In this occasional series we record the views and personal experience of people who have especially contributed to the evolution of ideas in the journal's field of interest. Professor Carlini is a Brazilian scientist who has made important contributions to the pharmacological understanding of drug misuse. He has profoundly influenced policy responses in his own country, but has also worked with the United Nations.

EARLY CAREER INFLUENCES: FROM MISSIONARY AMBITIONS TO CLINICAL PHARMACOLOGY

A: What made you choose a medical career?

E. A. Carlini (EC): One of my strongest motivations was this kind of messianic spirit that I have; I always thought that I had to do things and pay back for living. I remember quite well that my idea was to get into a medical school and be a doctor in a missionary boat that ran along the Amazon River. I thought it would be fantastic to dedicate my life to this, simply to be a missionary doctor. That was my motivation: the romantic ideal of a youngster, to take care of people who were totally apart and out of touch with the goods or the benefits that an organized society can give to its members.

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A: What made you move over to psychopharmacology?

EC: Well, I went into the Escola Paulista de Medicina (EPM), a federal public facility, in 1952 and this was a school with a great tendency to a predominantly clinical and therapeutic medicine, a school that was not very science-minded. In the beginning of my second year in the school I made contact with two teachers who were almost the only ones to conduct scientific work wholly and exclusively. One of them was a professor of pharmacology, José Ribeiro do Vale, and the other a professor of biochemistry, José Leal Prado. Those two teachers gave charming lectures and showed that the only means for the country to develop eventually had to be through science, for only through science could we develop technology, and only through technology could the country grow and stop being an underdeveloped country, as it was called at the time. Nowadays we speak of countries in development, but to my mind we are in fact underdeveloped. I made the acquaintance of those two teachers and told them that my greatest wish was to help the general population, especially those less fortunate and underprivileged. They convinced me that if I could give my contribution to the scientific and technological development of Brazil and therefore to its economic development I would be helping, however little, thousands or millions of people who would have a better quality of life, for they would then have access to more goods, more possibilities of treatment, education and so on. This had a very decisive impact on me.
A: But you dedicated yourself first to the study of arterial hypertension. Tell us about that.

EC: To start working with the two teachers had already been for me a great change of plan, from wanting to be simply a physician to going into research activities. I had no idea what path I should follow and what I should investigate. My two teachers were working in the field of experimental hypertension. At that time the renin–angiotensin and angiotensinogen systems were not well understood. The converting enzyme that transforms angiotensin I to angiotensin II had not yet been isolated and they were searching for it. By the way, one of the papers that we published about the converting enzyme is one of the first in this area (Carlini et al. 1958). I was a student and very enthusiastic about working with those two teachers and helping them. In fact, I did not have other choices; there were no other research centers in the Escola Paulista de Medicina at the beginning of the 1950s and so I started out there. The interest in psychopharmacology came when—I do not know the exact year—the library of the Departamento de Bioquímica e Farmacologia received the first issue of the journal *Psychopharmacologia* (now known as *Psychopharmacology*), edited in English in Germany. Every day I would spend an hour or two in the library, very early in the morning, and what I could read and understand in that journal had a powerful impact upon me. So I thought I would find what field I wanted to work in: I wanted to work in psychopharmacology. I looked to my Professor of Pharmacology, Ribeiro do Vale, for advice and he said something like: ‘Now, look here, Carlini, I don’t work in psychopharmacology and don’t know it well, and, as far as I know, there isn’t anyone in Brazil working even in experimental psychology. So, the best thing for you to do is to go on doing research, learning its basic principles, for, whatever the areas you are going to work in the future, you will have to know the basic principles of how to do research work, so I advise you to go on with us until you have the opportunity to make your choice.’

**NEW HORIZONS: AN OPPORTUNITY TO WORK IN THE UNITED STATES**

A: It was then that you received the Rockefeller Foundation Fellowship award?

EC: For 5 years the Rockefeller Foundation had sponsored the department of Professors Ribeiro do Vale and Leal Prado and this made research possible during all this time: at the end of that period the Rockefeller Foundation asked the two teachers to name a student who had shown dedication and interest and it was fortunate for me that I was that person. In fact, I made it clear from the outset that I would like to work in psychopharmacology and, in view of this special interest, it was agreed that I would spend a year at Tulane University, in New Orleans, reviewing biochemistry, biophysics and mathematics, aside from developing my mastery of the English language. In the meantime I would choose where I would study. So I did that: I spent a year working at Tulane University, with easy access to a vast bibliography, and coming into contact with the scientific output of different parts of the United States.

A: Where did you move to after that?

EC: I was soon very much impressed by the lines of investigation pursued at the pharmacology department of Yale University. Research work in psychopharmacology at Yale was intensive and conducted in an integrated way by three departments: psychology, psychiatry and pharmacology, just as my teachers in Brazil had impressed upon me the importance of integrated work in this area. I had great interest in some subjects: for example, the first studies on neurotransmitters and an advanced study on the isolation of synaptosomes. So I went to work with Professor Jack Peter Green for whom I have, to this day, great friendship and respect. Dr Green worked in the isolation of synaptosomes, trying to discover if there were other neurotransmitters besides those already known at the time. The pharmacology department at Yale gave great emphasis to pharmacological biochemistry and the amount of serotonin in the brain, for example, was measured by fluorescent methods. I liked to see the response of an organ and, where possible, a whole animal, to be able to show a direct physiological effect. The idea that emerged was to research the presence of histamine in rat brain synaptosomes. I used a biological method, the guinea pig ileum, and at the same time a spectrofluorimetric method. We showed at the time that the results obtained by spectrofluorimetrics yielded values substantially higher than the biological method. We concluded then that this difference in values was due to impurities related to the spectrofluorimetric method, yielding values above the real ones, while using the biological method we had only a contraction due to histamine (Carlini & Green 1963a, 1963b). This was my master’s thesis at Yale, working with ultracentrifuges, spectrophotometers I knew we did not have in Brazil at the time. I struggled to convince the Escola Paulista de Medicina and the Rockefeller Foundation to purchase this equipment for when I returned to Brazil. But seeing how difficult it would be purchase this equipment before I returned to Brazil, I began to learn a series of behavioral methods from experimental psychology.

A: You started then to work in other departments?

EC: I began to visit the psychology department at Yale and Professor Nicholas Giarman’s group, who were
conducting a great deal of work into the behavior of animals in mazes, and also Dr Neal Miller’s group, from whom I learned a series of techniques that were more likely to be used here in Brazil. I did that and had relatively great success when I came back.

A: Even while you were in the United States you thought of returning to Brazil and applying here what was being developed out there?

EC: Absolutely. When I was finishing my Master’s I received a proposal from Dr Arnold Welch, who was the Head of the Pharmacology Department at Yale, to stay in the United States to gain a Doctor’s degree and possibly remain there permanently. However, I had already been 4 years away from Brazil and I thought the time had come for me to go back to my country and take up my activities here again.

A: You were also in the Psychiatry Department with Dr Daniel Freedman?

EC: Yes, I made a good contact with him; I went to the internal meetings and we exchanged many ideas. So I consider myself a very fortunate and privileged person as regards my background in this area. I worked with great researchers in psychopharmacology in those days: Jack Peter Green, Nicholas Giarman and Daniel Freedman, who were above all people full of warmth and charm. You do not have to be boring to be a scientist, you can be nice and even kind and gentle.

‘You do not have to be boring to be a scientist, you can be nice and even kind and gentle.’

A DIFFICULT RETURN HOME TO BRAZIL

A: Would you say that those three teachers, José Leal Prado, José Ribeiro do Vale and Jack Peter Green, were fundamental for the development of your career?

EC: Absolutely. I think they undoubtedly molded my future destiny. Thenceforward I was evidently influenced by them, but in the sense of exchanging ideas with peers. There is another point I think it is worthwhile to mention. I came back to Brazil in 1964. 3 days before the military took hold of the country, and for 20 years we lived in a dictatorship. It was very difficult for me to cope with that situation, for during the 4 years I had lived in the United States there was much more freedom than here in Brazil, where economic factors imposed severe restrictions and part of the population did not have enough to satisfy elementary needs. That was what made me certain I should conduct research, to be part of that anonymous group that would improve the quality of life in my country. A peculiar and sad thing happened then. I went back to the Escola Paulista de Medicina, where I stayed from 1957 to 1960 as a voluntary assistant professor, receiving a scholarship from the Rockefeller Foundation. I had been 4 years abroad, came back very well prepared and when I arrived I was not admitted; there was no chance of my being hired by the Escola Paulista de Medicina. I was out of work and I took a job at the Instituto Biológico de São Paulo. I passed a test and was hired and in this job I would perform routine work, such as estimating glucose in the urine of goats; that is, routine work with no appeal whatsoever. I missed teaching tremendously; I always liked teaching a great deal.

A: So how did you find your way through those roadblocks?

EC: As I had no chance at the Escola Paulista de Medicina and at the Instituto Biológico I had no possibility of conducting research, I went to work at the Faculdade de Medicina da Santa Casa de Misericórdia de São Paulo, a private faculty, which was extremely uncommon in Brazil. There were almost no private medical schools at the time. At the Santa Casa I created the Departamento de Ciências Fisiológicas, with the disciplines of physiology, biochemistry and pharmacology. I was Professor of Pharmacology and, at the same time, head of the department. Although it was a private faculty and one with few financial resources, the allocations came from the students’ monthly contributions; the institution set apart a certain share of those resources for research. This was very important for me, for to carry out research you have to know exactly what you can count on; you will be able to make your plans if you have that information. In those days, and perhaps still today in Brazil, you do not know for sure what you will have, for the budget takes a long time to be prepared. It is reviewed very late in the year and suddenly suffers all sorts of cuts, and even then you never know whether you will get the rest of what they assured you that you would have. I was able to develop at the Santa Casa a small research group—a few students came to work with me, and we had the opportunity to start the very first postgraduate course in psychopharmacology in Brazil. We established the credit system, mandatory full-time work and the mandatory elaboration and presentation of a thesis. We graduated the first postgraduates (PhDs) in psychopharmacology in the Santa Casa. We followed Yale’s rules; we did not make up our own rules.

BACK TO SAO PAULO

A: How did you come to leave Santa Casa?

EC: I stayed at the Santa Casa from 1965 to 1970, when a very sad thing happened. In 1970 there was a change of
perspective in the Chairmanship of the Faculdade de Medicina da Santa Casa and they no longer wanted to conduct research. I was called and told that I could earn more, because the students liked my lectures and I could give more classes. I made it very clear that this was not the purpose of my work; I liked to lecture enough so as to be able to share ideas and, more than passing on information, to show the students that the development of medicine in our country depended on research. So I was out of work again in 1970 and I went back to the Escola Paulista de Medicina, which had a new head, and I asked them if they would accept me with my group and with the equipment we had assembled due to research projects approved by Brazilian agencies for aiding research, as CNPQ. The National Council for Scientific and Technological Development is a foundation linked to the Ministry of Science and Technology (MCT) to support Brazilian research, and FINEP (Research and Projects Financing), also known as the Brazilian Innovation Agency, is a publicly owned company subordinated to the Ministry of Science and Technology. I obtained my admission and then my other colleagues obtained theirs and we settled ourselves at the EPM. That was a group of four people working full time; I came back to my old home and it is still the place at which I work.

A: A smooth transition.

EC: When I went to the Santa Casa to fetch my equipment, that I had after all obtained by my personal efforts, the new Chairmanship of the Faculty did not allow that. There was a problem, almost a legal suit, but then the head of the FINEP went to the Santa Casa and showed that they had no right to do what they were doing.

A: So what were your research directions around this time?

EC: I finally managed to bring all the material to the Escola Paulista de Medicina. We had had the opportunity at the Santa Casa to start work in a series of interesting directions. For example, I had worked in the United States with substances that possessed a phenylethylamine moiety and I was interested in checking the effects in laboratory animals of substances such as, for instance, mescaline, trimethoxyphenylethylamine, because there is a certain structural resemblance to dihydroxyphenylethylamine (that is, dopamine). At that time a paper was published in the United States about a biological diagnosis of schizophrenia (Proctor et al. 1968a, 1968b). That diagnosis was made through 3,4 dimethoxyphenylethylamine: according to those American authors, if you incubated the plasma of schizophrenic patients with this substance and injected the mixture into mice, there would be substantial mortality among these animals. In contrast, plasma of any other mental illness incubated with this substance did not cause death. However, we did not show the same mortality; we incubated schizophrenic patients’ plasma with the substance and nothing happened to the mice. I even came to doubt what I should do with the results. I asked my psychiatric collaborators to assess the methods used to diagnose schizophrenia; but I was uncertain even so as to their validity.

A: As regards the diagnosis?

EC: Yes, the diagnosis. Who knows if we had not chosen cases that were not schizophrenia? Nevertheless, I managed to publish that paper (Masur et al. 1969) in the same journal that had published the papers of the American authors. A few months after our paper was published other international papers were published confirming our results. That was important for us in the sense that it gave us more self-confidence, for we have in Brazil, and perhaps even in Latin America, a certain prejudice that what is good in science comes from Europe, the United States or Japan. So that showed that we are also able to contribute something in this area. A summary of our paper was chosen for publication in the 1971 Yearbook of Psychiatry, in an abbreviated form, and this obviously left us very pleased.

DEVELOPING AN INTEREST IN CANNABIS

A: Around this time you became interested in cannabis?

EC: At that time we started to work with a herb that, even though not of Brazilian origin, was very common in Brazil, marijuana (Cannabis sativa L.). We started our experimental work using experimental psychology and pharmacological techniques, using cannabis extracts, and we started to publish papers in international journals.

A: But where did this interest come from?

EC: It came for various reasons. Even when I began to work as a student of pharmacology at the EPM, Professor Ribeiro do Vale had a great interest in this herb and I followed-up some research work at the time. But he, of course, told me to work more in experimental hypertension. Among the psychotropic substances used in Brazil the one that interested me the most was marijuana; at the
time I did not pay attention to alcohol, which was and still is our number one problem. With cannabis we conducted many experimental studies and published them in international journals and established contact with the groups of Professor Korte in Germany and Professor Raphael Mechoulam in Israel. Those were very fruitful contacts; I managed to receive pure cannabinoids and we performed some collaborative studies, sponsored by NIDA, WHO and Brazilian agencies, and we began to acquire an international reputation. Our studies were and still are often mentioned in bibliographical citations. For example, I do not know if this is too much or too little, but by Brazilian criteria it is a great deal: the studies in which I am named as the author have received more than 4000 citations by other authors. One of the papers published (Karniol & Carlini 1973), with an ex-postgraduate student of mine, Isac Karniol, now Professor Titular of Psychiatry, was one of the 50 most often-cited among 16,000 papers published that year in third world countries.

A: You had a specific area of interest among the effects of cannabis at the time?

EC: We were interested in getting to know the effects of cannabis on learning and memory, for we thought that chronic use could worsen those cognitive functions, even more so in the case of the users in North-east Brazil, a poor country area, in which the population had less access to education. We had an experimental study design to measure the ability of animals to learn a task, the reward they received for having learned the task being to obtain food. In studies such as these, in which the rats learned a path through a maze, we began to notice that during the experiment, which was a long-term one, very severe aggressiveness appeared in those animals and they began to hurt themselves. We were intrigued by this aggressiveness; we had no idea as to its cause and the only factor, besides marijuana, that could be associated with that behavior was the chronic starvation which the animals had to go through.

A: You began to see a possible parallel with the human studies in your country?

EC: Yes. On the basis of what we knew about the life of the Brazilian people, we thought of the north-eastern people whose lives are characterized by chronic undernutrition, and we wondered if marijuana given chronically to these people might not induce more aggressiveness. It came to our minds that marijuana in the North-east was often associated with violence. So this became our line of work, to see if there was any connection between aggressiveness and use of marijuana. We had a hypothesis about this. We also wanted to find out if starvation was the only factor at issue and then I read a study that fascinated me. That happened because I was in the habit of going to the library every morning for an hour or two to have a look at the journals in the shelves, even those from other fields, out of sheer curiosity, just to see what was happening in the world. The way in which we conduct literature searches today, which restricts us to the computer, I find very inadequate. I was taking a look at an issue of the Journal of Psychiatric Research and found a paper (Ferguson & Dement 1969) that showed a picture of a pair of rats in an aggressive posture; I still have that picture. I found that curious, for that was the same aggressive posture we found in the animals in chronic starvation and given marijuana.

A: What were the circumstances in which Dement’s rats became aggressive?

EC: Professor Dement’s rats became aggressive when they were deprived of paradoxical sleep and received amphetamine. I began to wonder if the aggressiveness produced by marijuana and starvation had any connection with the dopaminergic system, for amphetamine releases dopamine in the brain. I started to work with this type of aggressiveness and published many papers; some ex-students of mine produced their theses and I was particularly responsible for Professor Sergio Tufik’s thesis, and he went on along this line and is nowadays one of the world authorities on sleep research. In the Departamento de Psicobiologia there is now the discipline of sleep: a very advanced discipline with an enormous amount of published first-line work.

RATS: WORKERS AND PARASITES

A: So you had these results from the inspiration of Professor José Leal do Prado and José Ribeiro do Vale?

EC: Exactly. If I had stayed only with my early studies on marijuana, going against the advice that I should learn to carry out research in a more developed field, I would probably not have gone very far. When I again took up my interest in marijuana years later I had a whole background, including a period of work and study abroad. I was also taught to go to the library every day for a visit; this was another thing that was very important for my development. I still remember the advice Bernardo Houssay, from Argentina, a Nobel Prize winner in physiology, gave his young pupils: to read at least one scientific work and four summaries every day. It was very interesting and fruitful, having given origin to one research line in the field of marijuana, to have read two other studies making comments about social behavior in rats. One of them was about an adapted Skinner box (Oldfield-Box 1967) and
the other one about a competition method in a runway (Hsao & Schreiber 1968). In the box a rat was taught to press a lever and receive a water reinforcement; after the rat had learned the procedure thoroughly, the lever was put into one corner and the water releaser in the other, so the animal learned to press the lever and run to the other corner to receive the water. When two animals had been very well trained, they were put together and quite soon one of them learned to stand by the water dispenser to receive the water and the other one pressed the lever; as he got there to receive his water the reinforcement stimulus was gone. That is, one of them worked all the time, coming and going, and the other stood fast and received the reward.

A: How did you build on this work?

EC: What was interesting was that this lever-pressing animal, the ‘worker’ as we called him, would attack the ‘parasite’ and he did not react in any way: he did not even take his head out of the water dispenser. We have a saying in Brazil that ‘getting mad at someone is the sucker’s way’, and this was exactly what happened: the ‘worker’ got mad and got nowhere. We injected marijuana into these animals and noticed that, when the drug was injected into the parasite animal, he went on behaving in this way: when the drug was injected into the working animal the situation was reversed. That took us to the behavior of competition in a fixed tube, with a box at either end. A rat was taught to come out of the box and run though the narrow tube to get to the other side and get his reward. We then put two very well-trained animals into each of the boxes. The animals started to run along the tube until they were halfway through; then they had no other way but to push past one another to get to the other side and earn the reward. We found several drugs that could change this behavior, e.g. apomorphine and L-dopa, that enhance dopaminergic activity, so that during the time these drugs acted we made winners out of almost all those animals (Masur et al. 1974). These studies also had great impact; they received many citations in the literature. Summing up, these studies resulted from our curiosity in looking up the literature.

A: Even today, with the availability of easy access to the Web, you teach your pupils to keep a constant contact with the library?

EC: Well, I try to teach my pupils, but I do not think I am able to convince them anymore. There is complete resistance and I even say that, if you do not take care, the computer makes you an ‘idiot savant’. It gives you a restricted perspective, and the knowledge and biological phenomena you acquire are lacking in depth and width. At the computer the pupil as a rule searches only for his main subject, using a few key words. I really think this is rather restricting, no one gets to work anymore without a computer in his desk; the computer is great when you want to have specific data, but you have to know where you are going to look for it.

A: In your point of view, then, you think a computer can be a limitation?

EC: Yes, I do. I would also like to comment on the difficulty the pupils have in finding out the data they are going to use when making use of statistical programs. I have noticed this quite often: the pupils have to make a statistical test, whatever it may be, for instance comparing one group to another. They put a program into the computer and out comes a huge amount of data; then they start to input all the significant data needlessly; they are finally in a situation in which they cannot give their data the proper interpretation. You have to look at this tremendous tool therefore with some caution.

BUILDING CEBRID

A: Another area in which you have distinguished yourself was that of epidemiological research and now you are head of one of Latin America’s most important centers, the CEBRID—Centro Brasileiro de Informaçã es sobre Drogas Psicotrópicas. What made you develop this center and how did it begin?

EC: One of the things that the few Brazilian psychopharmacologists, myself included, missed greatly was that we did not have reliable information about the real dimension of the use of illicit drugs, or even legal ones, here in Brazil. This was hindering our researches. The other point was that we did not have access to the papers published by Brazilian authors in Brazilian journals. This happens because many of these journals lack continuity and others, even when indexed, are eventually lost; so we were greatly misinformed about early studies, and even contemporary studies, by Brazilian authors about drugs of abuse. This was what made us go into the making of this type of resource for our own use. We began to collect whatever scant papers there were in the Brazilian literature on use of drugs. It was very difficult to do this,
digging into libraries with books full of dust, but we managed to find what is perhaps the very first paper about drug abuse in Brazil, published in 1866 (Lima 1866), about the hallucinations of two slaves with an intoxication due to a herb, Datura sp., that produces anticholinergic substances such as escopolamine and atropine. This herb is still used today in Brazil for abuse purposes. However, as we obtained these data we began to see that the few available epidemiological surveys were rather limited—they did not provide a precise idea of the real situation in Brazil. We decided then to conduct a new type of survey. We obtained the permission of the Ministério da Saúde to receive, from 1986 onwards, the quarterly maps of admissions due to drugs and alcohol, overdose and addiction in the whole country. We also began to study use among students, and we are now finishing the fifth national survey of drug use among students in public schools in Brazil. Brazil has a problem of children living in the streets and we are also finishing the fifth survey of drug use in this population. We make those surveys every 3 or 4 years, depending on financial resources.

A: The purpose of this work?

EC: The purpose is to acquire a better understanding of what is happening here in Brazil and to be able to focus our attention. For example, from time to time we have here in Brazil an ‘epidemic’ of news about heroin, saying that this drug is becoming a great problem. This is really not the case; in fact, it is quite uncommon for us to have heroin-dependent people here and usually, when it happens, these are people that came from Europe or from the United States because they could not afford their drug use. It is important, therefore, that the authorities understand the true situation. We developed two other lines of work, one of them about medicinal herbs that act upon the central nervous system. We always thought that if it was possible to discover new therapeutic agents for mental disorders, with substances or plants having psychoactive activity, but without the problems due to inducing addiction, that chance would be in a country such as Brazil. It is our belief that we need to research Brazilian flora, which are very rich. In contrast to other countries, Brazil has five distinct bio-environments. We still also have enormous cultural heterogeneity—African blacks, more than 200 Indian nations and a marked European and Asiatic immigration. This has brought about a great mixture of cultures that, together with the great diversity of plants, has encouraged the use of many of those plants for medical purposes. We have a research line which is purely laboratory psychopharmacology, but it is connected to epidemiological features, closing the circle of work which we are interested in conducting.

AN INTEREST IN ETHNOPHARMACOLOGY

A: With these researches you have been finding out several ways of using these plants by specific ethnic groups, such as the Indians, for example.

EC: The studies on ethnopharmacology are being carried out with a group we were able to assemble, including field studies among the quilombolas, the descendants of ancient slaves, who ran away from the farms and created ghettos, living that way for a long time. Even today we have these quilombolas on land granted to them by the government, where they practise their cultural habits and do not mix with the white population. We noticed that they have very peculiar uses for plants, as also do our Indians. The Krahô Indians, for example, live in the Brazilian cerrado (central highlands) and we discovered that they use around 150 different plants for the most distinct purposes you could imagine as regards the central nervous system, such as plants to be able to think more clearly, to eliminate bad thoughts, to prevent snoring, to have good dreams, to strengthen memory and so forth. Many of these plants have not yet been identified botanically, and there are regions that are very little known, such as the caatinga, for example, which is very little studied. We think it is our duty to carry out research in this field.

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A: Then the therapeutic possibilities do not restrict themselves to the Amazonian ecosystem, but are present in all these ecosystems you have mentioned.

EC: I have no doubt about it, and these are ecosystems with incredible differences. The cerrado has low-growing vegetation; the trees and bushes grow very slowly and their stems are very tortuous; one can walk about quite easily. The caatinga is semi-arid, with many plants, but very different from those in the cerrado. We also have the Pantanal, that is a semi-humid region, that is flooded once a year for quite a long time and where the wildlife and the flora are also markedly different. I think this is a unique opportunity that will be lost if it is not investigated. In the cerrado, for instance, it seems that
approximately two-thirds of its natural vegetation has already been replaced by large soy plantations or cattle-raising ranches. The Amazon forest is burned at a rate of about 20 football fields a day.

SPEAKING TO POLICY

A: All these initiatives converge on the important contributions you have been making on the formulation of policies both nation-wide and internationally. You have been elected, for the second time, a member of the International Narcotics Control Board (INCB). After your first election you had to resign this post to serve the Brazilian government. Please tell us about that.

EC: I believe it is part of the role of a university teacher to look at the nature of the society in which the university exists. I always had this concern and was therefore always a controversial professor, for I thought we should not restrict ourselves only to the academic aspects of a university. These are clearly important but they are not so essential for the development of a country, particularly a country such as ours; we still have to undergo profound changes to come out of cultural colonialism and also the legacy we received, of being a country in which slavery was abolished only theoretically. The black and mulatto populations of Brazil that comprise more than 40% of the whole population are the victims of brutal economic discrimination. That situation has got to be changed. I have always had this point of view within the field of science. I founded agencies to fight against this sort of thing.

A: You became well known for this sort of activity?

EC: Yes. In 1994 I was invited by the Ministro da Saúde to be the head of the Secretaria Nacional de Vigilância Sanitária. This is a very important agency of the Ministério da Saúde, aiming to control appropriately every health-related product in the country. For example, any foodstuff that is to be released for marketing in the country has to be approved beforehand by means of documents proving that the product is properly produced, with adequate quality control, that all the tests for noxious agents have been negative, and so on. The same is true for medications and medical equipment. That was a very important position, requiring its holder to remain away from academic life for the duration of its mandate, a 4-year term. I thought my acceptance was important, for I had many ideas about how to make Brazil have a therapeutics and a medication policy that was different from the one being followed.

In 1994 I was elected a member of the INCB. I was about to take up this position but could not do it, for at the same time I was appointed head of the Secretaria Nacional de Vigilância Sanitária do Ministério da Saúde and the INCB term of 5 years did not allow its members to work in an executive governmental capacity. I was a candidate on behalf of the World Health Organization along with candidates from several other countries and I was elected by the UN Social and Economic Council, but I had to resign because I was taking up an important position in the Brazilian government.

A: But you were elected again.

EC: In 2001 I was again a candidate put forward by the World Health Organization, won the election and took up the position: I am currently finishing my third year in a term that will end in 2006. The second time, however, I did not have any impediment whatsoever and I think this is a very honorable position, one that gives me great pleasure in being able to contribute to the international community.

A: You have brought to our country discussions about certain subjects that are being approached by the international community as, for example, the classification of marijuana within the list of international conventions and harm reduction approaches.

EC: One of the things that has always worried me about Brazil was the apparent contradiction between the effects of marijuana that we were hearing through interviews with users and through research studies, and what is stated in the press and is contained in Brazilian laws. We did not believe that the statement that marijuana was a terribly addictive and dangerous drug was in agreement with everyday events. Meanwhile, we were very much concerned with the issue of Brazilian law punishing with imprisonment the mere possession of any amount of marijuana. This makes many youngsters, as also happens in other countries, subject to registration in police files and a criminal suit, sometimes even imprisonment, for the mere possession of a small amount of marijuana, which I believe is a terrible thing. Besides, what happens here in Brazil, and also in other countries throughout the world, is that quite often this is a situation that is associated with corruption. There were cases of police officers ‘planting’ marijuana inside the car of an apparently well-off youngster, so as to submit him to extortion, or even of parents who managed to convince a policeman by means of bribery to avoid having him taken to jail. That was extremely harmful for the young man for, aside from the marijuana problem, he saw his parents actively corrupting a police officer. I think this is an act that destroys the very fabric of society and completely prevents the likelihood that this youngster will develop a healthy attitude towards the country and its laws.
‘a criminal suit, sometimes even imprisonment, for the mere possession of a small amount of marijuana, which I believe is a terrible thing’.

A: What do you think of the way in which the 1961 UN Single Convention regulates cannabis?

EC: I never quite figured out that point of view of the 1961 UN Single Convention on Narcotics Drugs. First, I did not understand why marijuana was classified as a narcotic, because it is not that kind of drug; and secondly, why it is in Schedule I and in Schedule IV, along with heroin, both being supposedly very dangerous drugs. We know that cocaine is in Schedule I and not in Schedule IV; thus, according to the 1961 Convention marijuana would be as dangerous as heroin and more dangerous than cocaine, a thing that is recognizably untrue. I was very surprised when I came across a paper by a British author, Robert Kendell (Kendell 2003), where he speaks of the prohibition of marijuana. This paper was written on the basis of the records of a League of Nations Conference in 1925, in which the discussion centered on the opium problems, marihuana not being part of the subject of the scheduled meetings. There were more than 40 countries represented in the Conference and the Egyptian delegate proposed that marijuana should also be included in the debate; the countries’ officials were not ready for that, because that was a convention about opium. There was much doubt and disagreement over the proposal and then the Brazilian delegate stated quite assertively that marijuana in Brazil was more dangerous than opium, which is doubly untrue. Marijuana is not more dangerous than opium and then (as now) opium was not very much used in Brazil; there was then no way he could make the comparison. We found out later that the same Brazilian doctor who represented our country in that Convention had published papers in which he said he had treated hundreds of cases of cannabisism, as he called it, and he had never found even one case of death or withdrawal syndrome, which was another contradiction.

A: You see the historical analogy here as useful?

EC: Yes. So we felt very much at ease to start to study this subject on a historical basis, so as to correct a scientific untruth the country had in its record. In November 2003 we organized a large symposium, with the presence of international and Brazilian authorities, and the conclusion of this symposium was that the Brazilian government should make an appeal to the United Nations to take marijuana out of Schedule IV and to maintain it in Schedule I, with very strict control. There is no movement to decriminalize marijuana or to make it legal. There is also a project in the Brazilian Congress for a law proposing a partial decriminalization (reduction of penalties) for the possession of marijuana and we are completely in favor of it, because it is unacceptable that the mere possession of marijuana could take someone to jail. Besides, in the Household Survey we conducted in 2001 almost 4 million people stated they had used marijuana at least once in their lives; that is, those people broke Brazilian law and would go to jail if they were caught and tried.

**HARM MINIMIZATION**

A: What is your view on harm reduction approaches?

EC: We believe this is something that should be accepted in Brazil. There is actually much less need for substitution treatment with methadone, for example, for cases of this type of addiction in Brazil are almost non-existent. What we believe should be implemented in Brazil is some sort of harm reduction program, such as the distribution of syringes, even though there is great resistance to that. On the other hand, in Brazil we have some parties trying to make these harm reduction measures more widespread, but in an unreasonable way, for they amplify these harm reduction interventions in such a way that their true purpose is disfigured. Therefore, we believe it would be very important to bring together people who could discuss exactly what harm reduction is and place it into a more scientific context. We received the collaboration of the Secretaria Nacional Antidrogas (SENAD) and there was a very productive discussion, in which the points of view of the various agencies that work in harm reduction were stated clearly, and which was published in a special issue of the Jornal Brasileiro de Psiquiatria (2003). This helped to calm things down for a while for there was enormous ideological discussion, including attempts to take over positions of power in Brazilian executive agencies.

A: This concern of yours for concepts, terms, guidelines and public policies has also been part of your contribution to policy formulation and consultation in the Conselho Nacional Antidrogas, the highest ranking agency in our country. What could you tell us about this experience?

EC: This is a relatively long-term experience. The issue of drug abuse in Brazil is peculiar because it is, or was, like a ship adrift, with no direction whatsoever. Every person who took up the lead chose a certain path to follow. I was Vice-President of the Conselho de Prevenção Antitóxicos: this was the name it had then, when it was connected to the Ministério da Saúde. It never worked because there were much jealousy and power disputes among the
different ministries. I was a member of this Conselho for all its existence; meanwhile, I tried all the time to say that the Conselho had to come out of a Ministério, which entered into conflict with the other agencies the whole time, to a supra-ministerial position. Thus, in 1998, by an act of the President of Brazil, he created the Conselho Nacional Antidrogas and its Secretaria Executiva, the Secretaria Nacional Antidrogas, directly under the power of the Presidency.

A: Drug policy is today in a process of realignment?

EC: Yes. The Política Nacional Antidrogas (PNAD), which is now approaching its second year of existence, is passing though a realignment in a government initiative which I consider a model action. Our country is very large, so six regional Forums were held in different parts of the country, in which about 300–400 people met to discuss the subject. Each one of these regions, with its own socio-economic conditions, reached its own conclusions which were taken to a grand national Forum held in November 2004 in Brazilia, where this realignment of the Política Nacional sobre Drogas was finally summed up and brought to its conclusion.

NOT GIVING UP

A: What of the future?

EC: For the future we are now at a crossroads, which is as follows. We have the CEBRID (Centro Brasileiro de Informações sobre Drogas Psicotrópicas), which has a solid scientific foundation, is well known in the country and abroad and is currently a collaborating center to the WHO. This center has a group of well-trained researchers working full time. This is one of the things I always considered essential. To work in the area of research you have to commit yourself wholly, body and soul, and that takes great dedication in a country such as Brazil, where everything is much more difficult. My first concern therefore is what we can do to enable that group to survive much longer. I say this because I am 74 years old and I have been retired for the last 8 years, even though I work about 10 hours a day. I come from a long-lived family, my mother was 100 years old last July and I, as a prank, sent a note to the university that day saying that I intended to stop when I was 95 years old. But, of course, I will not get so far.

A: Do you fear that CEBRID may be extinguished when you retire?

EC: The sad thing is that, until now, and more than 20 years have passed, not one of the CEBRID researchers managed to become a professor in the EPM or in the UNIFESP (Universidade Federal de São Paulo). That is, when I retire for good the CEBRID runs a great risk of extinction. What I would wish for the future is to make effective in the University a fusion of the two main purposes of the CEBRID: to keep alive research on psychoactive plants in Brazil and the epidemiological research on drug use and abuse. We are evolving very quickly to a third field, which is not directed by me but by Dr Solange Nappo, that of qualitative research. My concern for the consolidation of those groups at the university comes from the fact that our present government has not been giving enthusiastic support to research. We have been receiving our resources each year, but no one knows for sure how long this will last. This group, already established, should have a chance to follow through what they are doing, as they are all almost self-sustaining; all they require is some stability in their job.

A: Any other topics for your future agenda?

EC: Another subject to be explored is that of Brazilian media and drugs. That is, what is the media’s participation and how it is effected. Brazilian didactic books on drugs have to be rewritten. There is a series of important points that, in my opinion, only an agency such as CEBRID could analyze. Another very personal point: I worked a great deal with marijuana, I supervised many theses, several professors of psychiatry received their PhD degree working with me and I still follow the literature on this subject. I would really like to write a book about Brazilian marijuana and compare its situation with what is happening in the world. An example is the acceptance of the medicinal use of Δ^9-THC, which is strongly rejected by several medical societies in Brazil even now. Why is this so? You speak to an oncology physician and he does not even want to hear about tetrahydrocannabinol being used as a medication against nausea induced by chemotherapy. You speak to a doctor who is a pain specialist and he also does not accept, in any way, that marijuana could be used in some cases. Another field I believe is very important, and I see that our group is almost ready for it, for I have been becoming less and less indispensable, is that of research on medicinal herbs. Thus, I intend to go on with what I have been doing for the time I have ahead of me. As I said before, I will stop when I am 95 years old.
A: I would like for you to talk about your family influences. Was there anyone who was important in your choice for a medical career?

EC: Yes. There was the influence of my maternal grandfather, who was a physician, a family doctor, back in the days when doctors took care of everyone in all age groups, and addressed every patients’ every needs. I remember that I was an avid reader of his books.

A: What about your family?

EC: I am married for the third time, and I have six children from all my marriages. Three of them are in the area of science, one of them is a musician and two are still students.

A: What do you do in your free time? Do you have any hobbies?

EC: During my free time I enjoy listening to classical music, especially Beethoven, Mozart, Haydn, etc. I remember two pieces of music that I consider real works of art. One of them, Mozart’s Requiem, I heard in the Church of La Madeleine, with the Choir and Symphonic Orchestra of Varsovia. I also particularly remember listening to Bach’s Saint Matthew Passion in the Saint Stephen’s Cathedral in Vienna. I enjoy operas, especially Italian ones, among which I stress Verdi’s Turandot. Another activity that brings me much satisfaction is taking care of my dogs. I have 11 in total, three of which live at my apartment in Sao Paulo, and eight at my summer house.

A: Being the scientist that you are, you have probably traveled a great deal and have seen many different places. I would like to know if any place struck you in particular during your leisure trips.

EC: Yes. One of the best experiences I have had outside my country was when I had the opportunity to go on the Route of Santiago de Compostela, in Spain. I have also been to Machu Pichu on two occasions, both of which have been really special for me.

A: Thank you very much, Professor Carlini.