigations. A review of the syllabi established for teaching the history of medicine in the Universities of the Middle East, for example, revealed that lectures, allegedly dealing with "modern" or even "contemporary" history, were most of the time reviews of the glorious medieval heritage of Islam and limited themselves to show that all important breakthroughs of modern medicine (such as anesthesia, abdomen surgery, asepsis...) had in fact been anticipated in early times in Rāzī, Ibn Sīnā and others' works. This retreat to the past, a refuge away from the present predicament, is very telling on the sense of historical frustration, which prevails in part of the Muslim world.

In the West itself, the active interest of medical historians for contemporary times is a fairly recent event. In the 19th century, the

1. Moulin, A.M., "La sécurité des soins. Lutter contre le risque infectieux", *Accueillir et soigner. L'AP-HP, 150 ans d'histoire*, Salaün, F. (éd.) AP-HP, Paris 1999, pp. 190-193.

2. Al-Kateb, B., *Review of the history of the teaching of medicine in Arabic*, Publications Eastern Mediterranean Health Journal, on the web: www.emro.who.int/publications/EMHJ/0503/20.htm

holders of the chair in history of medicine, established concurrently with other chairs such as pediatric and uronephrology, were primarily concerned with philological work, and translations of Greek and Latin. Littré, himself a physician, edited an authoritative version of Hippocrates' works, still a reference up to these days. When Daremberg, the holder of the chair for many years, who issued a multivolume History of Medicine, came to visit Egypt, he took little interest in the local brand of medicine and made only a brief mention of it[1].

The lack of interest for the contemporary history of Arab and Muslim medicine is hard to overcome. I have now spent part of my academic life trying to convince my students to pay attention to the modern period, from the 18th century to present times. Either they had a literary training and were attracted by the golden age of Islamic medicine, and/or lacked the scientific basis necessary to deal with contemporary work and were intimidated by the impenetrability of biological knowledge. Or they were medical students who, although sometimes exposed to social sciences during their training, either hardly paid attention to articles dated more than three years ago or did not feel equipped to address them. It means that a great number of manuscripts and sources relevant to the two last centuries (most notably those corresponding to the foundations of the "modern" schools of medicine, from 1827 in Egypt to 1976 in Oman) have not been explored so far[2]. As for surgery, the situation is particularly bad, because texts on surgery intimidate scholars because of the reputation of surgery as an esoteric knowledge, accessible only to those with special training. As a consequence, it is no surprise that a gap still persists between an overemphasized past and an "ahistoric" present, offering no firm grasp to historians, creating a dilemma between

1. Daremberg, G., *Voyage en Orient et en Occident*, Masson, Paris 1893.

2. A number of books is going to begin to bridge this gap. See for example H. Ebrahimnejad's *Medicine, Public Health and the Qadjar State. Patterns of medical modernization in 19th century Iran*, Leiden, Brill 2004; and Anastassiadou-Dumont, M. (éd.), *Médecins et ingénieurs ottomans à l'âge des nationalismes*, Maisonneuve et Larose, Paris 2003; also Moulin, A.M. (ed.), *Le labyrinthe du corps, Islam et modernité médicale*, Karthala, forthcoming...

history with little science in it, or science without history[1].

After consulting various curricula provided by the medical faculties in North Africa, the Middle East and the Persian Gulf, which invariably sent me back to the past, and despite my reluctance to believe that early surgeons had actually written a blueprint of modern surgery, I turned back to reread carefully the Andalusian Zahrāwī, who allegedly had laid the foundations of surgery in his *Taṣrīf*, the part of his encyclopedic work dedicated to surgery. Taking advantage from an extensive study produced by a Tunisian surgeon, also a prominent scholar in Arabic[2], I could see that Zahrāwī had investigated indeed a broad range of surgical interventions: he dealt with traumas of all kinds, from head injuries to thoracic and abdominal wounds, detailed how he operated hernias and extirpated multiple kinds of tumors and confronted himself with congenital malformations such as sexual ambiguities, in short laid a vast field for generations to come, both in minor and major surgery. To our dismay we have no clue to the mortality rate of this pioneer, and can only hypothesize, as we do for military surgeons in the following centuries, that due to high physiological resistance in patients, the mortality was inferior to the one we should normally expect, being given the lack of infection and shock control.

Reading Zahrāwī, whose manuscript was copied in all great libraries of the Muslim world, raises an important question: how was this heritage maintained and developed by the barber-surgeons who were currently in the villages in charge of surgical care: bloodletting, abscess incisions, and the management of fractures and traumas? Why was this heritage not brought to fruition? One possible answer is the high rate of illiteracy among barbers, the lack of institutions for surgical training and funding allotted to them, the lack of incentives for pursuing innovations and of channels for information exchange. Because of the scarcity of accounts regarding what happened with the

1. Beaudevin, C., "Une médecine dissociée de son passé ou l'avènement de l'échographie obstétricale et du diagnostic prénatal au sultanat d'Oman", Ulmann, Y.I., and Moulin, A.M. (eds) , Modernization in the East, IFEA, Istanbul (forthcoming)

2. Mestiri, S., *Abulcassis, Abul Kacem Khalef Ibn Abbès Az-Zahrawi, grand maître de la chirurgie arabe*, Arc Editions, Tunis, 1977.

barbers, we have to wait for the creation of medical schools, in the modern sense of the word.

Identifying events

I turned my back to history and entered surgical topics on Medline on the net, with a geographical mention of the main concerned countries. Browsing in the medical literature, I was able to localize a number of premieres in the field of surgery.

For example, I localized the first kidney transplantation, performed in Mansourah, Egypt, in 19?? and in Aden in 2003.[1] The first heart transplantation (with cadaver organ), allegedly the first one in the Arab world, took place in 1973 in Tunis. The first liver transplantation in a young man occurred in Saudi Arabia in 1980 and the first transplantation in a child in 1990 (split liver with living donor)[2]. In a similar way, cornea, lung, lower limb grafts could be easily mapped, and give way to speculation on the time differentials between the Arab countries and between them and the rest of the world.

But could I refer to the commonly accepted milestones of the history of surgery in the West as a matrix,[3] and admit to merely follow the development of a preempted history? This line of investigation appeared to me to be flawed in at least two ways.

Historical surveys of Western surgery have usually pointed to two important factors for the rapid improvement of the craft: the introduction of anesthesia, and of asepsis rules. But in fact these events had not always an immediate impact. For example, the publication of the first papers on ether, chloroform or nitrous oxide in the first half of the 19th century, were far from triggering the widespread use of anesthesia for surgery in the West. Doctors objected that it was dangerous to perform surgery on a motionless and seemingly areactive, dead body, and was even immoral, forbidding any control

1. Fitzgerald, R.D. and al., "Dealing with the uncertain and the unexpected: a report on the first kidney transplantation in Aden, Republic of Yemen", *Annual Transplantation*, 2005, 10 (1) pp. 44-47.

2. Jawdat, M., et al., "The first liver transplantation in Saudia Arab world", *Hepatogastroenterology*, 1993, 40, 3: pp. 297-300.

3. Duffin, J., *History of Medicine*, Toronto University Press, 1999, chapter on the history of surgery, pp. 212-240.

by the patient. They even pleaded that such surgery, when it came to female patients, could lead to punishable behavior on defenseless victims!

Secondly, sequencing the equivalents of the milestones in the Muslim world was neither easy nor obvious. In the East, where hemp and opium had been used as pain alleviating agents for centuries, the importance of anesthesia[1] for surgery progress as a demonstration of knowledge was not missed. The first chloroform anesthesia, for example, was solemnly performed in front of the Sultan in 1847 in Constantinople,[2] on a soldier whose consent was probably not solicited. The Sultan symbolically took his fair share of modernity, but nothing indicates so far that consequently anesthesia was rapidly introduced into daily surgical practice in hospitals. Both in Europe and in the East, the suppression of pain, which now seems to us to be a priority, did not seem to be so to most practicioners, as they were most concerned with saving time and blood, to avoid shock and infection, the main obstacles to overcome.

The whole history of transfusion is another example of an important chapter in the history of surgery, where it is difficult to single out premieres. Transfusion has been sporadically attempted throughout the 19th century, in two contexts at least: post-delivery hemorrhages in women, and on the battlefield. The discovery of blood grouping by Karl Landsteiner in Vienna in 1900, supposedly a decisive breakthrough for the safety and efficacy of transfusion, was far from being immediately applied to the operating-room[3], and rather served other purposes, such as identifying victims or criminals before the Court or tracking fathers in the case of illegitimate children. For many reasons, the routine use of transfusion was postponed until after World War I, despite some makeshift attempts during battles to inject blood prior to transportation of the wounded and effective surgery off the lines.

1. While Ibn Sīnā used the Arabic term *mukhaddir* for antipain drugs, the term anesthesia was coined by the American physician and man of letters Oliver Wendell Holmes.

2. Ulman, Y.I., "Les premiers pas de l'anesthésie au chloroforme en Turquie dans l'empire ottoman", *Annales françaises d'anesthésie et réanimation*, 2005, 24, pp. 377-382.

3. Moulin, A.M., *Le dernier langage de la médecine*, PUF, Paris, 1991.

In contemplating the papers testifying to the vagaries of the applications of anesthesia and transfusion in due places, an obvious question came to me. Since surgical progress in the West had met with obstacles and was fraught with all kinds of difficulties, was it not conceivable that in the East the craft benefited from the gains acquired by others, and bypassing obstacles in the way, could come to maturity more easily and rapidly? In other words, could less advanced countries avail themselves from their swift integration of new techniques recognized but not necessarily put to use elsewhere? Moreover, couldn't they anticipate more easily further developments, not being shackled by their dependence on ancient routines? And finally could local differences induce original approaches to surgery and lead to interesting innovations? Since obstacles and difficulties were not necessarily of a similar nature, here and there, why to reduce surgery out of the West to a mere rehearsal of the Western "premieres", with simple variations in the lag of time? All these questions implied to address the issue of local scientific and cultural specificities, and reintroduce society and the body in science and technology.

Tracking scientific specificities in the Arab and Muslim World

No doubt that there were specific diseases in some countries which gave surgeons opportunities to develop local expertise and that this strategy was effectively adopted by the profession. Original contributions of Arab surgeons in the 19th and the 20th centuries were linked to the affections prevailing in their environment.

In the 1880s, Dr Mohammad Ali al-Bakly, the head of the Egyptian surgical school, became famous for performing successful interventions on enormous scrotal tumors due to lymphatic filariasis (the "elephantiasis of the Arabs").[1] The same stands for other parasitic diseases, such as echinococcosis (hydatid cyst). Surgery of hydatic cysts in the lung, in the liver, and also the heart and the brain, was more frequent than appendicectomy in Northern Africa and the Middle East. Schistosomiasis (witnessed by the presence of eggs with typical spikes in mummies in the Pharaonic times!) now treated mainly with

1. Mahfuz, N., *The history of medical education in Egypt*, Cairo Government Press, 1935.

chemotherapy, has posed original surgical indications. The intensity of the parasitic infections led to localizations of the worm in unusual sites sometimes accessible to surgery and the long chapter on schistosomiasis is typical of Egyptian surgery.[1] The frequency of kidney and bladder stones, aggravated by the hot climate, has also permitted surgeons to acquire an impressive experience and codify interventions in their own way.

It remains to explore how the frequency of local affections has promoted exquisite specificities in competence and surgical skills. At all times, the transformation of weapons and the rising frequency of specific types of wounds, have provided new challenges to the surgeons and forced them to invent new solutions[2]. Although this positive impact of war on medical progress remains controversial,[3] the question is worth being discussed. For instance, during the European Renaissance, the cure of extradural hematomas or blood collections threatening the brain followed the shift from bows to arbalets, which hit heads with heavy projectiles. During the First World War, the frequency of septic wounds soiled with mud in trenches, during World War II the dramas of terminal kidney failure and shock resulting from crushed limbs induced indeed therapeutic advances. The improvement of skin grafting took place, when citizens endured the blitz and fire in their crumbling houses in 1942-44. The Museum of the history of medicine in Tehran shows some innovations dating back to the Iran-Iraq war. Today it can be speculated whether the care of the traffic traumas, of an appalling frequency on the highway roads in the Middle East, have induced some knowledgeable improvements in surgical technique or emergency management.

Plastic surgery[4] has recently been boosted in the East as it addresses important personal needs because of the social pressure on

1. Bitschai and Brodny, *A history of urology in Egypt*, Riverside Press, 1956.

2. Cooter, R., *Surgery and Society in Peace and War. Orthopaedics and the organization of modern medicine, 1880-1948*, Houndmills and Basingstoke, 1993 ; Cooter, R., Harrison, M., and Sturdy, S. (eds.), *War, Medicine and Modernity,* Stroud, Sutton, 1998.

3. Cooter, R., "Medicine and the goodness of War", *Canadian Bulletin of Medical History*, 1990, 7, pp. 147-160.

4. Haiken, E., *Venus envy*: *A history of cosmetic surgery,* Baltimore, Johns Hopkins University Press, 1999.

beauty, especially female beauty. Additionally, as this kind of surgery is not covered by most social security systems in European countries, patients are now flowing from all over the world and plastic surgery, in Egypt for example or in some countries in the Gulf, is carving an original niche in a globalizing world.

We are there clearly departing from the scientific sphere and moving to the field of cultural and social specificities, a dimension of the history of surgery which should not be missed.

Tracking cultural specificities

A good example of the overlap between cultural and scientific issues in surgery is the debate around the choice between living donors and the use of organ cadaver donors[1]. This debate has pivoted round the legal character of cadaver mutilation and has diversely been conducted in Muslim countries, with the intervention of religious and governmental representatives. Living organ donation is still the most widely practiced type of donation in the Middle East. There is an ongoing debate in the medical community about the acceptance of medico-legal concepts for brain death (as described along the so-called Harvard criteria promulgated in 1968). Public reluctance to donate organs is due to religious conceptions of the importance of bodily integrity at Resurrection as well as to a deeply entrenched fear from hospitals and mistrust of the doctors' doings.[2]

In Egypt, a law authorizing the use of cadaver organs is still being discussed at the Parliament, although some high religious authorities clearly expressed they accepted it. In the Middle East, one reason for introducing the alternative of cadaver organ donation is, apart from the organ shortage, the presence of an unofficial organ traffic and sale among the destitute. The interpretation of *ḍarūra* (necessity), which allows to legally transgress taboos in the name of the individuals' urgent needs has been developed elsewhere, for example in Tunisia, where organ transfer from dead people has been made legal.

1. Moulin, A.M., "La crise éthique de la transplantation d'organes. A la recherche de la "compatiblité culturelle" ", *Diogène*, 1995, 172, pp. 76-96.

2. Shaheen, F.A.; Souquiyyati, M.Z., "How to improve organ donation in the MESOT countries? ", *Annual Transplantation*, 2004, 9, 1: pp. 19-21.

Apart from some specificities, contemporary surgeons in the Muslim and Arab world have largely developed their art along the same lines as their Western counterparts. The luxury, in many big cities, of well-equipped private clinics where surgeons proceed to interventions with the latest technologies, contrasting with the often dilapidated character of some public hospitals, suggests an ever-widening gap between social classes. Social security does not cover the whole population and the situation is becoming worse because of the rising cost of new technologies. While the Islamic *ṣadaḳāt* principle should favor the development of an insurance system based on social solidarity, in many countries, the state tends to lag behind in its role of preserving equity and efficacy in surgical care for all social groups. The global tendency to the liberalization of market is also there exerting its effects with the rise of private insurances tending to segmentation of risks and the growing marginalization of the poorest.

The social history of the body

Surgical science is not sole at stake. Surgery is more than a series of technical procedures and a tool for cure. It is also a powerful agency for transforming the body. Surgery is part of a discourse on maiming, mutilating, embellishing, changing sex in the body, itself shaped by social, religious, and gendered concerns. The use of surgery is part from the "Medicalization" movement, a term that means that scientific knowledge cannot be understood out of the context, and is inseparable from relations of power.

Surgery is not only a response to bleeding or whatever vital threat, imposing a prompt response with the knife, it is also a choice between different kinds of interventions, versus other methods of treatment, such as chemotherapy or radiotherapy, and versus abstention. The forcible choice of surgery can be made unwisely, because of the surgeon's position of prestige and class status, the operator's personal pride in his performances, and lust for money, and sometimes because of the patient's personal desire for magic delivery, through the blade, from his (her) bodily problems.

In the West, the choice of mutilating therapy for breast cancer, (Halstedt's radical mastectomy was invented in 1890) versus more

conservative acts, has been challenged by historians as reflecting a certain indifference to the women's feelings on the surgeon's side. So that the surgeon's domination over his patients' bodies, in the feminists' views, symbolizes the male domination over females. But while we have a growing knowledge on the history of medical care from the patients' viewpoints[1], and more sensitivity to the excesses of medical power, we still have few retrospective assessments of the adequacy of surgical indications, in the field of obstetrics, or tumor surgery.

The issue of the surgeons' role in the operating room, linked to religious constraints, needs also to be explored. God made the human species male and female, says the Qur'ān. Circumcision and excision have been vindicated as completing the sexual differentiation intended by the Creator and getting rid of the vestigial traces, of embryonic origin, of the "other" sex. From the corrections of these superfluities to the mending of the important errors of nature, Muslim societies are led to answer new sets of questions: is it legal to proceed to more adventurous changes in the body, and for example, in order to facilitate harmonious sexual and social life, an obvious goal of Muslim societies, to accommodate the subject's various desires?

During these last years, the surgical guilds have faced unprecedented changes in the profession. Thanks to the development of medical optics and imaging, doctors have played out the surgeons in many fields. Doctors are now boldly penetrating into the inside of hollow viscera, using their fibroscopes (*manẓar*) to pull out polyps, cysts, tumors, without needing to open the body. Surgery, once a prestigious and lucrative profession, tends to be deserted in the West by the younger people, afraid of being sued and rebutted by the enduring work of their predecessors. Will the general surgeon disappear, and will surgeons specialize themselves in high-tech interventions such as iterative transplantations as life expectation is constantly growing? It had been predicted by sociologists of science that transplantation, past the 2000 year, would represent a surgical act

1. Moulin, A.M., "Le corps devant la médecine", *Histoire du corps, Les mutations du regard, Le 20e siècle*, Courtine, J.J. (éd.), Seuil, Paris, 2006, 15-74.

out of four.[1] Is organ replacement going to become the routine procedure for immortalizing the human species and will it be reserved to the lucky few, are pending questions for the future.

Virtual surgery, operated by robots, allowing forums of specialists to collaborate on the net, should also have an important impact in the East. This mode of surgery should increase the flow of information between the experts from all over the world, and this leads to considerations on the impact of globalization on the history of surgery, most notably the role of national and regional diasporas in their country of origin.

Contemporary achievements of Arab and Muslim surgeons in a globalizing world and the role of diasporas

As I firstly focused on the local scene, I would now like to replace this history of surgery into a broader context. If Arab and Muslim surgeons experiment, develop, and invent new techniques at home, they have also migrated all over the world, and participated to many medical ventures. Palestinians are a good example, who have staffed the hospitals and centers of research in the Gulf but also settled in Canada, the United States and Europe. So are the Lebanese. It is for example a Lebanese-born zoologist, Peter Medawar, during World War II, who enabled transplanters to understand the rejection phenomenon as mediated by cells and antibodies. Following his discovery that cells remember their first contact with foreign substances and that rejection is boosted in the "second set" graft, surgeons learnt to circumvent graft failure by using immunodepressive drugs or selecting genetically compatible donors. Medawar was awarded the Nobel Prize in 1964.

To provide further illustration of the scientific importance of the diaspora, quality assessment procedures have been introduced in the Middle East to facilitate exchange of scholars in and out the Arab and Muslim world. Shared protocols and clinical trials of surgical innovations are regularly discussed in the huge congresses held in the Gulf region, which concentrates today part of the Muslim medical

1. Fox, R.C., and Swazey, J.P., *Spare Parts*, New York, Oxford University Press, 1992.

diaspora, especially from Pakistan and Palestine. The prospect of inducing high level migrants to come back home or at least to coordinate local teams by way of short sessions or summer courses is promising and needs to be further explored.

Conclusion

This presentation wanted to illustrate how so many trends are waiting to be explored in the history of surgery. I acknowledged some of the obstacles and discussed how they could be overcome. Far from offering a definitive synthesis and a clear-cut and well-organized description of a body of knowledge I rather produced a mosaic. The fragmentation of knowledge is accrued by the difficulty of envisioning the Arab and Muslim world as a scientific functional whole, despite the existence of many conferences and transnational organizations. In presenting how I drafted a history of contemporary surgery in this part of the world, I have tentatively sketched future avenues of research. Clearly, where a unique road to success and truth was expected, alternative pathways should be explored.