CHAPTER 3

THE YEARS 1991 - 1993 AND THE SCHOOLS AT XANTHI, THRACE (1994 – 1995)

1. A Conference on "Chaotic Dynamics: Theory and Practice", Patras, July 11 – 20, 1991

In 1991 there was no Summer School on Nonlinear Dynamics and Chaos. After the loss of Stephanos I became involved with organizing the two NATO Conferences I mentioned at the end of the previous chapter. The first one was to fulfil an obligation that Stephanos had undertaken and had made all essential preparations before his passing. The second was in response to a request made to me by many foreign and Greek scientists who had taken part in the Thessaloniki 1986 Conference and wished to repeat the experience in Patras! They had also informed me that there was generous funding for such an event by a NATO grant allocated for Advanced Research Workshops on Chaotic Dynamics. How could I refuse?

Well, I had refused in the late 1980's due to personal convictions. NATO was after all a "defense" organization, formed during the cold war era, to provide "security" against any activities, military or otherwise, by the Soviet Union and its allies. But, by 1991, the world had changed. NATO was now ready to allow scientists from eastern block countries to participate in activities funded under its own auspices. And there were quite a few of them I wished to invite!

So, I decided to accept the offer. Since adequate funding was available, I decided to call on Porto Rio, one of the most modern and luxurious hotels in the area. There were many nice rooms for the speakers and a huge conference hall for our meetings. The only competition came from two factors beyond my control: A beautiful beach and a big swimming pool just a few feet away (see Figure 7 below).

The response around the world was very positive. Many professors from the US, Western Europe but also Russia, Eastern Europe and Slovenia (which had just become independent), even India, accepted the invitation. There were also many Greek speakers from many parts of the country, who were eager to present their results on chaotic dynamics, theory and practice.

And, of course, there were young sailors, most of them Ph.D candidates, and even high school teachers eager to find out what this fuss about Chaos was all about. The Greek academic community was eager to show its maturity and willingness to participate in this new science, on an international scale.

Wait a minute, I remember these guys in Figure 7! Isn't this tall fellow on the left, with the red shirt and his head in the tree Edward Ott, and below him 3 steps on the left with the green shirt Celso Grebogi, both from the University of Maryland, who had just discovered a new way to control chaos? And isn't the bald guy with the glasses, 3 heads to the left of Ott, Peter Christiansen

from Denmark, known for his work on Josephson junctions? Wait, two rows below him a little to the left, with the red shirt, I see Martin Kruskal the famous Mathematician from Princeton University who discovered solitons, and just on his right I see the bearded Professor John Nicolis of the University of Patras (about whom we will have a lot to say later) and on Kruskal's left with the purple shirt, isn't it M. Lakshmanan one of the best known nonlinear Indian physicists?

On the front row fourth from the left, with his legs crossed, wearing a dark shirt, we find Alain Arneodo expert in fractals and nonlinear biology from Lyon, while many Greek elder sailors of our voyage can also be seen on the front row: Fourth from the left Dimitris Frantzeskakis physicist from the University of Athens, next to him Kyriakos Hitzanidis electrical engineer from Athens Polytechnic and Hronis Polymilis also physicist from Athens. And the list goes on, with several young sailors of our Summer Schools, Ph.D candidates at that time, present on the front row.

Figure 7: Participants of the "Chaotic Dynamics: Theory and Practice" Conference, July 1991, Porto Rion hotel Patras. Whom do you recognize?

Unfortunately, several of our distinguished speakers missed the chance to be in the picture: Among them Mikhail Rabinovich, who had come with some colleagues from Nizhny Novgorod, Russia, the leading mathematical biologist Leon Glass from McGill University, Canada and the famous Chicago physicist Leo Kadanoff, who stayed only two days. Still, to the fellow sitting at the rightmost spot in the photo, it seemed that things were going as planned.

The proceedings of the conference were published in a volume entitled "Chaotic Dynamics Theory and Practice" by the NATO Science Series B: Physics and belong to history. I would like to recall, however, one funny incident that has remained vivid in my mind: One morning, just after Leon Glass had begun to deliver his lecture, there was a power failure and the lights in the conference

hall went out. I left the room to see what happened and was told by the manager that it would be some time before the lights came back on again.

I returned to the conference hall wondering whether I should call for a break and witnessed the following scene: In the little light coming from the sun through the windows, Leon was continuing his lecture undaunted, as if nothing had happened. In fact, he was walking up and down the corridor, moving his hands and describing in a loud voice the proper way to analyze cardiac signals and related biological oscillations, in such an absorbing manner, that everyone was listening without a sound, as if he were a preacher delivering a sermon!

Others would have been lost without their transparencies. But not Leon Glass. He finished his whole 45' lecture and answered questions, followed by a loud applause. I often wondered since that time if I would have been able to do something like that. I still don't know the answer. I suppose these are situations that you don't plan for, so you can never be prepared. In our long voyage of Schools and Conferences there were several surprising incidents that added to the excitement of our endeavors and I shall try to remember them as we go along. In the case of Odysseus, they were of epic proportions. In our case, they were lessons that taught us more about ourselves and the meaning of education.

After the break of 1991, our journey continued in 1992 and 1993, with one stop at Heraklion, Crete and one at Patras for the 5th and 6th Schools of Nonlinear Dynamics and Chaos. I do not recall many details about these events, as we were all still under the spell of the loss of Stephanos. Of course, none more so than his brother Spyros, who had joined the Institute of Research and Technology of Crete, a few months before the tragic event of November 1990.

Naturally, work is the best refuge when a tragedy strikes, so Spyros Pnevmatikos decided to turn all his efforts to a different direction: Having already many connections with eminent European mathematicians, he decided to take full advantage of the opportunities offered by a newly established European educational program called "Erasmus". Without hesitation he took the initiative to form one of the most successful such networks of European universities, which he named "Mathematics and Applications".

Spyros began by contacting many mathematicians in French and Dutch Universities, with whom he already had ongoing scientific collaborations. Next, he turned to several theoretical physicists, active in nonlinear dynamics and chaos, whom he knew because of their close relations with Stephanos. Finally, he invited some of us, Greek colleagues and fellow travelers on the voyage of Summer Schools and Conferences at Patras and Samos, to become part of his Erasmus network. Spyros wanted to make Crete and especially Heraklion one of the main stops of the voyage in Nonlinear Science, if for no other reason but to honor the legacy of his brother.

Of course, we accepted. I remember how thrilled I was with the idea of the Erasmus program. In fact, at about the same time, another famous Greek scientist, Professor Grégoire Nicolis of the Université Libre de Bruxelles (of whom we shall have a lot to say later) had just formed an Erasmus

network joining many European universities under the title “Nonlinear Processes in Physics and Biology”.

Naturally, I hurried to enlist the University of Patras as a partner in both the Pnevmatikos and Nicolis networks. Greek colleagues from several other universities, notably the University of Thessaloniki, also joined and took part in more than ten years of exchanges of students as well as faculty and young researchers among European groups belonging to these networks. We had a wonderful time and participated in many educational activities that were unforgettable and extremely useful both for us, the elder participants, as well as our students.

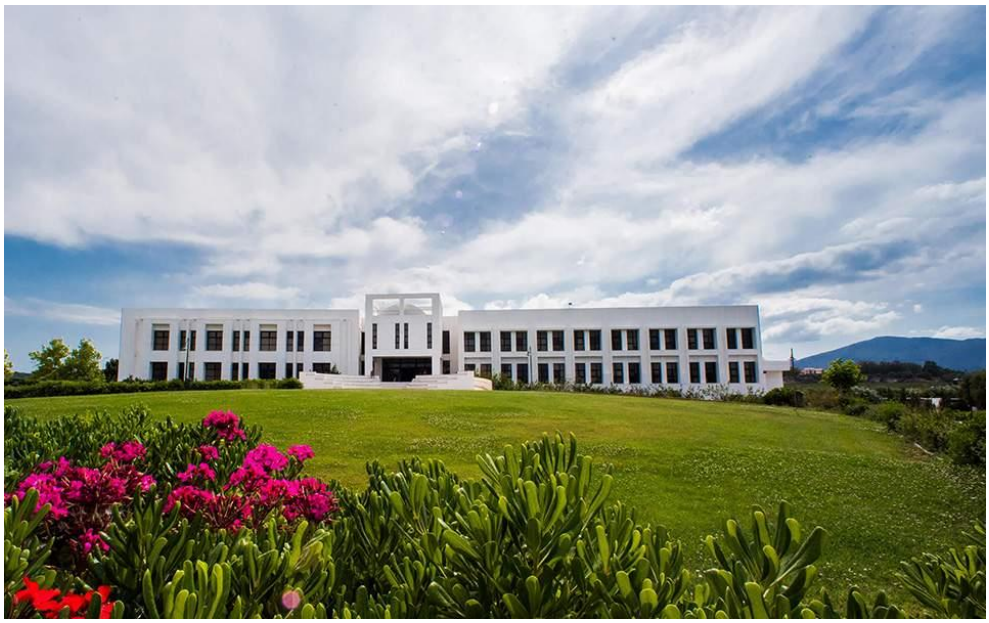


Figure 8. The main building of the Institute of Research and Technology at Heraklion.

But let us return to the 1992 stop of our voyage at Heraklion. Spyros had managed to convince some of his mathematician friends from European universities to write lengthy (30 – 40 page) educational articles on topics of their specialty that would be printed into booklets under the auspices of our Erasmus Network and distributed to all our young sailors. Several foreign colleagues responded positively and sent their contributions in English. Some of us Greek nonlinear scientists also contributed such booklets, so we had a lot to talk about during our Summer Schools at Heraklion and Patras in 1991 and 1992.

However, we had again started to stray away from our course towards the meaning of education. Despite all our noble efforts, our young sailors found the material we handed to them too difficult to understand and appreciate, Besides, partly because of what happened in 1990, we had started to lose the sense of joy and fun, which had accompanied all our earlier Summer School adventures. It was time to rediscover the spirit of excitement and delightful discovery we had experienced at

the first stops of our travels. Fortunately, this opportunity would be provided by our next two Schools at the beautiful city of Xanthi in northern Greece.

2. The 7th and 8th Schools of 1994 and 1995 in Xanthi

Xanthi is a beautiful city of nearly 70000 built at the feet of the Rhodope mountain, in the Thrace province of Northern Greece, on the western bank of the Kosynthos river, about 25 km away from the sea. It is divided in the "old" and "new" town and has a remarkable architecture that combines historic and modern houses, Byzantine Greek churches and Muslim mosques. In fact, of the 120000 that constitute the population of the province of Xanthi about 40% are Muslim, while in some villages in the north people speak a mixture of old Bulgarian and Turkish called Pomak. In terms of ancient Greek archaeological sites, Xanthi is close to the city of Avdira, the birthplace of Demokritos, while there are also ruins of a port dating back to 7th century B.C. on the nearby beautiful island of Thassos.

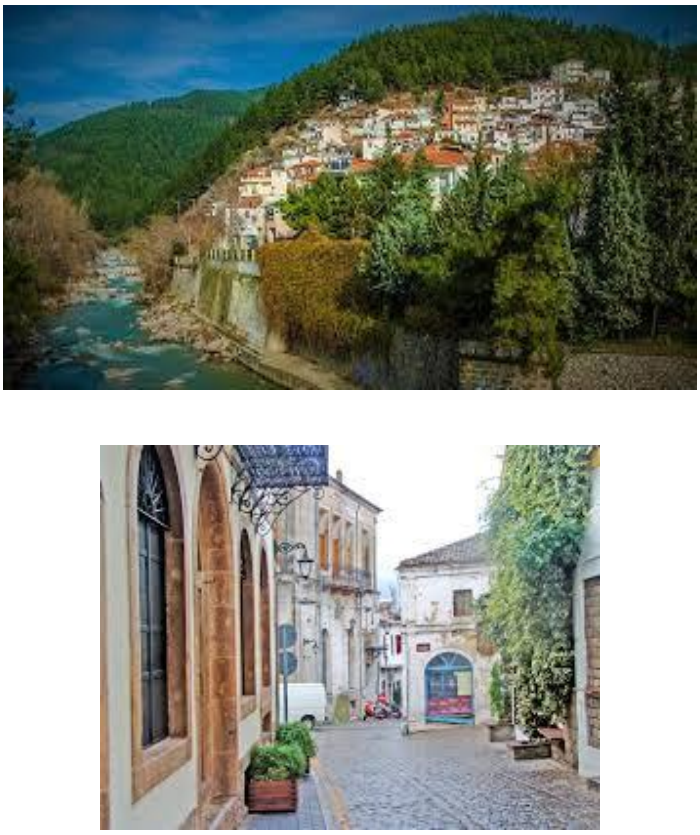


Figure 9: The city of Xanthi (above) and a characteristic street in the "old" town (below).

Many of us, especially those living in the central and southern part of Greece, had never been to Xanthi, so this promised to be a very exciting experience. First of all, we wanted to know more about the University of Thrace that had been founded as early as 1973, in Komotini, and had campuses in the cities of Xanthi, Komotini, Alexandroupoli and Orestiada. We were especially interested in Xanthi, where the Department of Electrical Engineering was willing to host our 7th and 8th Schools for two years in a row: July of 1994 and 1995.

Two colleagues, Moses Boudourides and George Pavlos, assistant professors at that time of the Department of Electrical Engineering, made every effort to secure the use of a relatively new and large lecture hall, equipped with the latest projection facilities and a wide screen that we had not had the chance to enjoy in our previous escapades. Nice hotel rooms nearby had been reserved for the elders, but, more importantly, the young sailors could stay in brand new and comfortable student rooms that had just been constructed and were available a short bus ride away from the lecture hall.

Many new names were added to the older and more familiar lecturers of the Schools: We had Greek and foreign speakers from many countries like the twin brothers Anastassios and Panagiotis Tsonis, Alexandros Vakakis, Leonidas Iasemides and Karl Gustavson from USA, Ioannis Antoniou from Brussels, Marko Robnik, Peter Petek and Aneta Stefanovska from Slovenia, Steven Bishop from London, Drumi Bainov and Emil Minchev from Plovdiv, and Yuri Melnikov from St. Petersburg. It was amazing! Our travels were becoming known all over the world, not to mention the wonderful new areas of the theory and applications of Nonlinear Dynamics and Chaos that they all had come to share with us at Xanthi. Many of the lectures at these two Schools were later included in a single 4th volume of the series “Order and Chaos”, dedicated to the celebration of the 60th birthday of Professor John Nicolis.

We shared wonderful experiences during these two Schools, which went beyond the many scientific advances on Nonlinear Dynamics, Chaos theory and their applications presented by our eminent speakers. We visited the ruins of the ancient city of Avdira, hometown of Aristotle, Protagoras and many other great thinkers of Ancient Greece. We also visited one of the greatest National Parks of Greece, around lake Vistonis, where many rare species of the flora and fauna of the region live in a protected environment. Some of us had the chance to visit the “Pomakoxoria” of Xanthi, where the local dialect of “Pomak” is spoken by the population.

Regarding free time for entertainment, a daily excursion to the island of Thasos was planned and proved to be very rewarding. After visiting the excavations of ancient ruins at the port of Thasos, we went on a tour of the island, stopping at some of its most beautiful historic churches and monasteries. Of course, we did not forget to take advantage of Thasos’ beautiful beaches, where, besides swimming, elders and sailors divided in “opposing camps” and clashed at memorable games of beach volley, before finally returning back to Xanthi late that Sunday evening.

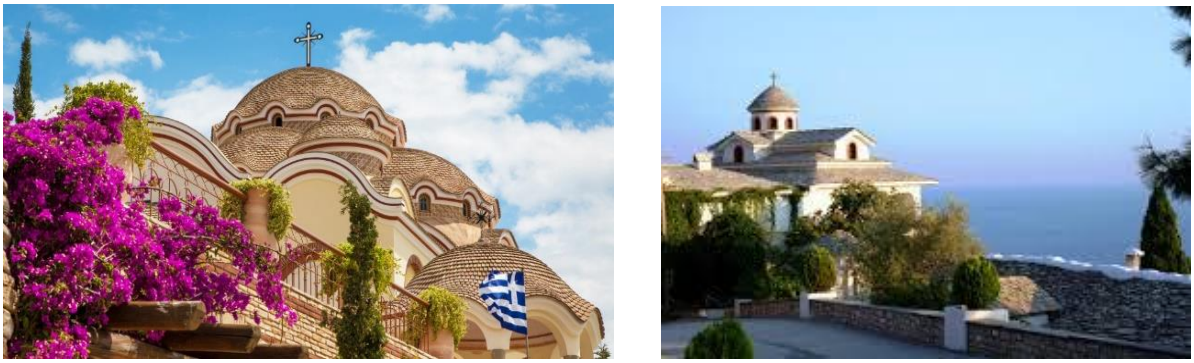


Figure 10: Beautiful historic churches of Thasos.

And thus, I come to a particularly instructive event that took place on the morning of the Monday following the excursion. The day was supposed to start, according to the Program, with a 2-hour lecture by Professor John Nicolis of the University of Patras. As we will have the chance to refer to him on many occasions in this book, John Nicolis was from the beginning one the most important Greek nonlinear scientists and frequent speakers at our Schools. He was internationally known from his Springer books on the "Dynamics of Hierarchical Systems" (1986) and "Chaos and Information Processing" (1991), where he was among the first to emphasize the connections of Nonlinear Dynamics and Chaos to game theory and information processes, in biological processes, notably brain function.

Figure 11: Professor John Nicolis (1933 – 2012).

On that Monday morning, his lecture was scheduled for 9:00 a.m., so he was already standing before the entrance of the Lecture Hall at 8:45 a.m. I was there too, together with a few more of the elder sailors involved with the organization of the 1994 Xanthi School. We nervously looked at each other and paced around aimlessly. There was absolutely no sailor in sight! None of the students were present! The situation was most disappointing. John Nicolis became angry and started to mumble about "the immaturity of today's youth", the "lack of appreciation of this generation for the importance of science", and so on. To humour him, I nodded in agreement and voiced my own frustration, trying to think of an explanation.

Almost two hours passed. Then, suddenly, a little before 11:00 a.m., a group of freshly awakened sailors entered the main gate of the University and merrily made their way to the lecture hall. They were soon joined by more groups, until most of our young audience was present ready to listen to the day's lectures!

What had happened was actually very simple and should have been obvious from the very beginning: Upon arriving at their rooms after the excursion the night before, the students decided that a free Sunday cannot be complete without some fun and enjoyment of their own making! So, they brought out guitars, had some drinks and late-night snacks, and proceeded to celebrate in their own way the end of their first week at the School!

We all calmed down, of course, and proceeded with our daily educational activities, shifting the lecture program ahead by 2 hours, as if nothing had happened. It was then that I understood the true meaning of our travels and the reason why our journey had been successful so far: These Summer Schools could not be planned and executed according to the wishes of the older members of the crew alone. If our search for the meaning of education were to succeed, we had to listen carefully to the sailors' wishes and desires. Odysseus himself had to amend his plans many times to keep his sailors happy and eager for the voyage! Why should it be any different in our case?

And so, the Xanthi Summer Schools ended to everyone's satisfaction. Still, I would like to close my narration of this chapter, with a particularly anecdotal event that has survived to this day and is often recalled not only by those who were present at Xanthi, but also many others who heard about it afterwards. Its origin is again Professor John Nicolis and it took place at one of the Xanthi Schools, although I cannot recall exactly which one.

As everyone knows who has attended Schools where John Nicolis was present, John not only gave great lectures, but was also very energetic in taking part in the question and answer period that followed every presentation. At times he was so persistent and monopolized the discussion with remarks of such scientific level, that even the elders had difficulty to understand, let alone the young sailors! So, on one of these occasions, during a morning session at Xanthi, I decided to intervene:

"Professor Nicolis," I protested, "I am afraid you are asking so many questions that the students do not have time to ask their own. I must request that you stop at this point and let some of our younger participants speak. From now on, I will allow only students to pose questions to the speakers." John was very cooperative and remained silent during the two lectures that followed. Indeed, some students did become bolder and began participating in the discussions.

Then, about 2:00 p.m., the last morning lecturer finished speaking and we were all getting ready to go to lunch. As usual, the Chairman of the session asked politely: "Are there any questions?". From the corner of my eye, I could see John barely able to control himself. And as the Chairman was getting ready to declare the session closed, John Nicolis jumped up from his chair and with his distinctive voice broke the silence in the Lecture Hall:

"If I were a student, I would like to ask…."

CHAPTER 4

THE YEARS 1996 – 1999: FROM PATRAS TO THESSALONIKI AND FROM LIVADIA TO PATRAS

1. The 9th and 10th Schools at Patras and Thessaloniki

And the journey went on. It was now time to return to Patras and "touch base" for the 9th School, as we often did, when there was no other port immediately available, where colleagues could find the proper location and obtain the necessary resources to support the organization of the School's activities. In Patras, our Summer Schools on Nonlinear Dynamics and Chaos had already become known at the University and around the town, and every year students and colleagues, but also hotel and restaurant owners, even tourist bus drivers, were asking about our plans.

The University Senate had approved the formation of a Center of Research in Nonlinear Systems (the famous CRANS), which exists to this day. CRANS hosted many activities within the university, but also internationally, through a variety of research and education activities that involved colleagues from several Departments. It is still hosted in the Department of Mathematics, as a Laboratory of Nonlinear Systems and Applied Analysis. Under its auspices, we organized annual series of Nonlinear Seminars, welcomed many Erasmus students and helped in many ways MSc. and Ph.D candidates, who worked on topics of what was becoming known as Nonlinear Science.

In those years, we did not yet have at the University of Patras the Conference and Cultural Center that exists today, see Figure 12 below. We did find, however, large lecture halls, notably in the Rector's main building and at the Medical School, where we could hold our meetings. There was, of course, the problem of air – conditioning! As everyone knows, July is a very hot month in Greece, and getting cool air to flow through the lecture halls was a real challenge! In the Rector's building we kept all windows open and were often able to generate a draft of fresh air to flow through the room.

At the Medical School, on the other hand, a kind of air – conditioning was functioning, but when the room was full it didn't help very much. Well, who said summer education was going to be easy?

Figure 12: The Conference and Cultural Center of the University of Patras, built in 2001.

Thankfully, some small campus cafeteria was always open nearby to provide refreshments. Most importantly, however, we already had at that time at the University of Patras our very own Park of Peace (see Figure 13)! This is a wonderful restaurant facility, that is still functioning today, sprawled over a wide grassy area across the street from the Rectorate of the University of Patras. The owners were certainly happy to see us visit it daily, but also helped us with our coffee-breaks and organized at the outside lawn our official Conference dinner!

Figure 13: The restaurant "Park of Peace" at the University of Patras, where we often organized official dinners of our Summer Schools and Conferences.

The 9th School was very successful, as the number of participants not only from all over Greece but also from foreign countries surpassed our expectations. I recall several members of the Free University of Brussels who were present, and also the Mathematician Professor Antonio Giorgilli from the University of Milano, who had brought his guitar and entertained us all at the end of our Conference dinner.

In fact, by that time, a number of musically talented young sailors had decided that it would be a good idea to add a new, artistic dimension to our gatherings. So, they started a tradition that significantly enriched our Schools at Patras and many other stops of our journey in the years that followed. They brought along their guitars (or flutes!) at group dinners organized at seaside restaurants and after a little "arm-twisting" led our sing-alongs until late hours in the evening.

As far as famous speakers are concerned, I remember in 1996 the great Russian Physicist Sergey Kapitza (1928 – 2012), who gave us a memorable lecture on world demography. He used sophisticated population models to make predictions for his own country, but also for the entire world! I recall that the asymptotic value he estimated for the Earth's population for the next 50 years was close to 11 billion! Considering that today's projection for 2050 is about 10 billion, he was not far off!

The following year, summer of 1997, it was the turn of Thessaloniki to come to the forefront and announce the organization of the 10^{th} School at a seaside hotel of the beautiful suburb of Peraia not far from the city of Thessaloniki, see Figure 14. The person at the helm of the boat now was Simos Ichtiaroglou (1950 – 2006), then assistant professor of the University of Thessaloniki, whom we have already mentioned several times in this journey, not only for his great lectures but also his musical talents! Simos' academic specialty was theoretical mechanics, on which he had worked very closely with Professor John Hadjidemetriou, as well as other faculty members of the Physics Department of the University of Thessaloniki.

Both Hadjidemetriou and Ichtiaroglou were among those present in all our Schools from the very beginning of the journey. Their presentations were always among the clearest and best received by the young sailors. In fact, they always came to the Schools with their own students and younger research collaborators. They taught us all so many things about nonlinear systems of classical and celestial Mechanics, not only through their lectures, but also through the many chapters they contributed to the volumes of the series "Order and Chaos", containing the proceedings of our Summer Schools.

Simos had found a nice hotel near the sea at the small town of Peraia, just a few kilometers away from Thessaloniki and had also managed to secure some funding from the Greek Ministry of Education. Through his Erasmus visits at the Université Libre de Bruxelles he invited a number of researchers from the Department of Chemical Physics, notably Dr. Vassilios Basios from the group of Grégoire Nicolis and Dr. John Antoniou from the group of Ilya Prigogine. It was a very well – organized meeting that lasted two very pleasant weeks. The lectures were held in a special conference room of the hotel (with air – conditioning!), whose doors opened to the beach outside, with chairs and tables where we could sit during the intermissions and continue our discussions.

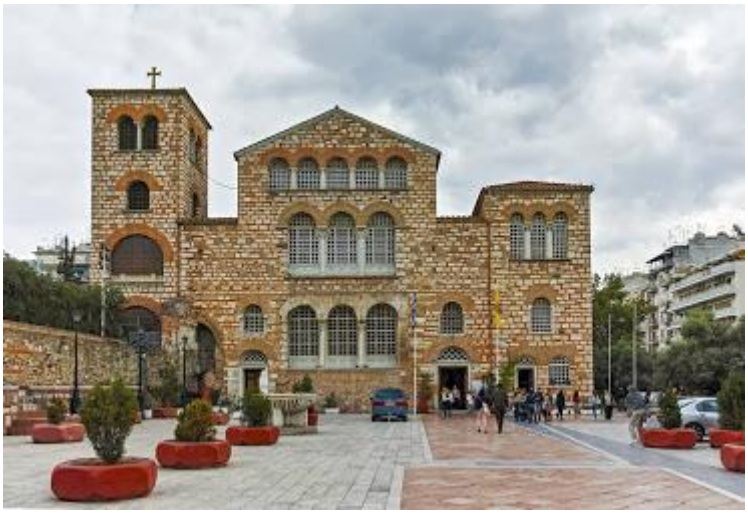


Figure 14. Above: A seaside view of Thessaloniki with its famous "White Tower". Middle: The magnificent church of Aghios Dimitrios, a "jewel" of the city. Below: A beach at the seaside town of Peraia, where the 10th Summer School was held. The city of Thessaloniki can be seen in the background.

On Sunday, that was as usual our free day, we hired a bus and went on an interesting excursion to visit the famous Petralona Cave, some 35 kilometers from Thessaloniki, on the Chalkidiki peninsula. The site was accidentally discovered in 1959 by a local shepherd and is magnificently beautiful with a complex maze of wonderfully colored stalactites and stalagmites. It became

famous in 1960 when a fossilized archaic human skull was found, which appeared not to belong to any of the well – known human lineages. Indeed, after many years of study, paleontologists concluded that the Petralona skull belongs to a lineage that is distinct from Homo Erectus or the Neanderthals and estimated its age to be about 200–400 thousand years old.

In one of the corners of the cave the visitors have a chance to see three crouched human figures created by an artist aiming to model how people at that time must have looked as they went on with their daily activities (see Figure 15 below).

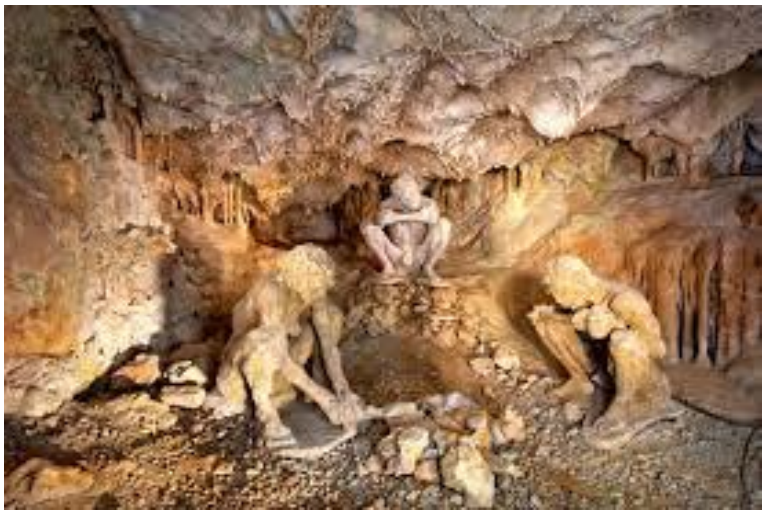


Figure 15. Photograph from the Petralona cave showing an artist's depiction of three humanoid figures as they might have lived in the cave some 200 to 400 thousand years ago.

As we were standing looking at them, wondering what they were actually doing, one of the young sailors was heard asking a question not specifically directed to anyone: "Well, do you think this is what a Summer School would have looked like at that time?"

2. The 11th and 12th Schools at Livadia and Patras

"Now, how in God's name did you come up with Livadia as a possible location for the next stop of our journey?" I asked my fellow elder sailors who first proposed the idea, when we gathered around a table at the end of the Thessaloniki Summer School. "First of all," I continued, "it is not on the sea! Where are the students going to go swimming? And there is no university in sight. How will we find a lecture hall, secretarial help, projectors for our slides, copying machines? Where are the young sailors going to stay? It's out of the question!"

At that moment, my dear friend Hronis Polymilis (1947 – 2000), then assistant professor at the University of Athens, without getting up from his chair, pointed his index finger to his chest and said with his deep characteristic voice: "Leave it all to me." "Hronis, I am serious," I continued.

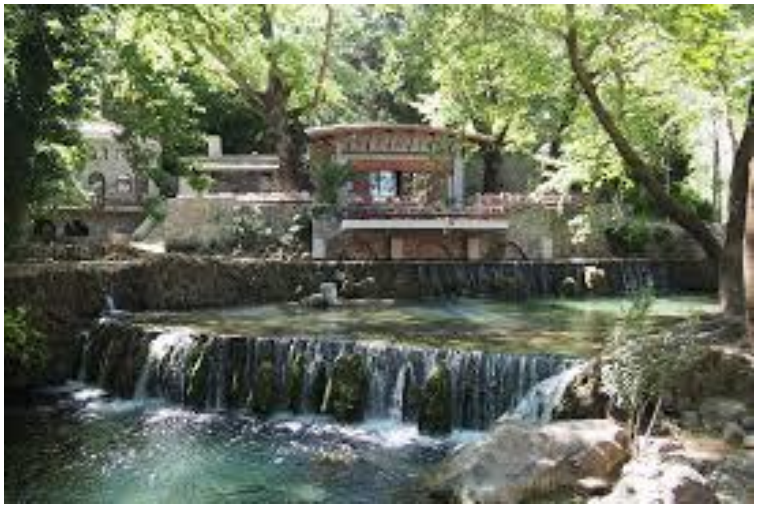
"So am I," he replied. "The Mayor of Livadia is my friend!"

And before I had time to respond, he went on: “Tassos look, next year Contopoulos[1] is turning 67 and is retiring from the University of Athens. So, some of us thought it would be nice to devote our next Summer School to him. I know the Mayor of Livadia very well, he was an old classmate of mine from the university. He has promised to make available to us free of charge a new beautiful stone building at the center of town next to a mountain stream to hold our lectures, surrounded by cafeterias, restaurants you name it. He can supply us with all equipment we need and will host an evening celebration at the Mayor’s building to honor Contopoulos. What more do you want?”

“What about swimming?”, I still protested.

“Oh, come on!” Hronis protested “Is this so important? If people want to swim there is a beach at the ‘Aspra Spitia’ half an hour away by car. And we can visit the Monastery of Osios Loukas, or even hire a bus and go as far as Delphi, 50 kilometers away. And, remember, Tassos, there are all these fantastic tavernas at Livadia, with the best lamb on the spit, souvlakia, kokoretsi,…”

“Ok, ok, I interrupted him. You convinced me. What does everyone else say?” I looked around the table. No one said anything, they just looked at me smiling. Only Loukas Vlahos, then associate professor at the University of Thessaloniki, spoke with his deep voice, “well, Livadia is my wife’s hometown. I am sure I can also lend a helping hand!”



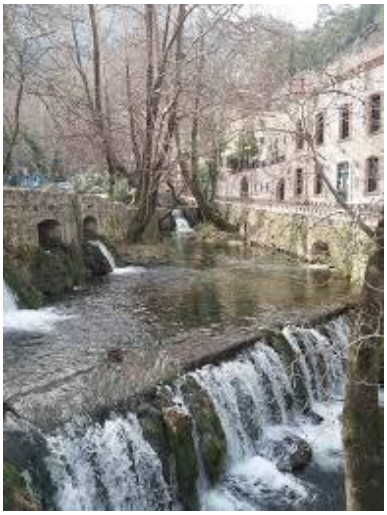


Figure 16: The location “Ta Krya Nera” (cold waters) in the center of Livadia, showing on the left a nice restaurant on the left bank and on the right bank the stone building where the 11th Summer School took place.

And so, the decision was taken unanimously: it was going to be Livadia for 1998. Hronis would lead the way and make all preparations, with the help of several colleagues from the University of Athens, who knew well Professor George Contopoulos and respected him as a scientist and a teacher.

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[1] George Contopoulos was then professor of the University of Athens and Member of the Academy of Athens. More information about his profile can be found later in this chapter.

And so, July of 1998 came around and all preparations had been made. The Mayor of Livadia proved to be indeed a great friend of Hronis. He realized, of course, that the Summer School we were planning would be quite beneficial for his town, as several hotel rooms would be occupied by the participants for nearly two weeks and new income would flow to Livadia's tourist businesses. So, not only did he not charge us for the beautiful stone house (Figure 16 right), where our meetings were held, he also helped us with many other necessities, as Hronis had hoped: A town employee to turn on lights and air - conditioning, a large screen, a projector for our transparencies and tables where we placed reprints of our papers!

To get an idea, take a look at Figure 17 below, where you see myself giving a lecture in the stone house, but the screen showing my transparencies is out of view because it is standing on a theater stage to the right of the picture! Notice also the lighting and the presence of air – conditioning pipes above our heads. Things were very different in scientific meetings those days! Still, observe the white billboard on the left. What you see on it are posters of some of the more advanced young sailors exhibiting their research!

Figure 17: The author delivering his lecture at the stone house conference hall of Livadia.

There were many interesting introductory lectures, by many participants at the meeting and some of them were submitted and published in the 5th volume of the series "Order and Chaos". I would like to list them here so that the reader can appreciate the breadth and importance of the topics that were covered at that School:

They were by: G. Contopoulos on "Chaos and chance", J. Hadjidemetriou on the "Stability of dynamical systems", S. Ichtiaroglou on "Integrabilty in Hamiltonian systems", M. Vrahatis on "The topological degree and its computation", M. Boudourides on "Ergodicity of dynamical

systems", Ch. Varvoglis on "Statistical studies of chaotic orbits", S. Evangelou on "Chaos and fractals in quantum mechanics", T. Bountis on "Nonlinear analysis of cell communication", J. Kyprianidis and coworkers on "Nonlinear electrical circuits", G. K. Savidy on "Pseudorandom numbers", G. Papaioannou on "Analysis and prediction of chaotic time series", A. Bezerianos and S. Papadimitriou on "Noise reduction using nonlinear dynamics", P. Maragos on "Image analysis" and L. Vlahos on "Complex systems in Astrophysics".

One of the highlights of the School, occurred in the evening of July 22 when we all gathered together in a more "official" Lecture Hall of the town to celebrate the 67th birthday of George Contopoulos. who had just retired from the University of Athens, and had already been elected the previous year full member of the prestigious Academy of Athens. We were all there, and the person who was going to introduce him was one of his first students, Professor John Hadjidemetriou of the University of Thessaloniki.

John's speech, also included in the 5th volume of "Order and Chaos", was laudatory and quite comprehensive. He described all aspects of the personality of George Contopoulos, his many contributions to Astronomy, Celestial Mechanics and the Dynamics of Galaxies. He listed Contopoulos' many awards from international societies of astronomy and described in detail his scientific achievements and the many distinguished foreign scientists who had referred to his work in their publications. Most of all, John praised Contopoulos' great interest in young students, which had led him to supervise more than 45 Ph.D. theses already at that time!

The young sailors present in the audience were listening very carefully to his speech (see Figure 18). Perhaps now they were beginning to understand the kind of voyage they were participating in. As they watched the older sailors honoring one of their own "scientific family", perhaps now they were starting to appreciate at what shores this voyage might lead them one day.

Figure 18: George Contopoulos delivering his lecture at the evening session of July 22, 1997, at the Livadia Conference Hall where we celebrated his 67th birthday.

In his lecture that evening, Contopoulos spoke about the differences between Chaos on the one hand and chance, or randomness, on the other. He explained that Chaos occurs in deterministic systems whose equations are perfectly well – known and yet their solutions are extremely sensitive to the choice of initial conditions. He mentioned a colorful example, attributed to Edward Lorenz, one of the first scientists to recognize the importance of Chaos, who had said: "Chaos makes it possible for a butterfly to flap its wings in China and cause a tornado in Texas!"

Contopoulos explained that randomness is not deterministic and is only governed by laws of probability theory and statistics. Thus, unlike Chaos, no matter how much information one can collect from the past, randomness (or stochasticity as it is more formally called) is incapable of improving predictions about the future. There were many questions and a very exciting discussion followed the end of the lecture.

But Contopoulos had to leave. After all, according to his habit, he never stayed at a meeting or a conference more than 2 or 3 days, whether it was in Greece or any other country where he had been invited to lecture.

Livadia was memorable for all us, not only in terms of what we learned from the lectures at Krya Nera and how much we enjoyed the city. We had time to visit wonderful nearby sites, during our Sunday trip. We hired a bus and visited several picturesque nearby villages on the mountains as well as by the seaside, where the young sailors could go swimming. The highlight of the excursion, however, in everyone's opinion, was our visit to the historic Osios Loukas Monastery (see Figures 19 and 20).

The Monastery of Osios (or Saint) Loukas is located at a very picturesque site on the slopes of the mountain Helicon, some 12 km away from Livadia. It was founded in the early 10th century AD by the hermit Loukas from the nearby village of Styris, who died in 953 and whose remains are kept in the monastery to this day. He is not be confused with Saint Luke, the Evangelist and author of the Gospel bearing his name.

Osios Loukas is the largest of three monasteries surviving from the Middle Byzantine period in Greece and derived its wealth from the fact that the relics of Saint Loukas were said to have exuded a sort of perfumed oil which had healing properties. Pilgrims hoping for divine intervention were encouraged to sleep by the side of the tomb to be healed. Later in the early 11th century, an impressive Byzantine-style cathedral was constructed near the monastery, with a huge central dome.

Today, the Monastery is a UNESCO World Heritage site. It has excellently preserved decorations, as well as silver and gold and plated murals and mosaics together with icons, chandeliers, silk curtains, and altar cloths, most of which have been placed in museums. But, of course, we wouldn't have known any of this had it not been for Mrs. Kalliroi (Lala) Nicolis, archaeologist and wife of John Nicolis, who was present at Livadia and often accompanied her husband along the voyage!