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Sir Arnold Burgen
Interviewed by Anne Buttimer

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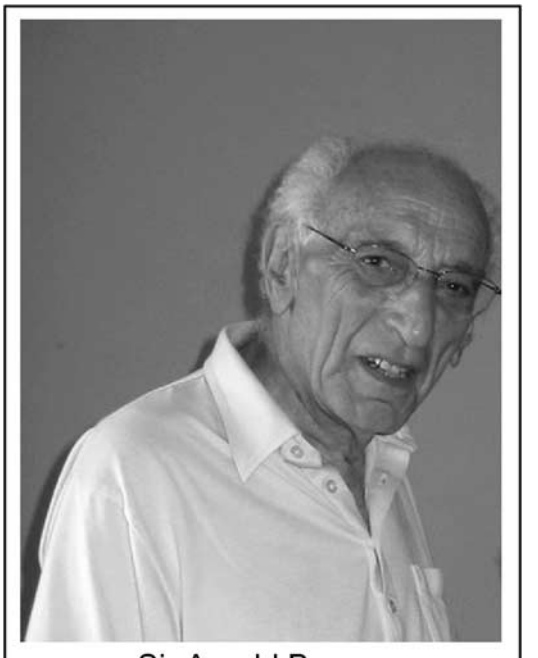

Sir Arnold Burgen

Sir Arnold Stanley Vincent Burgen was born in 1922 in Finchley, near London. He graduated with honours from the Medical School of London University with an MB (1945) and MD (1959). Having served teaching and research positions there between 1945 and 1949 he spent some years at McGill University in Canada (1949–62). Returning to Cambridge as Professor of Pharmacology (1962–71) he was also Director of the National Institute for Medical Research in London (1971–82). Arnold's work continued on the international front. He was President of the International Union of Pharmacology (1972–75), Member of the General Committee of the International Council of Science (ICSU) during two sessions (1972–78

and 1982–88). Within Britain, he served on the Council of Royal Society from 1972–86, acting as Foreign Secretary from 1981 to 1986. Within the European Science Foundation he was a member of the Executive Committee from 1985–90 and President of the Academia Europaea 1988–94. In addition to his many contributions to scientific bodies globally, he has also undertaken numerous editorial responsibilities for international scientific journals. One of these, for example, has been his role as initiator and first editor of *European Review*, one of the AE's main products.

Anne Buttimer (AB): Today we welcome Sir Arnold Burgen, founding member and first President of Academia Europaea. The purpose of these interviews is to get a grasp on the founding visions of the Academy, to hear something of its development over the years, and the challenges that now face it. But first we'd like to meet the personalities that shaped the founding years. Thank you so much for coming here to Dublin for this interview. So, Sir Arnold, please tell me about your own background. What was it like to grow up in London during the 1920s and 1930s?

Sir Arnold (SA): I was born in London and grew up in a suburb of London, Finchley. I went to local schools, including an excellent grammar school. But I hardly moved out of there, except for summer holidays, until I went to Medical School when I was 17. I entered Middlesex Hospital Medical School just after the war started.

AB: What was it like to be a student during the war years?

SA: It was very confusing. I had hardly got there when it was decided that London was going to be bombed to pieces, so we had to be moved out of London. They moved us to Bristol. After 3 months in Bristol, the phoney war started, so we moved back to London. Toward the end of 1940 it all started again, as far as London was concerned, so they moved us to Leeds. So I spent the next year and a half in Leeds. Then I came back to London to do the clinical work and we moved around all over the place. It was a very interesting time, a much more interesting experience than people normally have.

AB: Yes, one normally thinks of wartime as a difficult time, but you did have good teachers, no?

SA: I think it was a wonderful time, because I had a far greater variety of teachers, and some of these made a great impression on me. When I was in the middle of my clinical work, I unfortunately got ill and had to spend time in hospital, and was visited by a Professor of Physiology, named Samson Wright. He was a wonderful teacher and obviously thought that I was worth cultivating. He came to see me when I was in my hospital bed and he said to

me one day: 'You know, you are not fit enough to go straight into clinical work. Why don't you come and spend a little time in the lab?' I said 'Well, you know I really want to become a paediatrician'. 'Yes', he said, 'but come and spend a year in the lab'. So I agreed to spend a year in physiology. And that was how I got involved with science. It was a very interesting experience. It was a very small department and we used to meet for lunch every day. Samson Wright used to ask me what I had done every day. I would be put through a real inquisition. And he taught me how to do research, because I had no experience with research. I had sought training to become a clinician, and that's not training for research. So that's how I got into it.

AB: But your attraction for clinical work: did you pick this yourself or were you inspired in this direction by your family background?

SA: No, my father was a laboratory assistant in a chemical analysis firm, but would have liked to have been a doctor but his family circumstances didn't permit it. No, there is no family history at all of either science or medicine. So that's how we were. I stayed at the Middlesex, teaching physiology and doing some clinical medicine. What happened after that was also an accident. I had got married in the meantime and had a child and my wife was in hospital having the second child. I had been to see her and on the way home I got on a bus and met a friend. 'What are you doing here?' he asked. 'I've just been visiting Judith to see the new baby.' 'Well', he said, 'come home with me and we'll wet the baby's head'.

AB: You also use that expression here in London?

SA: No, he was a Canadian.

AB: So that's your connection with Canada?

SA: So I went home with him and we spent a couple of hours talking. And in the course of the conversation he said 'You know I'm on my way back to Canada. How about coming?'

AB: Just like that?

SA: Just like that. So the next night I went to see my wife and said 'What about going to Montreal?' She more or less grinned and bore it. I had the experience of being interviewed for the post by McGill University's Vice-Chancellor in a London Club! So by the end of that year (1949) we went to Montreal – I was in the Physiology Department there – and we stayed there

for 13 years. I did some clinical work in the last five years when I was head of research in the department of medicine in one of the university hospitals, as well as continuing teaching and research in physiology. Montreal was a lovely place except for the horrible weather.

AB: Canada is such a cordial country.

SA: Yes, there were some outstanding people there, particularly in nervous system research. So there I was, and I didn't think of going anywhere else. I had one little trip away to Wood's Hole for a summer doing marine biology but otherwise I was just staying in Montreal. But then I got the invitation to go to Cambridge.

AB: To a professorship?

SA: As Professor of Pharmacology. I went to Cambridge in 1962. That was really a difficult job because there was not much of a department there at the time.

AB: This was in a Department of Pharmacology?

SA: Yes but it was initially in the Physiology Building.

AB: But what was the connection with pharmacology for you, most of your previous work had been in physiology?

SA: When I started research I was very influenced by the work of Henry Dale, although I did not have the good fortune to actually work with him. Dale had been working in a drug company where one of his tasks was the routine testing of extracts of the adrenal gland before they were issued as pharmaceuticals. One day he found a very active 'contaminant' in the extract and with George Barger he isolated the substance as acetylcholine. He investigated the action of it and found powerful activity on the heart and circulation and some other peripheral systems and as this work went on he noted the resemblance between these actions and those of some nerves acting on these organs. Eventually he was able to prove that these nerves made acetylcholine and released it when stimulated, this was the foundation of the theory of the chemical transmission of nerve impulses; for this discovery he shared a Nobel Prize with Otto Loewi in 1936. Dale always regarded himself as a physiologist. In fact, acetylcholine remained the central theme in much of my own research. The difference between pharmacology and physiology is mainly a matter of emphasis, after all

most drugs exert their actions by modifying physiological systems. I wanted to develop pharmacology in a very different way. Pharmacology is really a boundary science, or it was then, between chemistry and biology. It was the chemical side of it that I wanted to develop. That became my main theme during the years at Cambridge.

AB: And how did this connect with your other interests in the academic world? You were undoubtedly a good leader of the department at that time. But, intellectually-speaking, was chemistry one of your driving interests at the time?

SA: Not directly, but drugs are chemicals and it is their interaction with biological structures that underlies their activity. However, I have always had very broad interests. I was lucky enough, after two years in Cambridge, to be elected a Fellow of the Royal Society, and soon became active there and met many people in different areas of science. But of course, as you know, in Cambridge – because of the College system – you meet a very diverse lot of people in the college. In 1971, I left Cambridge and went to London as Director of the National Institute for Medical Research, a large multidisciplinary institute, where I was able to continue my research, but I missed teaching, which I had always enjoyed. When I retired from the Institute in 1982 I returned to Cambridge as Master of Darwin College until 1989. It is a Graduate college and about half its students are non-British. This was my base when the early discussions about the Academia took place. In 1981, I also became Foreign Secretary of the Royal Society where international activities in science was my remit. I went on a sabbatical to Harvard in 1965 and later to Stanford, UC San Diego and the NIH as well as evaluating a Medical Research Group in Australia.

AB: Yes, I'd like you to speak a little more of this because I think that may lie at the heart of your enthusiasm for European collaboration. You were exposed to a diverse range of intellectual fields in Cambridge.

SA: Yes, and also, of course, having been in North America, international things were interesting for me. I became a Council Member in the International Union of Pharmacology, and eventually President of that Union. And that took me around the place and meeting other people. And through that, and also through the Royal Society, I became involved in other organizations such as the International Council for Sciences (ICSU); the European interest with ESF came a bit later.

AB: And you did some editorial work also?

SA: Yes, the *International Journal of Pharmacology* and *Pharmacological Reviews*.

AB: It takes great patience and careful critical reading to be a good editor.

SA: Yes. But I really like editorial work.

AB: And your work with ICSU, was this mainly in the 1980s and late 1970s?

SA: More the 1970s I would say. I was a representative of the British Royal Society for many international organizations. And it was from the Royal Society that the Academia got its origins.

AB: So let's now focus on the Academia Europaea.

SA: In 1981 I became Foreign Secretary of the Royal Society. So I had a very broad experience travelling in the Far East, South America, Africa as well as representing the Society in many of the new European bodies. This worldwide travel ruined my research! I was away far too much – but it was as a consequence of being Foreign Secretary that the Academia came into being. It was one day in September 1984 that the Chief Scientist of the UK came to the Royal Society to see the President of the Royal Society about European affairs, and the President asked me to join them because that was part of my remit. He came up with the idea that had arisen in discussions with his Minister, Peter Brooke, of a European Royal Society.

AB: Maybe it would be helpful for readers if you would describe the Royal Society. It has a special character, has it not?

SA: It was founded in 1660, covers all the natural sciences and it is a very prestigious body indeed. It has had many famous scientists as members and its President. At that time, it did very little other than having occasional meetings in London of an international character, but since that time it has developed a wider range of meetings and become a source of specialized reports on science.

AB: But it is constituted by individual members, no?

SA: Yes, it is based on individual members, and has no connection with politics or government. It is self-selecting and selects a group of new Fellows each year on the basis of their scholarly merits.

AB: 'Science' thus meaning exclusively natural sciences?

SA: Exclusively natural sciences. As I have said, the Chief Scientist came to speak to us and I must say that neither the President at the time, neither Sir Andrew Huxley nor I were particularly taken with the idea. We felt that there were enough other things going on in Europe that we did not see the need for a European Royal Society. However, Peter Brooke, was still very much taken with the idea and he went to a meeting in Paris of European government officers concerned with science. Hubert Curien, who was at that time the French Minister of Science, chaired the meeting. Peter Brooke put the ideas across in quite an enthusiastic way to this meeting and he got a lot of support for it. When he came back to London afterwards he sent a letter to the President of the Royal Society with an outline of what he had said and asking if we would consider it further. This outline was very persuasive, his emphasis was on the importance of science for the future of Europe and the need to overcome the barriers due to history, psychology and prejudice, barriers not easily overcome just by administrative action. He asked 'do we need a focal point for individual scientists: is there a gap which might be filled by a fellowship of individual scientists, a prestigious self-regulating body which fulfils the function of a national academy but on a European basis, free from political interference and without the mediation of national institutions … the initiative would be more profound if designed by the scientific community and would be enhanced if it were to capture the imagination of the great foundations and companies in our individual countries'. It is hard to imagine what our response in the Royal Society to this stirring message would have been, but unfortunately Brooke lost his job just after that and was moved to a position for Northern Ireland. And we got a new Minister for science. You know how it is in politics; new appointees are rarely keen to pursue the ideas of their predecessors, so nothing happened for a while. But at the end of 1985 the new Minister came to the Royal Society to talk about a number of things and this idea came up again. By that time he had also got enthusiastic messages about it. So the President said to me 'you'd better do a bit more exploring'. And I did a bit more exploring with a number of people who were very much involved with Europe at that time in organizations such as the European Science Foundation, CERN (European Organisation for Nuclear Research) and so on, notably Lord Flowers and John Kendrew who was Director of EMBO (European Molecular Biology Organisation). And I found all of them enthusiastic. Then I went back to the President and he said 'Well, you had better see how your European colleagues feel about it'. So I arranged the first meeting with European colleagues, people I'd known from meetings of the European Science Foundation. We met at the Royal Society in June 1986. They were

interested and enthusiastic about it. One matter that immediately came up was the definition of what is science. And it was clear that the Royal Society's idea of science was not the one that was used on the continent. *La Science* in France means everything, it means knowledge, as does *Wissenschaft*. So we had to think about that. I went back to the Council and said 'Look, they are enthusiastic but they want it to be all knowledge'. And we agreed that that was what it should be. So we had to have another meeting then because that first group that I had chosen were all natural scientists and now we extended the group to include individuals from the humanities. A second meeting, including the humanities was arranged in Strasbourg at the end of the year.

AB: Was this in connection with the ESF, which is based in Strasbourg?

SA: Yes, it was convenient to hold the meeting there in conjunction with one of the regular meetings of the ESF. And it went from there. This very effective group had several meetings after that, trying to define what the proposed body should do, who would be members and how they should be selected. The committee members were enthusiastic and played an invaluable role in developing the philosophy and the details of what the proposed body should be. I'm sure you do not want more detail on those discussions.

AB: No, what I'm trying to gain insight into are the underlying ideas, the founding visions of the Academy.

SA: They were very much the same ideas adumbrated in Brooke's proposal, except for the extension to the humanities. Eventually, by the end of 1986 (or perhaps early 1987) the British Science Research Council decided that they would give financial support.

AB: In London?

SA: Yes, in London. They gave generous support, they offered 50 thousand pounds a year for five years. So then we could start organizing. We set up an initial office in Cambridge, actually in my College office and through that office we had meetings in Cambridge that then generated the first hundred members. By early 1988 we had a separate office in Cambridge through which the meeting of those first 100 members in Cambridge in 1988 was organized.

AB: This was the Cambridge meeting that marked the official foundation of the Academy?

SA: This was the 'Foundation' meeting. We discussed all aspects of the proposal, elected a Council, Vice-Presidents and I was elected the first President.

AB: So in the initial vision was an agreement that it should include individuals from natural sciences, humanities, social sciences – perhaps even the full range of scholarly activities; that it would be based on individual membership; and that the selection of new members should be done by the existing members.

SA: Yes, I should say, too, that we needed to discuss what Europe meant in the context of the new body. To start with, we decided to focus on those countries that made up the Council of Europe. By the time we got to Cambridge 1988, there were new members in Europe, so we extended the range to the whole of Europe, including East European countries and Russia. Turkey was included and Israel was included because it is spiritually European.

AB: You mean individuals from those countries?

SA: Individuals. It did not involve anything political.

AB: I gather that for the ESF the potential representation of countries by their respective Research Councils caused some controversy, no?

SA: Yes, indeed it did.

AB: 1988 must have been a pivotal year: it was just on the eve of the Iron Curtain's demise. Before this date, obviously during the early years, it must have been very attractive for scholars from East and West to have this opportunity for interaction. But now that there is free movement, does that remove one of the main attractions of Academia?

SA: I don't think so. Of course free movement occurs. It depends, of course, on what you mean by 'free movement'. Do you mean free movement within Europe or free movement in the globe?

AB: I mean the interaction of ideas among members. Now that we have email and the internet, the potential interaction space has been radically transformed since those early years.

SA: That must be true of all international organizations. The demand that one should go to meetings is less now because you can have conferences by email

or web. And this means that Academia meetings that have moved around Europe attract mainly local people and invited speakers, and not many others.

AB: Tell me a little more about those meetings. The annual meeting has been more or less the main agenda, as it were, over the years?

SA: Well, it is one of them. Apart from the annual meeting, there have been meetings on special subjects. We have had a lot of those and they have been followed by publications.

AB: Yes, and one of your major contributions has been the editorship of *European Review.*

SA: The *European Review* started very soon after that. It is now in its 17th year and I think it has been rather successful. That is interesting too because the articles have been predominantly in the humanities. It is much harder to think of what kind of science you could you put into an inter-disciplinary journal like that. On the whole it has been on the history of science.

AB: Do you think that the natural scientists have begun to be more appreciative of the humanities as a result of these various Section meetings, or have they still maintained that interactions within their own worlds are the most important?

SA: I think that scientific boundaries have broken down so much that you cannot really find dividing lines: how can you separate anthropology from genetics, for instance, or astronomy from conceptions of the universe and our position in the universe? I think that, in fact, the boundaries have broken down anyway. The conferences we have organized have been cross-disciplinary and quite successful.

AB: Yes, conceptually speaking, of course, the disciplinary boundaries are not as defensible as they used to be, but institutionally, young scientists are very much ensconced in discipline-based career journeys. Their career prospects, tenure and promotion, are based largely on their status within those specialized fields. Has the Academia been successful in attracting these young and/or mid-career specialists?

SA: No, I think that this is one of its failures. It has not attracted the young people. It has been drawn mostly from mid-career and late career people. But I think that this is true of most such organizations that are not focused

on single disciplines. Look at the Royal Society: it is unusual to be elected before you are 40 and most people are well into their 50s or 60s before they get elected. So the young people have only a peripheral part in it. On the other hand, the Academia has made special efforts in this regard. We were aware, for instance, of the terrible isolation of Russian scholars. That is why we set up the Russian scholarships, and that scheme has been very successful for young Russians (most of them are under 30 anyhow). So, I think you have to discriminate. And if I go back to the Royal Society, it has done the same thing, it has set up scholarships to support career development programmes for young people.

AB: Yes, you mean provision to give young scholars free time from teaching and administrative duties for a year or so in order to allow them time to pursue research interests and writing? Perhaps that would be a trajectory for the Academia to pursue in the future?

SA: It would be a very natural development if one could find the funds for it. If you are a national organization, you know where to get the funds from, but if you are a European organization, it's not at all clear from where you'll get your money. The Academia has had, and is still having, problems procuring financial support.

AB: And what about the British support? The initial five-year commitment has long since expired.

SA: The British support has continued. They renewed it again and again, perhaps now for the fourth or fifth time. We've had very good support from others, from Sweden and from Germany particularly, but less from other countries.

AB: So the Academia is still searching for its niche, as it were, among the various international scientific bodies?

SA: Yes.

AB: The ESF was, in a sense, its patron and in many ways its 'parent', but according to one of your colleagues, there are also worries about the future of ESF. There are so many European research bodies, such as European Research Council, EASAC, ALLEA, and EU Framework programmes, which are much better funded than the Academia.

SA: The Academia has never had any connection with the EU. It ought to have a better connection with the European Research Council. But this

Research Council is a new body that is still finding its way. However, as far as the ESF is concerned, of course, this is a representative body, you represent an organization in your home country, you are not there as an individual scientist.

AB: Now I'd like your overall perspective on what has occurred since the beginning of the Academia. Among its successful agenda you have mentioned the annual meetings, the various specialized Section meetings, and the publications based on them. Now regarding *European Review*, you have noted that it is still primarily oriented toward the humanities.

SA: Yes, but I think it is a good journal, well regarded. It crosses boundaries well. It has specialized subjects in it and has recently also published two specialized volumes also. There was a very fine one on symmetry, a very broad concept. I don't know if the present Council of the Academia has ideas about other publications.

AB: A recent issue deals with the changeover to digital forms of publication. And one of the great dilemmas for young European scientists, especially for those in the non-Anglophone world is that there is now an official ranking of journals, and people depend on their records of publication in those journals for their tenure and promotion. The hierarchy of journals is very much biased toward Anglophone worlds. Is there something that the Academia Europaea could do about a more sophisticated – a more mature – categorization of journals? This is really a trans-European dilemma. But now the Academia itself has become Anglophone!

SA: I think that is inevitable. It is an inevitable aspect of globalization. You have got so many different languages in the world, it is impossible.

AB: But the quality of scholarship conducted in Chinese, Spanish, Croatian and other vernaculars: how can this be evaluated by criteria articulated in the English-language? I can see the point of a common language for communication, but in terms of the quality of the scholarship being conducted, do these Citation Indices really deliver fair assessments?

SA: Well, I can only answer that in terms of the natural science, in which at present there is very little of importance that is not published in English. This is the 'natural science' attitude. I see it as a very different problem for the humanities. How can you evaluate poetry, for instance, in translation? I don't know how you manage that.

AB: I know. This remains an unsolved issue and I think it would be great if the Academia could address this. Otherwise, what do you see as the future potential for the Academia? What horizons do you see emerging?

SA: Well, I think it is going on the right way. I think it has to grow. It has just over 2000 members now and at the start we thought it should have between 2000 and 5000 members. I think it will increase in the next year or two, particularly with the innovation of the President's List, which tries to identify individuals who merit election, but somehow do not find initiation in the Sections. However, there are too many members who are not involved with the Academia's activities. The other thing that has started, which I think could have good potential, is national meetings. And I know that you have had one in Ireland and there has been one in the Netherlands and in Belgium. I think that's a good thing.

AB: Yes, because at the national level sometimes interdisciplinary interaction is not easy, for in many ways we are in competition with one another for relatively scarce resources and status within curricula.

SA: And you are also in different places.

AB: Well, Sir Arnold, I mentioned this to you before, I notice that the year of your birth (1922) was a fundamentally important one for Europe. It was the year when the League of Nations was founded, and also the year on which several international scientific organizations saw the light of day. And I can see that what you have done in your career is fulfilling many of those visions. So I'd like to thank you once again for coming today and for sharing your insights.