

Henri Coandă and the Romantic Programme

The present study discusses the major romantic universalistic aspects in Henri Coandă's worldview and philosophy, which point to a cultural-scientific programme worthy of being reevaluated since this programme anticipates a new kind of critical discourse, namely one which is holonic-holistic-encyclopedic in nature, one that simultaneously takes into consideration 'information' and 'culture' in Coandă's acceptation. Henri Coandă is a priceless example of how men should combine these two fundamental aspects in any cultural/scientific act: information (i.e. scientific knowledge; or thought in general) needs culture (the integrated assemblage of science, art and religion; or materialized thought in general, as accumulated during millennia of civilization), while culture (materialized thought) needs information (thought), either one without the other leading to cultural barrenness (both these concepts, information and culture, are in agreement with Brâncuși's system of thought). The scientific and the general cultural theory, will, as a consequence, sooner or later unite their ways, which are artificially separated in our modern society by the emphasis on overspecialization. Coandă's message is as clear and as valid as ever: the way towards universality can be reached only by avoiding a unilateral cultural formation. This is an ideal that was stated as such as early as Leonardo da Vinci's Renaissance and it is reflected in what is known today as the 'third culture' – i.e. literature and science in Elinor S. Shaffer's acceptation –, as well as in encyclopedic, holonic-holistic systems such as those developed by, among others, Arthur Koestler, Fritjof Capra and Ken Wilber.

Key words: *romantic; information; culture; universality; holonic-holistic*

Henri Coandă, together with his Romanian predecessors Traian Vuia and Aurel Vlaicu, are the undisputed pioneers of a revolution in science: avionics. Similarly, the German and the British romantics are the undisputed pioneers of a revolution in culture: the boundless psychological exploration. The latter reputedly led to the appearance in the 20th century of increasingly more sophisticated ramifications of psychological research, like analytical psychology, cognitive psychology, psychotherapy, existential analysis, psychotronics, etc. Henri Coandă's discovery of jet propulsion in 1910 can be said to be a romantic landmark, since this is the moment when the romantics' lofty dreams of exploring the highest places on Earth began to come true indeed. Vuia, Vlaicu and Coandă are thus among the most important personalities worldwide who made possible the romantic dream of conquering the boundless spaces of the Cosmos. In this context, Coandă's personality as leader of a scientific revolution is an exemplary model which demonstrates the validity of the hypothesis that, regardless of space and time, scientists and artists work in similar ways. Thus Coandă points out that "[i]t is useful not to omit the fact that the scientists, who belong to the so-called rigid, sombre world of technics, can be also poets and it is even proper that they should create poetry" (Firoiu, 21). Poetry, in this respect, is a category of the spirit which makes the

very scientific dialogue possible, so much so that even mathematics, one of the most exact sciences, is seen to have a poetry of its own (Firoiu, 67); more than that, for Coandă the pilots are the “poets of the sky” (Firoiu, 228).

In the present paper, we will analyze the elements in Coandă’s biography that lead to the conclusion that the literary-artistic and the scientific processes go hand in hand and make scientific discovery possible, and that these processes in Coandă’s case evince the intensely romantic structure of his personality.

Thus, Coandă confesses that in the years of his childhood he saw, felt and took inside himself the weeping wind, he saw the roaring sea [the North Sea] playing and heaving due to the huge invisible bellows animated by the wind, he was attracted and at the same time terrified (Firoiu, 48-50) by this powerful display of forces, he listened to the wind, to its free move, to its unbounded greatness and to its joy. This view of the wind as a universal animating force of life manifest in the form of “invisible bellows” reminds one no doubt of the romantics’ doctrine about the wind of inspiration, to be traced back in time as far as Democritus. The strongly metallurgic image of the invisible bellows as the animator of the waves of the sea reminds one indeed of Blake’s descriptions of Tharmas’s world of agitated waters which exist both inside and outside the body: the bellows for Blake are in this sense the human lungs, which blow the wind inside and outside the body, the planetary lungs, which blow the wind around the globe, and the cosmic lungs which blow the wind through the spaces of the universe. Like many of the romantics (among them Blake, Shelley, Coleridge, and others), Coandă was fascinated by the wind with its deafening roar and weeping and this lifelong fascination led to the most important realization: his mission to study the wind and decipher the laws governing it as well as the laws governing flight, and so Coandă loved the weeping or joyful wind all his life and kept it inside himself. The romantics tried something similar, in a different register: to study the laws governing the wind of inspiration; this is one of the reasons for which romanticism became reputedly a science of emerging phenomena, a doctrine of cultural revolution, a science of thresholds, an aesthetics of the creator (Voia, 607), an instrument for exploring the very nature of the act of artistic creation.

Another element which contributed to Coandă’s developing a romantic personality was his experiencing the “voluptuousness of the heights”: the Eiffel Tower in Paris, which he later called “the giant of the world”, the Monastery at Curtea de Argeș, the Church “Trei Ierarhi” in Jassy, the lofty St. Sophia Cathedral in Constantinople (Istanbul), the heights of the Acropolis in Athens: all these were for Coandă man’s attempts at flying (Firoiu, 70, 80). This emerging personality is visible in the words used by A.D. Xenopol, the Romanian historian from Jassy, in order to characterize the young Coandă: Coandă C. Henri remained “the quicksilver, difficult to control, whose curiosity always created one more question, regardless of how well the problem had been clarified, thus opening the history lesson always new horizons”; “a quicksilver, difficult to curb in his thoughts which were continuously breaking loose” (Firoiu, 61-62, 73). His inquisitive spirit was stunned by the realization of the fact that the world had been interested in the sky, in the birds and in the idea of flight by imitating birds (see Kernbach, 239) since ancient times, in myths, in the Greek legend of Icarus and Dedalus recounted in Ovid’s *Metamorphoses*, in building churches and monasteries and towers. So he became the friend and the protector of the wind, aware of the fact that he had to follow Archimedes of Syracuse (c. 287-212 BC.), the great Greek mathematician, physicist and inventor, whose calculations made possible the flight with machines easier than air; in

order for him to fulfil the scientific predictions made by Roger Bacon (c. 1214-1294) in his study *De secretis operibus artis et naturae*, written in the 13th century, regarding the mysteries of flight and man's eventual possibility to fly, and in order to continue what Leonardo da Vinci (1452-1519) had started: establishing the rules of flight, the principles in accordance with which we can confront the air (Firoiu, 70). This field had been also constituted by Isaac Newton's (1642-1727) major contribution (the discovery of the universal law of gravity and of air resistance) and Clément Ader's (1841-1926) attempts to fly with a machine looking like a bat with wings wide open [*Eole I*, 1890: this steam-powered, bat-winged monoplane, a heavier-than-air flying machine, flew a distance of 50 m on a friend's estate near Paris, being the first powered takeoff in history; later in 1897, Ader created his *Avion III*, but failed completely (see Jenkins-Jones, 3; and *The New Encyclopaedia Britannica*)]. Coandă was thus irresistibly attracted by two myths, the myth of man's flight (one powerful instantiation of which is the Greek myth of Dedalus and Icarus) and the myth of the wind: these shaped the development of his entire life. The force of the first myth (of man's flight) was enhanced by the fact that Coandă made several visits: to Constantinople (Istanbul), a city in which he experienced the living fascinating power of the Orient with its legends and fancy reminding one of Semiramis or Scheherazade, and where he visited and was immensely impressed by the huge St. Sophia Cathedral, no doubt a universal treasure of the Byzantine church architecture, built by the emperor Justinian the Great (483-565) (Firoiu, 78) around the year 500 AD.; to Athens, to the heights of the Acropolis, where Coandă is said to have shouted: "Eureka, I have discovered the greatness of the past." Thus, Athens represented for Coandă a vital experience reminding one of romanticism: in Hölderlin's, Shelley's and Keats's systems of thought the golden past was associated with Greek antiquity. Also, by visiting the Gibraltar and the Atlantic, Coandă felt as if he had belonged to the crew of Christopher Columbus (1446-1506), Vasco da Gama (c. 1460-1524) or Captain James Cook (1728-1779) (Firoiu, 80), this being in many ways the experience of the romantic archetype of the traveller and quester.

For Coandă the idea of flight by imitating birds remained however by no means only at the level of the Greek myth of Icarus and Dedalus: this was only the necessary first powerful impulse to deepen the study of flight, so much so that he became thoroughly involved with the analysis of the works of Otto Lilienthal (1848-1896). Lilienthal's book *Bird Flight as a Basis for Aviation (Der Vogelflug als Grundlage der Fliegekunst, 1889)* provided Coandă with an excellent tool for understanding the laws of flight. In Spandau, where Coandă explored the precious legacy left by Lilienthal, who had died in 1896 while testing one of his gliders, Lilienthal's disciples recognized in Coandă the passion and the inner sacred fire (Firoiu, 91) indispensable for any real creator, these being features which add to the portrait of a genuine romantic thinker. Coandă's passionate artistic side came to light also by his involvement with sculpture, already obvious in the time spent in Jassy at the Military School, whose entrance, as he later confessed, had been for him "the gates of life" (Firoiu, 267). In Berlin he took lessons from the German master of relief Rudolf Markusse: in his studio Coandă entered the world of form and the philosophy of contour; two of his compositions are related to the romantic tradition: one he called *Prometheus*, the other *Towards the Light* (Firoiu, 94, 100). While Coandă's concern with the philosophy of contour is an important connection with at least two British romantics – Blake, with his ontology of the "wiry line" and strong contour, and Byron, with his "lucid and flexible contours" –, Coandă's *Prometheus* connects him with the entire romantic tradition which assimilated the Greek

myth (e.g. P. B. Shelley's *Prometheus Unbound*, Mary Shelley's *Frankenstein or the Modern Prometheus*, Byron's *Prometheus*, etc.). (Of course, Gothic art underlines also the role of the line. For Blake, however, the line is the sign of imagination: "Nature has no Outline: but Imagination has [...] Nature has no Supernatural & dissolves: Imagination is Eternity." (Keynes, 779: *The Ghost of Abel*). The line/contour is connected with eternal forms, and its absence – with the ephemeral forms. The emphasis on the line is characteristic also of religious art, starting already from the rupestral designs in the Stone Age and up to the Gothic, from Chinese Buddhist art and up to El Greco. Cecil Collins, an artist who was Blake's contemporary, said that "line is essence", unlike appearance or chance, which are the topic of French impressionism. (See Raine, 11). Byron, on the other hand, builds "lucid and flexible contours" for the self: Byron's success in his "cooperating with chaos" is due to the fact that "boundaries or barriers are set to the edges of the self". (Garber, apud Pipkin, 23). Kipperman shows in this respect that "creativity is nothing without boundaries to act upon", (Kipperman, apud Pipkin, 29), and Coandă apparently started precisely from an attempt at understanding the laws of contour and form}.

Coandă's following statement qualifies him as an undissembled romantic thinker: "[...] everything I have achieved was only a call of the new, for knowledge, with a view to finding out everything that might have allowed me to understand man [...] his possibilities to create in a universe which one desired to be ever larger, ever greater, ever more different from what it was until that time [...], in which I should be able to contribute, not like an ambitious or egocentric man, but as one devoted to the idea of man's rise [...] Of course, the instinct of the new resides in each of us, just like the feeling of conservatism, on which develop the very tradition, the longing to move through space, the voluptuousness of the unknown, and hence, naturally, the fruit of adventure can blossom..." (Firoiu, 95-96). In stylistic terms, Coandă defines here the romanticism-classicism paradox, which makes possible cultural and scientific manifestations proper, as Schlegel, Novalis, Blake and Byron explicitly announced.

This drive to know the unknown determined Coandă to travel abroad. Thus, he received an invitation to travel to Haifa (Israel) while at Markusse in Berlin. He accepted the invitation, got to Haifa, and there met "père Olivier", who convinced him to take a trip with a caravan even to Peking (Beijing), via Jerusalem. On this occasion, covering an immense route more on foot than on camels and donkeys, Coandă felt like being a worthy descendant of the first tourists recorded in the Bible, an apostle of the new times (Firoiu, 97). The travel from Haifa, to Ispahan [Isfahan, in central Iran, the capital of Persia from the 16th into the 18th century (*Webster's Encyclopedic Unabridged Dictionary of the English Language*, 754)], to Tehrān, through Tibet, through the Gobi, to Peking, was full of adventures, so full actually that Coandă confesses it seemed a road to hell, the only missing element, which might have caused them to feel like crossing indeed the Styx, being Charon's boat (Firoiu, 98). This was confessedly a school of the will, from which all the twelve members of the group graduated, Coandă being the youngest and the tallest (and so the one "nearest the Sun", as père Olivier used to comfort Coandă). The voyage to the Orient, as well as the many other trips he took between 1906-1907, meant for Coandă, therefore, an initiatory experience, one that set the directions of the later evolution of the young scientist, in which patience, endurance, hope, renunciation, strong will, enthusiasm, etc., were imperiously required, and one that Coandă felt necessary as a temporary escape from the rigorous domain of positive sciences, in the study of which he had been already involved for some time. These travels helped Coandă "build his soul" (Firoiu, 99), or, in Jung's terms, helped him tread the path of individuation.

His artistic profile is completed by the fact that he was also a talented cello player (while in Berlin, due to the fact that an instrumentalist was sick, Coandă performed in the famous imperial Berlin Orchestra) (Firoiu, 101). This is the profile of a romantic theorist and experimenter.

Here is Coandă's fundamental programme in science and culture, one that has strong affinities with the main tenets of authentic romantic theory: "Over everything that has been tried and achieved, he [Coandă] thinks a lot, *about something that should be new, even in that world of the new*, even when the new being just born had not yet had the time to shape its proportions, 'about something that should raise the limit of attempts up with a few decades ahead, should recover the time that mankind had lost for so many centuries, should *push* this technics far away, in a revolutionary way, forwards, *in space and time*. [He] wants a means of flying that should not wait for its evolution, but should devote man the ultimate great potential of *the unlimited, of the infinite*, without the loss of successive investments, without evolutionary waiting' [...]" (Firoiu, 106). This romantic zest for the new became almost a life philosophy, as it reputedly was for the romantics: "[...] the appreciation which each of us has to show for anything new given to people, for any invention, great or small, brilliant or just practical, revolutionary or current, with the awe which the new deserves, which the nonpareil beginning imposes..." (Firoiu, 159); in avionics, he was meant to make "prototypes, new and always other exemplars, other thoughts, other accomplishments, other ideas molten into facts" (Firoiu, 173). This image of Coandă as a daring scientist is completed by Captain Ferber's witness: Coandă was an inexhaustible young man in everything he knew and in everything he was elaborating; "not even the devil, in all his devilishness, had managed to think like this Henri Coandă" (Firoiu, 108-109). This is undoubtedly a portrait having affinities with the images of the great romantic heroes.

Coandă's formative years were in this respect no doubt deeply impressed by the experiences he had in Rodin's studio. Here, Coandă confesses, he entered another universe, and became even more passionate about sculpture than he was before, in Markuse's world in Berlin (Firoiu, 147). Now he began to understand that sculpture was addressing the eye only apparently: Rodin, whom Coandă compared to Michelangelo (Firoiu, 153), thought in terms of clay, he professed a philosophy in relief (Firoiu, 148), one for which and through which he lived his entire life. Under Rodin's guidance, Coandă composed a Christ's head for a little tomb in Passy, which rendered the deadly sufferance of the little girl Monique, who had died before the very eyes of her powerless parents. This sufferance Coandă experienced as an indomitable force that raises the spirit, materialized in his sculpture of Christ's head about which he said it remained for eternity, even though created in Rodin's studio, in the atmosphere of a giant of sculpture, of relief and of thought (Firoiu, 150). On the other hand, while in Paris Coandă met Brâncuși, whom he considered a "great romantic" and who became a very good friend, being, like Coandă, Rodin's disciple. Coandă confesses in this respect that "one didn't need to understand Brâncuși; it was simpler and easier to feel him; Brâncuși would give himself to you, he would become one truly yours, entirely, without reservations, so that you in turn should remain near him, something of your living being would be kept there, for ever and against your will, causing you to become unable to leave, in his studio at Montparnasse, next to that kind and frolicsome child in his being, that was he himself, Brâncuși" (Firoiu, 151-152). [Coandă soon observed the fascinating power that Brâncuși was exerting on him, but realizing that he could not keep up with Brâncuși's art, that for him art was only a longing and not his entire life, as it was for Brâncuși, Coandă

decided to simply run away from Brâncuși's studio in order for him to preserve his own self, in order for him to become the Henri Coandă of aerodynamics in scientific research, in his positive art (Firoiu, 236)]. This portrait no doubt is the portrait of a romantic made by a romantic. Brâncuși's sculpture was, in Coandă's view, nothing but "philosophy expressed in reliefs, deepened in clay and plaster, chiseled in stone, in contours that accurately rendered the cerebral product, a philosophy starting in clay and being accomplished in stone [...]" (Firoiu, 152). His own metal birds Coandă could rediscover in Brâncuși's "bird of paradise" (rom. "pasărea măiastră"). Coandă soon understood that Brâncuși's prime matter was thought, out of which his great creation started, in an authentic and personal way; Brâncuși cut this thought in stone, he chiseled it into eternity in a personal and, paradoxically, at the same time universal way, in dimensions surpassing even those of Rodin (Firoiu, 152-153). "Brâncuși created the thought matter, he was giving relief to thought" (Firoiu, 236). This is indeed one fundamental feature of any romantic process: mental-cerebral creation (see esp. Blake and Shelley). Coandă confesses that the language of sculpture attracted him by agency of his belief in beauty. This language he believed as beautiful as that of technics and as vast as that of mathematics. Sculpture was for him a passion and the fulfilling of a vocation (Firoiu, 152). About this beauty he was to say the following: "The beautiful is not a detail of construction; it is a necessity. For without the beautiful we cannot advance in life and can we ignore precisely it when we are dealing with constructions to which we will be bound for the rest of our lives, for ever?" (Firoiu, 183). In other words, the scientist without the artist loses a fundamental dimension: the aesthetic; while the artist without the scientist loses another one: experimental and theoretical certainty, truth, knowledge and research, insightful experimental progress, intellectual evolution. Coandă was a "scientist, a thinker and a creator. He [was] an engineer in technics and a creator, an artist, in that universe of the beautiful." In his view "the scientist looks, like the artist, ahead, only ahead, before everybody, towards the infinite..." (Firoiu, 197). This is the programme of a romantic through and through. So Coandă confesses: "I was thinking always only ahead [...] I was looking only forwards, I scrutinized the future [...] in order to anticipate the course of time, to snatch from posterity the very unknown, but I was using the experience of the past [...]" (Firoiu, 198). This programme reminds one of the dilemmas of Blake Urizen's, who, like Coandă, was fighting the very course of time, exploring, experimenting, measuring, creating, setting limits to things. But in this dilemma, Coandă choses ultimately not Urizen as the one setting limits, but Los, the Imagination, the one creating infinitely and for ever: "ideas cannot be commanded. They are a renewal of the perspectives towards which they guide us. We are, maybe, dealing with the very notion towards the future which helps us to elucidate things. Yes, it is the very acceleration of history... I have understood that my calling is to invent, to discover the new, to enter the future. Everything must be always something else, freshened, renewed. [...] I accept only a new world, rejuvenated and freshened by the very wish to discover the unknown, to decipher its enigma. For me the future is not a succession of the present, that which follows, in a cycle, the actual, that which is different from this present. I do not consider truly authentic anything but the imagination, which is not at all a disorganized play of images, on the contrary, it is an availability of the spirit which refuses any limitation, any restraint in the existing, in what we have [...] I drill the new and do not accept it but from an integral beginning, not an evolutive one; and then I search for an ideal solution for it, in order for this solution to be valid in the future, in order to regulate a content for good. For instance, I do not accept Nietzsche, because he thinks the world is absurd and

that mankind is condemned to remake, ad infinitum and without results, the same gestures [...]” (Firoiu, 199). [Coandă’s imagination as the only “truly authentic” has indeed affinities with the concept of romantic imagination as an onto-noetic principle; regarding Coandă’s concept of “an integral beginning” see also Paracelsus’ doctrine implying what we call a “panprimordialism” which influenced the romantic thought from its very foundations].

That “ideas cannot be commanded” points to the fact that creation is spontaneous, be it in the realm of science or art; this is the definition of the Eureka act/effect (as defined by Arthur Koestler and Colin Wilson), which means scientific, artistic, etc., revelation occurring in an instant, like a thunder. John Clare and Mozart are good examples of artists creating by agency of cascades of Eureka effects: Mozart could “see” an entire musical composition at a glimpse (for details see Penrose, 2001), regardless of how long it was; Clare wrote his poems as they came, without wiping any of the words, so much so that his texts can be said to have been written by virtue of the technique of automatic writing (“écriture automatique”). In this respect, Adolf Muschg had justly pointed out the fact that the romantics had anticipated the surrealists, who by their method of *écriture automatique* created a “short circuit” between art and the unconscious (see Muschg, 9). On the other hand, that “they [ideas] are a renewal of the perspectives towards which they guide us” points to the fact that ideas, in modern terms, are “strange attractors”, archetypal forces, transcendent nuclei of structural energy which direct thought in its natural dynamics. (For details, see Stroe, 2004). Likewise, Coandă’s “very notion towards the future which helps us to elucidate things [...] the very acceleration of history [...] [the] calling [...] to invent, to discover the new, to enter the future” reminds one indeed of Blake: his calling was to create, and not to imitate: “I must Create a System or be enslav’d by another Man’s. / I will not Reason & Compare: my business is to Create.” (*Jerusalem*, 10, 20-21, in Keynes, 629).

The similarities between Coandă’s and the romantics’ system of thought is remarkable in the fragment above. Here is one of Blake’s fundamental statements defining the romantic spirit: “I know that This World Is a / World of Imagination & Vision. I see Every thing I paint In This / World, but Every body does not see alike [...] To Me This World is all One continued / Vision of Fancy or Imagination.” (Blake, “Letter To Dr. Trustler, 23 August 1799”, in Keynes, 793). In this context, Coandă’s concept of an “integral beginning” seems to have affinities with the concept of “panprimordialism” implied by Paracelsus’ theories (see Stroe, 292ff, for details about the idea of panprimordialism), which avowedly influenced the system of thought of romantics like Blake and Novalis.

It is interesting to notice that at a certain moment in his life (around 1927) Coandă changed the direction of his research from aerodynamics to geophysics, from the lofty heights of the wind and the sky to the mysteries of the depths of the earth (Firoiu, 189). This indeed reminds one of Novalis, who was so fascinated with the mysterious treasures of the womb of the earth, they being transformed by him into a poetic setting, in which alchemical initiations took place: descending into the depths of the earth meant descending into the depths of the soul and, at the same time, into the past/history. Coandă thus came to contribute also in the field of house building [worthy of note is the massive structure he helped create: a block having four thousand apartments on the hills of St. Cloud, a sort of modern Acropolis, a different, horizontal replica of the Eiffel Tower (Firoiu, 193)].

The many levels and dimensions of his personality bring Coandă close to the greatest figures in world history, which in a way or another tended to disclose the universal aspects implicit in the human being. This explains for instance why Coandă wanted to see the future

Bucharest as a metropolis similar to Paris, Berlin, Rome, Vienna or Rotterdam (Firoiu, 242). Coandă's complex romantic personality can be observed also in the following declaration, reminding one of Blake's mental cosmo-philosophy which had announced the mental travel as a mode of experiencing in a visionary way both the future and the past in the revelation of the one "Moment of Time" (mentioned by Blake in *The Four Zoas*) akin to Coandă's "integral beginning": "back then, I pierced through the future, with the eyes of my mind, looking through time's opacity at the things that were to come; now [in old age], I am going in the reverse direction and am striving only from the heap of memories to reconstitute the past, a world, a world gone-by, which is nevertheless ours, belonging to stories... [...] in the world of technics, of science, one scrutinizes the future with the eyes of one's mind, of course. But in the past, in the world of memories and shadows, the place in which one looks only with the eyes of one's heart, there life is lived near those departed, one does not conceive of nor does one build that world rigorously, with the rule in one's hand, with one's eyes fixed on the drawing board, on the contrary, one reconstitutes it only from memory..." (Firoiu, 244). As it was for Hölderlin, the past for Coandă resides in one's heart, in one's emotional life, the place where archetypes receive differentiating contours. For Coandă the visionary future, on the contrary, is of the mind, as for Blake Urizen-Reason was the *Zoa* striving to pierce through the opaque paths of the future. It is striking that Coandă came to an ontic solution to the problem of time by theorizing the existence of an "integral beginning"; likewise, Blake made Urizen realize in *The Four Zoas* that the future is in the very present, this revelational event being an ecstatic defining experience for Urizen, who then is regenerated in his freedom to rise or fall at will. Coandă's aesthetic view is similar to that of romantics like Blake or Clare even more so since Coandă thought of natural beauty as a captivating force whose charm is preserved precisely by the savageness intrinsic in it (Firoiu, 246). Coandă's genuinely romantic programme is completed with his incentive addressed to the young: they should be constructively daring, fearless, and willing to face danger, risk, the unknown (Firoiu, 274); they should learn man, since science and technics without this is impossible (Firoiu, 279); they should begin, finalize and persevere; they should research, create, fight and be successful, regardless of obstacles, for to begin means also to finish, i.e. to fight to be victorious [this being something he learned from Jules Verne, as Coandă confessed (Firoiu, 280)]; all these for one reason: treading the path of universality and avoiding limitation and the psychosis of extreme, strict specialization which appears as a result thereof (Firoiu, 283). In this sense Coandă explains that music, the plastic arts, literature, the theatre, cinematography, sports, etc., enlarge knowledge, amplify its contents; information without culture is like "putting nails into a wall made up of concrete"; information must be filtered through culture, i.e. through the gains of human intelligence and talent accumulated during the millennia. Culture without information means allowing theory to function in an abstract, barren way, to be estranged from reality. The new cannot be explored if one does not have good command of the past, if one does not know what to ask from the new; information is vital for the creator, for information means discovering the new; creative fancy cannot grow and develop if it lacks culture, information, documentation; culture and information is the creator's prime matter by virtue of which he can create in the first place (Firoiu, 284). This is indeed Coandă's romantic holistic programme, in which "culture" means "to know" (so it normally includes "information"-science, alongside with art, music, literature, poetry, etc.; culture is the form in which thought is materialized; this concept is no doubt an echo of Brâncuși's noetic theory of artistic creation applied to the

whole of culture) (Firoiu, 284, 286, 302) and is one of the most important fundamentals, one that namely generates the evolution of our life (Firoiu, 302). According to Coandă, it is only out of this correlation between culture and information (science) that modern man can *spiritually* be born (Firoiu, 285). This programme has a romantic purpose reminding one of Novalis' and Blake's teleologic worldviews: integral man's purpose is the conquest of nature and of time itself (Firoiu, 285, 286). Like de Broglie, Coandă believed that the authentic man of culture should strive to feed on an all-encompassing information fuelled by many sources, to surpass artificial unilateral specializations, and pursue true science which serves the great ideals of mankind which were never reached by too narrow personalities (See de Broglie, 290; and Firoiu, 286). Thus, Coandă's fundamental conclusion, reminding us of Blake's Urizen in his eternal explorative voyages of discovery, is that "man has to fight to go forwards, always forwards" (Firoiu, 302).

The natural consequence of Coandă's view schematically presented above is that scientific and general cultural theory will, sooner or later, unite their parallel paths, now artificially separated by the emphasis on overspecialization. Henri Coandă is a priceless example of how men should combine the two fundamental aspects in any cultural / scientific act: information (scientific knowledge) needs culture, and culture needs information, either one without the other leading to cultural barrenness. Coandă's message is thus clear and as actual as ever: the way towards universality can be reached only by avoiding a unilateral cultural formation. In our paper we presented the romantic universalistic aspects in Coandă's view, which point to a cultural-scientific programme worthy of being taken again into consideration since this programme anticipates a new kind of critical discourse, namely one that simultaneously takes into consideration 'information' and 'culture', i.e. the integral "to know" of the romantics.

For the present analysis one fundamental aspect is particularly worthy of notice: Coandă's development and interests were decisively influenced by the myth of the wind and of man's flight: in the Greek myth of Icarus and Dedalus he found a pristine example of man's aspiration to the heights; in Greek science (namely Archimedes) he found the first demonstration showing that this dream of man's flight is mathematically possible; in Greek architecture (mainly the Acropolis in Athens) he found the first impressive materialization of man's drive to the heights, thus discovering the greatness of the past; and in his travel to Asia (to Peking) crossing the Balkans, via Jerusalem, and on foot through the desert with a caravan, he must have found the first example of how important mankind's dream to fly is: the vastness of the desert to be crossed without wings was the ultimate test of endurance, it was his "school of the will", the embodiment of the ultimate obstacle, the "road to hell".

Thus, if the Balkans meant for Byron the culmination of his romantic pursuit, for Coandă the culture of the Balkans, at least through the elements mentioned above, meant the "integral beginning" in his pursuit of mankind's myth and dream of conquering the heights and the wind, which finally led him to another pursuit, that of universality.

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