# FROM THE DISSECTION ROOM TO THE FIRST ANTHROPOLOGICAL INSTITUTE IN ROMANIA. FRANCISC I. RAINER AND THE „BRIDGE" BETWEEN ANATOMY AND ANTHROPOLOGY

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The Romanian anatomist and anthropologist Francisc I. Rainer (1874–1944) exerted an influential role in the implementation and development of functional anatomy, experimental embryology and physical anthropology in his country. The main objective of this paper is to explore some of his major contributions to the advancement of anatomy in Romania and to highlight his determinant role in the foundation of the Institute of Anthropology in Bucharest. As a result of the influences exerted upon him by the German school of anatomy and embryology, championed by notorious scholars like W. His, W. Roux, H. Driesch, O. Hertwig etc., Francisc I. Rainer developed new ways of studying and teaching these disciplines which were considered, at the time, modern and even revolutionary. From the static and descriptive anatomy of the old school, he went on and adopted a broader, biological and functional view. As a professor of anatomy Francisc I. Rainer was the frst to introduce his students to the surface anatomy of the living persons. Based on Rainer's view that „anatomy is the science of the living form", the methods of teaching he adopted were intended to improve the future physician's abilities to apply the notions of anatomy at the patient's bedside. Rainer became also interested in morphology, evolution and human variability and this represented a decisive step towards the larger domain of physical anthropology. Soon after he became the head of the *Institute of Anatomy and Embryology* at the Faculty of Medicine in Bucharest, in 1920, Rainer founded a small Section of Anthropology which functioned as a part of the chair of anatomy before it moved to a new building thus becoming the Laboratory of Anthropology. This laboratory, together with the Museum of Anthropology and the Department of Cadavers made up the new Institute of Anthropology, inaugurated on the 20$^{th}$ of June 1940. The intimate collaboration between anatomy and anthropology, at the Faculty of Medicine in Bucharest, during the rainerian period, could be regarded as a veritable „bridge" between these two disciplinary fields, not only at the theoretical but also at the institutional level.

*Key words:* Francisc I. Rainer; Functional anatomy; Experimental embryology; Morphology; Physical anthropology.

## INTRODUCTION

In the first decades of the XX-$^{th}$ century, anatomy was still a static discipline, mainly preoccupied with the dissection of human bodies and the production of a kind of knowledge that could be only with great difficulty adapted to the necessities of the modern clinical teaching at the patient's bedside. Even if the signs of a profound change that had to affect both embryology and anatomy, could be seen as early as the end of the XIX-$^{th}$ century, in influential works published by W. His, W. Roux, H. Driesch etc., a number of years had to pass before a new research programme got into the mainstream and dominated the modern anatomy by establishing stronger connections not only with physiology and pathology but more broadly with general biology. Anatomy became a biological science *par excellence*.

Founder of the biological anatomy in Romania, Francisc I. Rainer (1874–1944) situated himself in the line of several important European biologists, most of them German and French,[1] as Ilie Th. Riga, an ex-student and succesor at the chair of Anatomy in Bucharest, mentioned in a book dedicated to the memory of his mentor: „builder of new ways and fresh and unforeseen perspectives, as a result of a synthesis of different sources of anatomical knowledge, not forgetting even for a moment that the anatomist's ideal was situated at the functional level – the organic form being considered only in its action – professor Rainer could be seen as the creator of the biological anatomy in our country, a science that, in the West, evolved under the pressure exerted by notorious biologists such as Hans Boeker, Benninghoff (or his predecessor, in this field, Hermann Braus), R. Anthony and, more recently, H. Rouvière" (I. Th. Riga 1947: 16).

In order to stay atune to the novelties in his domains of interest, Rainer read an impressive amount of textbooks, monographs and articles wrtitten by important anatomists, embryologists, anthropologists and physiologists[2] and critically incorporated, in his own scientific view, a large number of theories, concepts and methodologies that he subsequently developed in a personal and creative manner. Thus he became the promoter of the functional anatomy and set the basis for a school where young researchers were formed and developed the necessary skills to approach different themes of anatomy in the perspective of the *developmental mechanics*[3] and also to approach anthropological themes both in the field and the laboratory.

Though, Rainer has not limited himself to merely explore the theoretical basis of the disciplines he had an interest in, but he took a large number of trips abroad with the specific purpose to learn directly from their inventors the most recent methods and techniques of execution of anatomical, embryological and antropological pieces.[4] What is more, he visited the museums of the most important institutes of anatomy and embryology in Europe and became familiar with the procedures to preserve and to display the exhibits. At his turn, Rainer offered the hosts his own experience in the area of preparation, preservation, annotation and exhibition of anatomical and anthropological specimens.[5]

In this paper, we shall briefly describe Rainer's perspective on human anatomy, some of the advancements he brought in the teaching methodology of this discipline in the first half of the XX$^{th}$ century at the Faculty of Medicine in Bucharest and, last but not least, we shall mention the larger theoretical framework that could be considered as the foundation of his scientific endeavour, also being situated at the origin of a significant part of the collections initiated, organized and developed by the Romanian anatomist throughout his long career. All these

[1] There are other important authors that also influenced Rainer's scientific thought, especially during his early career. Some of them were mentioned by I. Th. Riga in a book published in 1947: „[Rainer] confessed that, beside R. Virchow, he also felt the overwhelming influence exerted upon him by Goethe and by Claude Bernard's book *Introduction à l'étude de la médecine expérimentale*" (I. Th. Riga 1947: 13). Another two figures of the history of Western medicine were also mentioned: Duchenne de Boulogne and Laveran who „even if they were just practitionners, they made accurate scientific observations" (I. Th Riga 1947: 14).

[2] In his diaries, published under the title *Jurnale* Rainer mentioned, in a letter addressed to his future wife, Marta Trancu, that he was strongly influenced by the writings of two important physiologists: Gustav von Bunge and Claude Bernard. He used to read their publications in order not to accumulate new information and knowledge but with the specific purpose to fully understand and adopt their style of scientific thinking and the principles of the experimental method in medicine (Fr. I. Rainer 1979: 255 Scrisoare către Marta Trancu din 27.04.1899).

[3] I. Th. Riga & Gh. Călin (2008: 39) tried to highlight Rainer's critical stance on this matter: „Profoundly influenced by Roux's views, that he never accepted though in their entirety (as demonstrated by his subsequent activity), Rainer wrote to Marta, with regard to the latest book published by Roux at that moment: „…16 of June 1906. I will send a thorough analysis of his conception to the journal „Revista ştiinţelor medicale" (Fr. I. Rainer *Scrisori inedite*, Colecţia I. Th. Riga). The book mentioned here was Wilhelm Roux's *Developmental Mechanics* that Rainer had the opportunity to read during his fellowship in Berlin, in 1906.

[4] From his *Jurnale* we learn that, during one of his frequent working trips abroad, he went to München, in Rudolf Martin's laboratory in order to practice under his direct supervision the method for the measurement of human skulls. At page 71, for instance, Rainer wrote that: „He showed me the best way to hold the sliding caliper" (Fr. I. Rainer 1979: 171). And, on the next page we learn that: „This morning I have seen the correct positionning for goniometry. Martin explained to me the problem with the point […]" (Fr. I. Rainer 1979: 172). It should be reminded here that this story is situated in 1921 (October 7, 1921). So, several years later, in 1928, when Rainer was asked by the sociologist D. Gusti to participate as a member of the first Gusti-Rainer fieldwork campaign (an excellent opportunity to order, from Martin himself, the kit for anthropometry), the anatomist was already familiar with the methods of anthropological measurements.

[5] See, for instance, Gh. Brătescu (1979) *Fr. I. Rainer şi jurnalul său*, in Fr. I. Rainer (1979) *Jurnale*, ediţie îngrijită de Gh. Brătescu şi M. N. Basarab, Editura Eminescu, Bucureşti, pp. 5–22.

considerations have the purpose to prepare the reader in order to understand the peculiarities of Rainer's way to surpass the strict limits of his discipline (*i. e.* anatomy) and to get into the larger sphere of general biology[6] on one side and into the area of anthropology,[7] on the other side, as these were understood at the time. As a result of his constant interest in pathology he actually set the basis for an interesting approach which, situated as it was in the theoretical space of European physical anthropology, with all its limitations, might be considered as an early form of medical anthropology in a perspective dominated by biology but also with some bio-cultural accents. Some authors had no hesitation to claim that Francisc I. Rainer was, in fact, the forerunner or even the founder of medical anthropology in Romania.[8] Such a claim is, at least, daring and problematic as the discipline as we know it appeared in the 1950-1960 in the USA. What is true, indeed, and could be regarded as a proof is that Rainer deliberately situated his studies on human skulls and osseous pathology into a larger, medical anthropological pespective not only in the case of recent or contemporary human populations but also in the particular case of prehistoric human remains (*i.e.* paleopathology).

## THE ADOPTION OF FUNCTIONAL ANATOMY

Endowed with a sharp, critical mind and formed, mostly as an autodidact, in the spirit of the German school of anatomy and embryology, the future anatomist Francisc I. Rainer, also heavily influenced by Ch. Darwin's *evolutionism* and Wilhelm Roux's *developmental mechanics*, perceived his own discipline as a dynamic science, not only descriptive but mostly explanatory („the simple inventory of facts is not yet a science", as Rainer used to say). From the statics of classical anatomy Rainer moved to the functional anatomy whose agenda set out to establish the connections between anatomical structures and their functions, with all the dynamism that this implied in the living organisms („*Anatomy is the science of the living form*" was another principle, so dear to Rainer, under which all of his works could be best understood).

At the beginning of a study, published posthumously, in 1945, together with R. Robacki, and dedicated to the functional structure of the yellow ligaments of the vertebral column,[9] there are a few considerations on the history of Western anatomy that enabled us, to indirectly enter the realm of Rainer's own ideas about anatomy, by the way of competent critical commentaries on the contribution made by important authors that illustrated this history from the Antiquity to Rainer's days (Fr. I. Rainer, R. Robacki 1945: 47).

The first and most important thesis defended by the authors is formulated as follows: „the history of Anatomy shows us that this branch of medicine aquired quite recently the status of a science" (Fr. I. Rainer, R. Robacki 1945: 47). This bold statement is followed by another: „the last century

[6] This topic has been evoqued, quite recently, by G.E. Palade, the former student of professor Rainer's, who remembered that, during his teacher's lectures, a discipline much more dense and complicated than anatomy was taught. It was more general biology there than students wished to get and less descriptive and topographical anatomy than expected in a medical school. Even at the exams, Rainer asked a number of questions having to do with the general characters of the living matter, with heredity and evolution (R. Iftimovici 2007: 17).

[7] With regard to Francisc I. Rainer's contributions to the early anthropological research in Romania, Th. Enăchescu insisted on the fact that, even not so impressive from a quantitative point of view, his publications were nevertheless characterised by a high quality, scientific rigour and accuracy. These studies, though, covered a large array of anthropological themes such as: the typology and somatology of human populations, serology, dermatoglyphy, child development, the craniological study of recent and contemporary populations, paleontology etc. (Th. Enăchescu 1970: 171). One can identify at least three major categories of anthropological research projects carried out by Rainer, two of them being strongly connected to the anthropological collection from the Institute: 1) studies on human skulls (recent populations); 2) studies on ancient skulls (specimens from archeological sites; paleoanthropology, paleopathology etc.); 3) studies on contemporary populations (fieldwork trips during several campaigns in villages situated in the Carpathian Mountains and also comparative studies on medical students etc.).

[8] Professor Pătru Firu, a reputed Romanian stomatologist and anthropologist, repeatedly claimed that Francisc I. Rainer was indeed the founder of medical anthropology in Romania, his endeavour in this direction being continuated for several decades, starting from 1950, by an ex-student of Rainer's Șt. M. Milcu and his collaborators. As for the specific role that Rainer played in the birth of this disciplinary field, Firu maintained that: „Professor Rainer has created a medical anthropology as he studied the manifestations of genetic diseases, infectious diseases, TB, syphilis, articular rheumatism etc., at the level of the bones of the trunk and head respectively. His collection of osseous pathology as an object of study was in sharp contrast with the classical collections of monsters exhibited in various museums where „curiosity" dominated in every aspect" (P. Firu 2005: 36).

[9] In the *Preface* of the 2nd volume of Rainer's complete works, the editor Șt. M. Milcu reminded that this anatomical study of the yellow ligaments of the vertebral column had been finalised in 1940 (Șt. M. Milcu *Préface*, 1945, p. 5).

had to come before Anatomy could rise to the status of a veritable science" (ibidem). Of course, at this point, we need to have an argument for this critical position and this is what the authors considered as an appropriate answer to the question: „Indeed, despite the fact that Aristotle, more than 2000 years ago, after the establishment of the existence of a certain form, strived to understand its importance and to search for its causes, until the half of the last century, our predecessors contented themselves only to describe the forms that the observation made visible, without enquiring further into their significance" (*op. cit.* p. 47).

In this moment of the argumentation process the authors reveal their own view on anatomy, as a discipline, that ends up with the well-known definition given by Rainer to this science: „It is only through the study of the causes that determine the existence of animal organisms that one could hope to understand the anatomical facts: only by dissecting dead bodies we can understand life itself. The famous definition: „Anatomy is the science of the living form" only gets its whole significance this way" (Fr. I. Rainer, R. Robacki 1945: 47).[10]

Following in this line of thought, Rainer and his collaborator inisisted upon the predecessors of their school of anatomical research. Fist to be mentioned is Carl Gegenbaur who used Ontogeny (*i.e.* Embryology) and Comparative Anatomy as instruments of study and „considered the organism as being a part of a whole. Thanks to Gegenbaur, Rainer et al. contend, „anatomy deserted the road of mere description to enter the way of explanation" (ibidem). The second great anatomist to be remembered, is Wilhelm Roux, whose contribution is evaluated as follows: „It was a bit later on when Wilhelm Roux clarified the causality in Anatomy, by showing the relationships existing between function and form, between action and structure. The organic functions are not realised automatically but under the influence of functional impulses characterised by a variable nature and intensity. The living organisms can adapt to new functions and the exercise makes possible for them to easily execute what they have learned; on the contrary, they can lose some of the functions as a result of the lack of the latter (lack of exercise). Therefore, it was Roux who first introduced in Anatomy the notion of *functional adaptation* („funktionnelle Anpassung") meaning the habituation of organs with new functions, thanks to the existence, or, on the contrary, the loss of certain faculties as a result of inactivity" (*op. cit.* p. 48).

W. Roux has been followed by other European anatomists, including the Romanians led by prof. Rainer, and we quote from the same article: „H.von Meyer and Cullman, H. Triepel, R. Fick and H. Bluntschli followed the pathway opened by Roux: Anatomy became a full-fledged science and strived to explain, through their function, a diversity of forms, in their mechanical genesis. In France, Anatomy became explanatory thanks to the works in functional anatomy published by H. Rouvière. In Romania, the present paper – whose object of study is represented by the yellow ligaments of the vertebral column in humans – is only a part of a long series of research projects focused on the functional structures, the beginning of which can be situated more than thirty years ago" (Fr. I. Rainer, R. Robacki 1945: 48).

It seems pretty obvious that Rainer himself situated here, very clearly, the beginnings of his own research in the new paradigm of the *functional structure* and *causal explanation* promoted by the German school of developmental mechanics (*Entwicklungsmechanik*) in the first decade of the XX-$^{th}$ century, so, immediately after his fellowship in Berlin (1906).

## FROM THE DISSECTION OF CADAVERS TO THE SURFACE ANATOMY OF THE LIVING PERSONS

Rainer was also the first Romanian anatomist to combine, during his lectures *ex cathedra*, and the laboratory classes, the notions of anatomy on the living body with that on human cadavers, so his

[10] In the evolution of a certain scientific field a series of specific „thresholds" have been described by M. Foucault in his book *The Archeology of Knowledge*, as follows: positivity, epistemologization, scientificity, and formalization (M. Foucault 1999: 229). Biology itself has passed, during the last decades, through several thresholds like these. One recent article, dedicated to the *developmental mechanics* clearly shows that the main difference between the approach favoured by Roux and Driesch respectively, consisted especially in the use of mechanics as a metaphor, by the former while the second took the discipline as it was, and applied the mathematical formalism and physico-chemical reductionism in the study of morphology (Silvia Waisse-Priven and Ana M. Alfonso-Goldfarb, 2009). Thus, biology and more particularly the morphological sciences entered the era of formalization and progressive mathematisation, things that one cannot find in Rainer's studies, as he was still tributary to a qualitative and non-mathematical approach of the developmental mechanics. Rainer seemed to have remained in an Aristotelic (i.e. as opposed to Galilean) paradigm of science and that situated him in a certain line of thought in the modern study of morphology, the one that started with Wilhelm Roux himself.

students, the future physicians, could apply more easily the profound knowledge of anatomy to the clinical examination of the patients. The fact that, in those times, such an approach represented something new and quite difficult to understand and to accept, especially for some of the most conservative or reluctant students, is very clearly described by a former student of Rainer's, the Nobel prize winner George Emil Palade, in his memoirs: „[Rainer] asked the students to avoid limiting themselves to the dissection of cadavers, and one of the most difficult tasks during the exam was to locate on a living person a variety of anatomical organs and systems. This examination probe, which was so different from the ordinary practice of classical anatomy (based solely on dissection) and where a sense of orientation, associativity and discernment were required, displeased those students habituated to learn «mot à mot» from textbooks and atlases" (R. Iftimovici 2007: 17).

## MORPHOLOGY, EVOLUTION, AND VARIABILITY OF ANATOMICAL FORMS

From the synchronic aspects of topographical anatomy Rainer decided to go further and explore the diachronic and dynamic aspects of the evolution and variability of anatomical forms, so he became interested in *morphology* (Șt. M. Milcu, C. Maximilian 1967: 27). These aspects were highlighted by another pupil and collaborator of Rainer's, the future endocrinologist Șt. M. Milcu who insisted, on several occasions, on the distinction, as far as the anatomical conception of Francisc I. Rainer was concerned, between morphology and anatomy (Șt. M. Milcu in I. Oprescu, C. Glavce 2006: 86; Șt. M. Milcu 2000: 49).

It was very early in his career that Rainer developed an interest in morphology both at the macroscopic and microscopic levels.[11] At the macroscopic level the purpose was to describe the variability of anatomical structures, some of which were caused by the racial variation of human populations.[12] This idea that Rainer's scientific view was larger than what constituted at the time the mainstream anatomical knowledge, by becoming biological and more specifically morphological, has been defended also by Th. Enăchescu (1970) who seemed to be convinced that: „we find ourselves in front of a new perspective, one which represents a great departure form the static orientation of those times, being capable to develop and to generate broader syntheses. Therefore, Francisc I. Rainer's anatomy transformed, from the very beginning, into a morphological discipline integrating elements of embryology, developmental physiology, comparative anatomy and paleontology" (Th. Enăchescu 1970: 167).

As a matter of fact, Rainer was well-known for his remarcable interest in some of the stages in the ontogenesis of human individuals: embryogenesis, development of human fetuses and the formation of the newborn (N. Neagu 1985: 475). He had also interests in the phylogenesis of the human species and the intimate connections between ontogenesis and phylogenesis (as expressed, in the then respected *biogenetic law*) as well as in the comparative evolution and development of different species (from the standpoint of comparative anatomy).

## FRANCISC I. RAINER'S SCIENTIFIC PROGRAMME AND THE COLLECTIONS OF HUMAN REMAINS

Starting from the study of anatomy, as a fundamental science, nothing more but a simple biomedical instrument, intended for the use of future medical practitioners, Rainer aspired and succeded to enter the greater domain of anthropology, a discipline that, in the epoch, studied comparatively, a large number of human populations (J. Dieserud, 1908). This opening towards anthropology, a comprehensive science that included, during the last decades of the XIX-$^{th}$ century and the beginning of the XX-$^{th}$ century, not only a significant part of human anatomy, comparative anatomy and physiology but also some notions of ethnology, helped Rainer to get prepared several years later (in 1928) and enabled him to participate, as a physical anthropologist, to

[11] See, for instance, Rainer's use of some arguments on this topic originally formulated by the French anatomist and university professor Adolphe Nicolas in 1907 (Fr. I. Rainer 1908: 4).

[12] In his memoirs, entitled *Însemnări memorialistice* (2006), Șt. M. Milcu insisted on the importance of a major theme in Rainer's anthropological thinking: the *human variability*: „As a result of his anatomical and anthropological studies, Rainer reached this fundamental idea, this strong and illuminating idea of variability, more specifically of human variability. This is the reason why one can find at the Institute of Anthropology the collection initiated and organized by Rainer, made up of thousands of skulls and hundreds of simple bones" (Șt. M. Milcu in I. Oprescu, C. Glavce 2006: 138).

a number of anthropological campaigns led by the Romanian sociologist Dimitrie Gusti (1880-1955)[13] in several villages situated in the Carpathian Mountains. All these sub-disciplines of the anthropological knowledge of the human species could be considered as integral parts of the same scientific project – the same paradigm – inside which Rainer exemplarily functioned for decades, thus ensuring his scientific studies and didactic activities the necessary coherence of a solid research style and a scientifically oriented education for his students.

We shall briefly mention now a series of theoretical aspects which represented, in our opinion, an important part of the very foundation on which Rainer's scientific collections resided. From this point of view, of a great importance were *two fundamental research programmes* developed since late XIX-th century until early XX-th century: the *developmental mechanics* (*Entwicklungsmechanick*) born in Germany in the second half of the XIX-th century and the *racial anthropology* especially developed in France starting from the 1830s and propagating to several other European countries. There is no enough time to fully explore in this paper the two theoretical roots of the Rainer collections so, we decided to concentrate on that one that assured a coherence and unity to the human remains collections displayed in two different museums in Bucharest: the *Museum of Anatomy* and the *Museum of Anthropology*.[14]

Therefore, we shall refer here to the *developmental mechanics* that exerted a strong influence on the mainstream anatomy and embryology for decades. As a result of the application of experimental methods and causal explanations as well as the situation of both disciplinary fields (i. e. anatomy and embryology) inside the framework or darwinian transformism, new conditions of scientific rigour appeared that made possible new objects of study and new research themes. Under the impetus of Wilhelm His, Wilhelm Roux and other leading biologists from that period, new disciplines have been created like experimental embryology and functional anatomy and a whole research programme called *Entwicklungsmeckanik*[15] that proved to be, on a long term, extremely fertile, found its way to the main stage of biological research (J. Maienschein, 2006).

## THE ANTHROPOLOGICAL INSTITUTE IN BUCHAREST AND RAINER'S DIDACTIC ACTIVITY IN THE FIELD OF PHYSICAL ANTHROPOLOGY

As a result of this intimate collaboration between anatomy and anthropology, the first anthropological institute in Romania has been created in Bucharest under professor Rainer's direction, strictly following his own plans. Speaking about this institution and the scientific collections it sheltered, I. Th. Riga was very elogious in his evocation: „Apart from the Institute of Anatomy and Embryology, in the last years of his teaching activity in anatomy, professor Rainer founded the magnificent Institute of Anthropology that bears his name and that he endowed, beside the precious anthropological material, collected and classified by himself, with a benedictine fervour, with entire collections of recent

[13] Dimitrie Gusti (February 13, 1880—October 30, 1955) was a Romanian sociologist, ethnologist, historian, and voluntarist philosopher; a professor at the University of Iaşi and the University of Bucharest, he served as Romania's Minister of Education in 1932-1933. Gusti was elected a member of the Romanian Academy in 1919, and was its President between 1944 and 1946.

[14] The situation of these two institutions was somehow different, in the sense that the *Museum of Anatomy* had already been founded in 1854, by Dr. Carol Davila, who was also the founder of the Faculty of Medicine in Bucharest. This implies that, in 1920, at the arrival of Francisc I. Rainer at the Department of Anatomy, the museum had 66 years of history. An eventful history, we may say, that left indelible traces on its collections. Rainer's arrival in Bucharest as the head of the department and curator of the Museum of Anatomy represented, in our opinion, a new page in the long history of the institution and an extraordinary opportunity for its collection to get out of the isolation and anonimity and to become the *pièce de résistance* of the didactic activities in anatomy and also in the area of biomedical research. The *Museum of Anthropology*, on the other hand, was the personal creation of professor Rainer's. It started as a small collection of skulls (before 1900), then enriched with a collection of pathological bones, and it was housed, for several years, in the basement of the Faculty of Medicine. Afterwards these collections became an integral part of the *Section of Anthropology* of the Institute of Anatomy and Embryology from the same faculty (1920-1937). It was in 1937 that the anthropological collections moved to a new building and set the foundation of one of the most important scientific museums in Romania (M. Mihalache, 1960: 192, 1972: 55).

[15] The recent article by Claus C. Hilgetag and Helen Barbas (2005) *Developmental mechanics of the primate cerebral cortex*, Anat Embryol (2005) 210: 411–417 presents at large the concept of *developmental mechanics* the English equivalent of the original German notion (*Entwicklungsmechanik*) which had a great influence on Fr. I. Rainer's thinking.

publications in anthropology, a number of plaster casts of the most well-known figures of human prehistory and with an original system of preservation of human cadavers. On the occasion of the XVII-th International Congress of Anthropology,[16] the presentation of these immortal creations determined H. Beer, a Western scholar, to declare: *This is not the work of a man but of a giant!*" (I. Th. Riga 1947: 18).

Regarding the anthropological collection started by Francisc I. Rainer we found out some important details expressed by the professor himself in a citation from the second chapter of the volume entitled *În amintirea profesorului Fr. J. Rainer (1874-1944)*, where he said that: „Apart from the *anatomical* collection itself, of this Institute,[17] which I received insignificant and rose it at a high qualitative and quantitative level, I have created *ex ovo*, not without personal suffering and out of the strict necessities of the curriculum, an *anthropological* collection of a great scientific value, together with a huge documentation regarding the morpho-biology of bones, which some of the anthropological research problems made mandatory. This collection, which I started well before 1900, during the period when I was an university assistant, included over 4000 human skulls. No other collection in our country could compare to it, not even by far. It is located in the courtyard of the Faculty [of Medicine], in the building erected, as a result of my longstanding perseverance, with the purpose to shelter the Department of Cadavers in the basement and the laboratory and the anthropological collections at the groundfloor and first floor, respectively" (Fr. I. Rainer 1939 in op.cit. 1946: 14).

Now, let us say a few words about Francisc I. Rainer as a professor of anthropology in Bucharest and his pioneering role in the teaching of the discipline in Romania. If we analyse the article published by V. C. Papilian and C. C. Velluda in 1941 intended as a short history of Romanian anthropology to date, we might be persuaded that the Cluj School was the first to make efforts and strive to introduce anthropology as an academic discipline in high schools and universities throughout all Romanian territories.[18] Not everybody seems to agree with this claim. For instance, the anthropologist Th. Enăchescu (1970) has a different opinion on this matter. He defends the idea that, in Romania, the first lectures in anthropology were delivered by Francisc I. Rainer: informally at the beginning, during his anatomy classes at the Faculty of Medicine in Bucharest (starting as early as 1920) and more formally, later on, when he started teaching at the Institute of Physical Education in Bucharest (starting from 1923). These academic lectures were followed in 1941-1942 and 1942-1943 by special lectures in anthropology held by Rainer at the University of Bucharest and very much appreciated in that epoch (Th. Enăchescu 1970: 175).

## CONCLUSIONS

The birth of anthropology in Bucharest, in the first decades of the XX-th century, is strongly connected to the discipline of anatomy and is inseparable from Francisc I. Rainer's name. There was, at first, the scientific curiosity of the anatomist followed afterwards by his efforts to enlarge the limited horizon of the medical students by surpassing the narrow and strict biomedical framework used as a basis for the understanding of human anatomical forms and the openning towards morphology. The study of the variability of human anatomical structures both diachronic and synchronic, ended up in the field of physical anthropology. Anatomy and anthropology have been also strongly connected at the institutional level, if one considers the fact that Rainer, as soon as he became the head of the *Institute of Anatomy and Embryology*, in 1920, founded a small *Section of Anthropology* which functioned as a part of the chair of anatomy[19] before it moved to the new building, thus becoming the Laboratory of Anthropology. This laboratory, together with the Museum of Anthropology and the Department of Cadavers made up the new *Institute of Anthropology*, of Bucharest, inaugurated on the 20th of June, 1940. What is more, the two scientific museums that Rainer had under his direct supervision: the Museum of Anatomy from the Faculty of Medicine and the Museum of Anthropology from the Institute of Anthropology were connected through a flow of didactic and

[16] See „Al XVII-lea Congres Internațional de Antropologie și Arheologie preistorică" and the „A VII-a Sesiune a Institutului Internațional de Antropologie" held in Bucharest, 1-8 September 1937.

[17] The Institute of Anatomy and Embryology in Bucharest.

[18] V.C. Papilian, C.C. Velluda, 1941. *Istoricul antropologiei în România*, Analele Academiei Române, Memoriile Secțiunii Științifice, Seria III, Tomul XVII, Mem. I., pp. 31-35.

[19] See Z. Iagnov 1931, p. 151.

research materials. During the rainerian period, this flow was maintained constant by the existence of what, in a recent paper, we called Rainer's „institutional machinery".[20] This interconnected institutional ensemble included: the external sources (hospitals, clinics, city morgue, nursing homes which provided the Faculty of Medicine with human cadavers), the dissection rooms from the Institute of Anatomy and Embryology, the Department of Cadavers, the Laboratory of Maceration, the Laboratory of Anthropology and the Museum of Anthropology (V. V. Toma, 2010).

Thus, one can see a powerful connection between the two academic disciplines: *anatomy* and *anthropology*, which was a reflection of Rainer's scientific creed, during his entire professorship in Bucharest (1920–1942) and afterwards when he held the position of honorary director for life of the Institute of Anthropology (1942–1944).

This veritable „bridge" between the two disciplinary fields manifested itself not only at the institutional level but also at the theoretical level which is quite obvious if one takes a closer look, for instance, at the manner of organising the collections of the two museums which were based, as we have demonstrated elsewhere,[21] on the principles of a research programme called *developmental mechanics*. This European scientific paradigm, born in Germany in the second half of the XIX-$^{th}$ century, as previously mentioned, has been critically incorporated by Francisc I. Rainer in his own conceptual framework as early as 1906, after his return from a fellowship at the Institute of Anatomy (II) in Berlin. On this theoretical foundation resided not only the collection of *human remains* (embryos, fetuses, skulls and pathological bones) distributed in the aforementioned museums but also the new wave of anatomical and anthropological research carried out by the young members of the school that surrounded, for several years, the great Romanian anatomist and anthropologist.

[20] V.V. Toma. 2010. *Skulls, Bones and Embryos. Professor Francisc I. Rainer's Medical and Anthropological Collections in Bucharest (1906-1944)*, paper presented at the International Conference „Museums of Medicine in Past and Present. Innovating the use of medical collections as public and private academic resources", organised by the Semmelweis Museum, the Library and Archives of the History of Medicine, and the Oxford Brookes University, Budapest, 12–14 May 2010 (personal communication).

[21] *Ibidem*.

## REFERENCES


1. Brătescu Gh., „Fr.I. Rainer şi jurnalul său", in Fr.I. Rainer (1979) *Jurnale*, ediție îngrijită de Gh. Brătescu şi M. N. Basarab, Editura Eminescu, Bucureşti, 1979, pp. 5–22.
2. Dieserud J., „The scope and content of the science of anthropology; historical review, library classification and select, annotated bibliography; with a list of the chief publications of leading anthropological societies and museums", The Open Court Publishing Co., Chicago, 1908.
3. Dumitrescu H., *Contribuția românească la studiul anatomiei funcționale*, Analele educației fizice, Anul VII, **1938**, 237–241.
4. Enăchescu Th., *Contribuția profesorului Francisc J. Rainer la dezvoltarea antropologiei românești*, Studii şi cerc. antrop., **1970**, *7(2),* 165–179.
5. Firu P., „Medicina şi antropologia în şcoala lui Francisc I. Rainer", in C. Guja, Al. T. Ispas (eds.) „65 ani de la inaugurarea Institutului de Antropologie *Francisc Iosif Rainer*", Editura Universitată „Carol Davila", Bucureşti, 2005, pp. 33–37.
6. Foucault M., „Arheologia cunoaşterii", colecția *Filosofia culturii*, traducere, note şi postfață de Bogdan Ghiu, Editura Univers, Bucureşti, 1999.
7. Iagnov Z., *Institutul de Anatomie şi Embriologie din Bucureşti*, România Medicală, **1931,** *9 (10),* 150–152.
8. Iftimovici, R. „George Emil Palade. Spovedania unui învingător", Editura Academiei Române, Bucureşti, 2007.
9. Maienschein J., *Principles of experimental embryology*, chap. 3 in, Gilbert, S. F. (2006) DevBio. A Companion to Developmental Biology, 8-th Edition, Sinauer Associates, Inc. Publishers, Sunderland.
10. Mihalache M., „Muzeele din Bucureşti", ediția a I-a, Editura Meridiane, Bucureşti, 1960, p. 192.
11. Mihalache M., „Ghidul muzeelor din România", Editura pentru turism, Bucureşti, 1972, p. 55.
12. Milcu Şt.M., „Préface", in L'Oeuvre scientifique de Fr.J. Rainer, Vol. II Structure fonctionnelle, Monitorul Oficial şi Imprimeriile Statului, Imprimeria Națională, Bucureşti, 1945, pp. 5–6.
13. Milcu Şt. M., Maximilian, C. „Introducere în antropologie", Editura ştiințifică, Bucureşti, 1967.
14. Milcu Şt. M., „Unitatea şi diversitatea antropologiei", in S. Dumitrescu, M. Stîrcea-Crăciun (eds.) *Rainer*. Centrul de Cercetări Antropologice. Academia Română, Editura Anastasia, Bucureşti, 2000, pp. 48–49.
15. Neagu N., „Profesorul Rainer ca embriolog", in Gh. Brătescu (ed). Retrospective medicale, Editura Medicală, Bucureşti, 1985, pp. 475–477.
16. Oprescu I., Glavce C., (eds.). „Însemnări memorialistice. Acad. Şt.M. Milcu", Editura Academiei Române, Bucureşti, 2006. pp. 138.
17. Papilian V.C., Velluda C.C., *Istoricul antropologiei în România*, Analele Acad. Rom., Memoriile Secțiunii Ştiințifice, Seria III, Tomul XVII, Mem. I, **1941.**
18. Rainer Fr.I., „Scrisoare către Marta Trancu din 27. 04. 1899", in Fr. I. Rainer Jurnale, ediție îngrijită de Gh. Brătescu şi M. N. Basarab, Editura Eminescu, Bucureşti, 1979, p. 255.

19. Rainer Fr.I., Robacki R., „Étude morphologique et fontionnelle des ligaments intercruraux de la colonne vertébrale humaine", in Fr.J. Rainer (1945) L'Oeuvre scientifique de Fr.J. Rainer, Vol. II, Structure fonctionnelle, Academia Română, Imprimeria Națională, Bucureşti, 1945, pp. 47–70.
20. Rainer, Fr.J., „L'Oeuvre scientifique de Fr.J. Rainer", Vol. I–IV, Academia Română, Imprimeria Națională, Bucureşti, 1945–1947.
21. Rainer Fr. I., „Jurnale", ediție îngrijită de Gh. Brătescu și M. N. Basarab, Editura Eminescu, București, 1979.
22. Riga Th.I., „Le Professeur Fr.J. Rainer", in Travaux d'anatomie à la mémoire du Prof. Fr.J. Rainer, Imprimeria Națională, București, 1947, pp. 11–19.
23. Riga I.Th., Călin, Gh., „Dr. Fr. I. Rainer", Editura științifică, București (first edition 1966) in D. Riga, S. Riga (eds.) Anatomie și antropologie. Eseuri și sinteze, Editura Cartea Universitară, București, 2008, pp. 3–199.
24. Toma V.V., *Skulls, Bones and Embryos. Professor Francisc I. Rainer's Medical and Anthropological Collections in Bucharest (1906–1944)*, International Workshop „Museums of Medicine in Past and Present. Innovating the use of medical collections as public and private academic resources", organised by the Semmelweis Museum, the Library and Archives of the History of Medicine, and the Oxford Brookes University, Budapest, 12–14 May 2010 (personal communication).
25. Waisse-Priven S., Alfonso-Goldfarb A. M. *Mathematics Ab Ovo: Hans Driesch and Entwicklungsmechanik*, History and Philosophy of the Life Sciences, **2009**, *31 (1),* 35–55.