An International Congress has as its goals the education of participants, the exchange of ideas, the sharing of customs and values and the introduction of new innovations. The 4th World Congress on Brain Injury promises this and much more. It brings together professionals from many fields from throughout the world. Together with students, families and persons with brain injury, there will be much discussion, questioning and learning from each other. No other international meeting is as diverse, or as broad in the disciplines that participate.

From the arts of the renaissance to the latest in technical and scientific achievement, the 4th World Congress on Brain Injury will provoke thought, raise and answer questions. New friendships will be made, new alliances formed and new ideas will emerge.

Presenters come from throughout the world and represent all disciplines. The workshops, plenaries, seminars, papers and posters represent the best and latest in the field of brain injury. The social activities, food, the beautiful city and the citizens of Turin have made the Congress the best yet. The Organizing Committee, headed by Bianca Vetrino, Roberto Rago, MD, Claudio Perino, MD, Carla Andreotti, Enrico Castelli, MD and others have done a tremendous job. The Stilema organization, and especially Stefania Albis and Anna Gilardi, have been wonderful, as have the Pearson Group and Sandy Pearson.

Participate fully; enjoy the food, art, music and the hospitality of Italy. This will be the best World Congress yet.

George A. Zitnay, PhD
Co-Founder, IBIA
Director, John Jane Brain Injury Center, Inc.

Leonardo - An artist of the mind

Leonardo opening a man's skull, injecting molten wax into the ventricles of the brain to make a cast, comparing the section of a human head with that of the bulb of a plant… What was he looking for?

The shape and function of the brain, of course; but that was not all: the senses? The soul? The principle of life, or rather of generation?

For Leonardo art was a vital fluxus, interdisciplinary and universal; painting was a "mental thing", "philosophy and science"; his paintings depict contrivances like "machines" of extraordinary complexity; architecture, the ideal city, are living beings, like the "body of the earth" and of man.

If a building is "sick" then you need an "architect-doctor".

Leonardo, artist of automation, produced a topical version of the medieval conceptions of micro- and macrocosm in his technology and in his anatomical studies, drawing an analogy between parts of a machine and biological organs, between hydrology and circulation of the blood… Did he practise vivisection?

As always we seek to present a Leonardo who, beyond the myth and the legend, with all his contradictions and sublime certainties, appears "truer", very human but no less a genius. A Leonardo who, as a conceptual artist and protagonist of an old avant-garde, the Renaissance, has been an absolute point of reference for the artistic neo-avant-garde and a recurrent metaphor for scientific research in the twentieth century. And who, moreover, was concerned with foodstuffs, experimented with steam in cooking, to roast meats, but who investigated dreams, physiognomy, the "motion of the mind" and thus psychology. Or who studied accident prevention, in particular for the risk of the flying man's falling.

Was Leonardo dyslexic? A number of scholars have concluded that he was, in terms of visual and linguistic disorders. Nevertheless, he is quoted as an example of precision.

Was his brain organized in an exceptional way, from which his genius and exceptional qualities stemmed, including his left-handedness? Psychoanalysts and neuropsychologists have discussed such a possibility. Were Leonardo's works profoundly influenced by homosexuality? Freud's essay, considered a masterpiece, is based on biographical information that now appears to have been unfounded. A document would appear to mention that Leonardo had a child… and from a careful re-reading of his writings we discover that he made a particular study of the female orgasm…

Did Leonardo have a stroke that left him hemiplegic? As a consequence did he lose the use of his right or his left hand? The very recent discovery of a large number of fingerprints on Leonardo's manuscripts, after those found on his paintings, may be able to shed some light, not only so as to verify that he actually wrote the works attributed to him, but also to analyse his peculiarities of character and behaviour, of health and work.

Leonardo's inheritance allows us to imagine future scenarios that border on unreality: by investigating the organic substances he used in painting and drawing,

looking in a sense for the artist's DNA, since he mentioned strange recipes using urine, saliva and blood.

Will science, to whose development Leonardo made such a great contribution, be able to help us to understand the physical nature of genius?

With the extraordinary "grapho-dynamic" nature of his analytical drawings, Leonardo designed what were almost film sequences in his dissection of the human body. Does the visual artist who investigated the human "machine" – the incomparable invention of nature – tend to affirm that images dominate over words in the knowledge of anatomy?

Even the smile and the expression are composed like inventions of extraordinary complexity: both "mathematical fruit" and metaphor, constructed by integrating physiological mechanisms and the "motion of the mind" with innovative applications of painting technique and optical perception, thinking of the "figuration – not only musical – of the invisible" and of the mysteries of art in the "infinite reasons that were never experienced".

Any presentation or reconstruction about Leonardo loses a lot of meaning if it fails to take into account his extreme complexity and multiplicity. The work of Leonardo, Janus of the arts and the sciences, always introduces new interrogatives. The continual research and reinterpretation of his works and his life offer us a never-ending stream of fresh and up-to-date answers, documents and hypotheses.

Alessandro Vezzosi
Director of Museum Leonardo da Vinci, Vinci, Italy

Science, technology and public opinion

When I was invited to be a speaker a few months ago I had no idea as to what I was going to talk about. I am of course very impressed by your work but my personal research activity remains far removed from yours, I am in fact a theoretical physicist and, no offense meant, I am not longing to become one of your patients.

Quite recently I realized that we have nevertheless much in common to argue about.

This is a time of momentous changes, of interdisciplinary exchange and of technological advances, of enthusiasm but also of caution.

I am happy about technological advances but worried about the public image of science and I gather that many of you share my worry. Science is human and therefore fallible but is it reliable and, moreover, it learns from its own mistakes and tries hard to do better. Science is in continuous evolution and must go on and this is nowhere so evident as in the field of medicine. As our lifespan is lengthening we fall prey of new and old diseases whose social impact was negligible or not fully evident a few decades ago but is taking a heavy toll in these days. Taking good care of the human brain is now in the front line.

In order to go ahead we need more basic research and research calls for public approval and support for our work. We need to convince the man in the street that science has made substantial progress and that it can do even better and this is where trouble begins. Recent events and old hangovers of society are casting shadows on our glorious future. The very progress of science has been flawed by the increasing inability of the laymen to understand our work and by our inability and all too often unwillingness to listen to queries and explain what science is about. The gap between research and our daily life is broadening and dubious characters are rushing in to fill it with their own mystical and whimsical metaphysics and all too often outrageous lack of scruples and splendid control of mass media. The field of alternative medicine is booming with quacks and swindlers who prey on desperate people, do not keep medical records, need no approval for their dubious practice and laugh at statistics and hard facts.

In recent years our mass media have been flooded by endless squabbles over a few accidents or just unsubstantiated allegations related to modern technologies. I would like to discuss them briefly although not all of them relate to brain damage. One of the most controversial issues is the use of genetically modified organisms (GMO) in agriculture. At the moment there is no statistical evidence of health hazard on, say, animal life fed on GMO. Experts tell me that the few years elapsed since the time GMO's entered our diet are not enough to exclude potential damage. In any case no effect has been seen, and a few research papers on damage inflicted by corn pollen on Monarch butterflies and on rats by transgenic potatoes have been heavily criticized. In spite of this lack of evidence public oppositions to the use of GMO's has been increasing in the EU and perhaps to a lesser extent in the USA. The underdeveloped countries have other pressing problems to worry about and regard the GMO's

squabble as a rich man political game. Public debate on the GMO's is now so hot that it has become increasingly difficult to keep our heads cool and plead for common sense.

Transgenic corn seems to have nothing to do with brain damage but do not forget that the layman dumps all biotechnologies in the same bag and does not appreciate fine points. The uncontrolled spread of urban legends does no good to us and ultimately to your patients.

Another controversial topic is electrosmog. A few years ago there occurred an outbreak of leukemia cases in a USA high school build near a power line. Somebody suggested that electromagnetic fields were the cause of the disaster. The suspicion extended to radiowaves of much higher frequency emitted by portable phones and TV emitters. Recent statistical data and official statements of the WHO do not support electrosmog but this has not stopped legal battles in court in the USA and I presume elsewhere.

Next in line is uranium. A number of NATO military involved in the recent Bosnian war, among them five italians, died of leukemia in the last year. The victims were involved in actions where ammunition filled with deplete uranium were used. The word uranium started a witch hunt with high emotional overtones, as a result very few people asked the right questions. How many cases of leukemia would you expect in a populations of tens of thousands people in the critical period ? Uranium is a weak alpha emitter and it is far more dangerous as a chemical poison like lead or mercury than as a radiation hazard. How comes that nobody has seen chemical victims of uranium? The normal latency period for radiation damage is several years but here the outbreak occurred immediately. A sixth italian victim of leukemia who had never been involved in action was thrown in the heap for the sole reason that he worked in a depository of uranium ammunitions in Italy.

Natural uranium is omnipresent in Italy and elsewhere and accounts for wide fluctuations in the background radiation. In spite of these doubts and of official statements public hysteria has been mounting and has been smartly exploited by unscrupulous politicians.

Newspapers are now busy with the mad cow disease, this time obviously relevant to human brain. Scientists have still a lot to learn about prions and laymen know even less, as a result horror stories are spreading around and meat consumption has fallen to all times lows. I am not an expert of prions, I merely listen to what colleagues have to say and to statements of official and responsible organizations. Experts also claim that falling meat consumption and changes in dietary habits will save many more lives than the ones claimed so far by the mad cow disease but this is obviously not a good reason to spread the BSE and/or related horror stories. We should keep our heads cool and take the necessary steps to prevent and stop the disease but at the same time avoid public hysteria

Last but not least are staminal cells, the last and hottest frontier of medicine now under heavy fire from religious denominations, from ecologists and a vocal array of critics. I am aware that the use of staminal cells goes to the core of personal beliefs

and that even among researchers there is disagreement on this matter and I am not willing to stick my neck out in the battle. Disagreement among scientists should invite open and frank debate but not invective, it is a call for further research and hope but not for a priori preclusion and bigotry. I feel confident that a way out will be found in a reasonable time. There is no doubt however that the public image of science comes out tarnished by these events and all this leaves me with the conviction that scientists should be more responsive to the needs and unanswered questions of the laymen. We should leave no space for the army of quacks and ruthless demagogues which thrive on the hidden fears of defenseless people. Financing of research depends heavily on the changing winds and moods of public opinion and a tragic mistake can always occur in spite of the efforts of honest and capable men. There is no such a thing as absolute safety, at the best we have calculated risk. Just one unforeseen accident could wipe out years work. Do not forget that the invisibility of successful medicine is appalling, that people get used to it very quickly and take it for granted: nobody points out the finger to the guy who lives a happy life thanks to a successful vaccination, only the cripple is visible. The last polio vaccination campaign in Italy was marred by a casualty which was widely publicized in the press but nobody talked about lives saved.

Dear colleagues, historians keep on saying that mediaeval ages weren't so bad as their current reputation but in any case I do not want to go back to those times and neither do you. Scientists have now decoded the human genoma and if the pace of technological development does not slow down you should be able in a few decades to prevent and cure many of the deadly and crippling diseases which still beset mankind. But please do keep an eye on public relations. Thank you.

Tullio Regge
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