

κ. Τσιχριτζή Πρόεδρο Συμβουλίου - ΔΥ-Πρύτανη
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ΠΟΛΥΤΕΧΝΕΙΟ ΚΡΗΤΗΣ
Αρ. Πρωτ. 2454
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NATIONAL TECHNICAL UNIVERSITY OF ATHENS
DEPARTMENT OF CHEMICAL ENGINEERING
SECTION II: PROCESS ANALYSIS & PLANT DESIGN
Computational Fluid Dynamics Unit

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Αθήνα 25 Φεβρουαρίου 2013

Καθηγητή κ. Διονύσιο Τσιχριτζή,
Πρόεδρο Συμβουλίου Διοίκησης του Πολυτεχνείου Κρήτης

ΘΕΜΑ Αίτηση Υποψηφιότητας για τη θέση του Πρύτανη.

Αγαπητέ κ. Πρόεδρε ,

Με την παρούσα μου επιθυμώ να υποβάλλω υποψηφιότητα για τη
θέση του Πρύτανη του Πολυτεχνείου Κρήτης.

Σχετικά υποβάλλω ,

- 1.Την παρούσα ως Αίτηση,
- 2.Αντιγραφο Δελτίου Ταυτότητας
- 3.Βιογραφικά εις την Ελληνική και την Αγγλική καθώς και σύντομο βιογραφικό κατά τα Ευρωπαϊκά πρότυπα.
4. Λίστα επιστημονικών Δημοσιεύσεων
- 5.Το όραμα μου για το Πανεπιστήμιο του 21^{ου} αιώνα ,που παρουσιάστηκε σε Ευρωπαϊκή Συνάντηση Παιδείας
- 6.Την εισήγηση μου για κάποιο άλλο μικρό Πανεπιστήμιο , και παρακαλώ για την κοινοποίηση τους όπου δει.

Σας ευχαριστώ πολύ για την προσοχή που δεν αμφιβάλλω ότι θα δείξετε στο θέμα,

Με Εκτίμηση,

Νίκος Μαρκατος, DIC, PhD, CEng, FICHe, FRSA

Ομότιμος Καθηγητής ΕΜΠ, πρώην Πρύτανης ΕΜΠ

During his University studies he was involved in the students' movement for Peace and Democracy.

He graduated in June, 1967, (first in rank among all the students of the University). During his studies he was awarded five scholarships and three University Awards for his excellent performance as a student and his character, (the Thomaidion Award in 1966 and in 1967 and the Xrysovergion Award in 1967).

He served his military service from October 1967 to October 1969 in the Supplies and Equipment Corps.

From November 1969 to September 1970 he worked in the "VIOCHROM" -Procter & Gamble Hellas Industry, initially as a Unit Operations Engineer, and then as the Cost and Methods Manager.

From 1968 to 1970 he attended Postgraduate Studies at the Athens School of Economics, from which he graduated in 1970 with an M.A. in Business Administration.

From October 1970 to November 1973 he attended Postgraduate studies in Advanced Chemical Engineering and Technology at the Department of Chemical Engineering of Imperial College of Science and Technology (University of London). After succeeding in the M.Sc. examinations, he worked on a PhD thesis entitled: "*Transport Processes Through Wavy Interfaces*" which was concluded in 1974. That year he was awarded the DIC (Diploma Imperial College) and Ph. D degrees.

In January 1974 he was appointed Post - Doctoral Research Assistant at Imperial College (Fluid Dynamics and Thermodynamics Section, Mech. Eng. Dept.) and worked with the well-known Professor D.B. Spalding, FRS, with whom he continues to collaborate until this day.

In parallel he started working for CHAM Ltd, (Concentration Heat and Momentum, Limited) London, England, the world-leader in fluid-flow software, that was then developing unique and pioneering computational methods to solve problems of Heat, Mass and Momentum Transfer, with turbulence and with chemically reacting species. In that company he worked first as a Group Leader of the Aerospace Group (1976) and then, from 1977 onwards, as the Manager of the Applications Team, being responsible for all the Application Groups that were carrying out projects for research centres and Industry, on various Fluid Mechanics, Thermodynamics and Transport

Phenomena problems in Aerospace, Combustion, Environmental and Process Engineering. He worked for CHAM Ltd until 1984.

During his work at CHAM Ltd. he was elected Extra-Mural Academic Advisor of the Imperial College students working on their PhD theses with SRC (Scientific Research Council) scholarships.

In December 1982 he was elected Principal Lecturer in Mathematical Modelling and Process Analysis at the school of Mathematics and Scientific Computing of University of Greenwich, London, England. In May 1983 he established the Centre for Mathematical Modelling and Process Analysis at the above school, and he was appointed its first Director. In 1984 he became a Reader of the same University, while from April 1983 he was Visiting Lecturer in the Computational Fluid Dynamics Unit of Imperial College.

Since 1974 he has served as Technical Consultant for many Research Centres, State Institutions and Industries in the United Kingdom, the United States, Germany, France, Japan, etc; for example:

- * *Combustion Engineering (U.S.A.)*
- * *KWU-Siemens (W. Germany)*
- * *NASA Langley Research Centre (U.S.A.)*
- * *NASA Lewis Research Centre (USA)*
- * *Admiralty Experimental Works (United Kingdom)*
- * *National Maritime Institute (United Kingdom)*
- * *Ishikawajima-Harima Heavy Industries (Japan)*
- * *Mitsubishi (Japan)*
- * *Westinghouse Co. (USA)*
- * *Boeing (USA)*
- * *British Leyland (United Kingdom)*
- * *SNPE (France)*
- * *British Aluminium (United Kingdom)*
- * *Imperial Chemical Industries, ICI (United Kingdom), and many more.*

In June 1980 he was awarded, by the Inventions Council of NASA, the Certificate of Recognition and an award for the "*Creative development of innovative technology which is considered as a serious contribution with future consequences in aerospace and other fields of science*".

In 1985 he was elected Professor of Chemical Engineering at the National Technical University of Athens. In 1988 he was elected Associate Head and in 1990 Head of the School of Chemical Engineering. He was re-elected as Head for another three terms in 1992, 2006 and 2008.

In 1991 he was elected Rector of the University. He was re-elected in 1994 and served the maximum term until 1997.

Professor Markatos' main scientific interest is in the mathematical modelling of Transport Phenomena, Fluid Mechanics, Thermodynamics and Physical Processes like Fluid Flow (Laminar and especially Turbulent), Heat and Mass Transfer, Combustion, distillation, filtration, pollutants dispersion, major industrial accidents etc. and in the solution of the corresponding differential equations with numerical methods on Computers. He is also interested in the development of complex algorithms to study environmental and industrial processes with particular emphasis on generality, user friendliness and results presentation with Computer Graphics. His research team involves people who are specialists in computer simulation, design of engineering equipment and processes, industrial accident management and in environmental measurements, monitoring and control.

He is member of the following Scientific and Professional Bodies:

Technical Chambers of Greece (1967)

University of London Convocation (1974)

Engineering Council of Great Britain (Chartered Engineer, C.Eng. 1977)

Institution of Chemical Engineers (Fellow, FIChE 1976)

American Institute of Chemical Engineers (AIChE 1977)

American Institute of Aeronautics and Astronautics (MAIAA, 1979)

British Council for Computer Simulation (UKSC, 1978)

International Society for Computational Methods in Engineering (MISCME, 1979)

Society for Computer Simulation (Simulation Councils, Inc. USA 1979)

He is referee of scientific papers, reviewer of new books, as well as member of the Editorial Board of several international Scientific Journals. He is also Regional Editor of the International scientific Journal *"Applied Mathematical Modelling"*.

He has published a large number of original scientific papers in international Journals and he has participated and organised many International Conferences, Seminars and Meetings all over the world. He has also published many articles in the popular press on matters of Engineering Higher Education, and he is the author of two books and Editor of another two.

He has been cited over 1200 times and his h-factor is 24.

Professor Markatos' biographical data are included in the "WHO' s WHO" in Frontier Science and Technology, "WHO' s WHO in America", "WHO' s WHO in the world", "WHO' s WHO in Science and Engineering", and elsewhere. He was "International Man of the Year" in 1994 and 1995. He is a Life Fellow of the International Biographical Association (LFIBA).

For his scientific and social activities in Bulgaria he was awarded a Doctorate Honoris Causa by the University of Chemical Technology and Metallurgy of Sofia, in 1996.

He was appointed Senior Visitor and Fellow at Selwyn College, University of Cambridge, UK, (2002-2003). He is also Visiting Professor at the University of Surrey, UK, (2000-2011).

He is Fellow of the Royal Society of Arts (FRSA) , UK.

His social activities in Greece are very well known through his publications in the national press and his appearances on TV. He has presented two TV series, one on Education (The Educational and Cultural Files) and the other on Technology (Human Works), that lasted for years and promoted the notion of the "Universitas" as the place where Society reflects upon itself.

He was a councillor for the Municipality of Athens (1995-1999).

He has been Chairman or member of several non-government organisations and he is currently Chairman of the Kallergis Institute for Historical and Political Studies and of the "Acropolis Appeal" for Peace, Humanism, Civilisation and Environmental Protection.

Six years as Rector he organized dozens of social, cultural and political events, such as "The Athens Summit", that attracted International interest and had as speakers, among others, Mikhail Gorbachev, the then President of Cyprus Vassiliou, Simon Perez, Peter Ustinov, Neal Kinnock, and many more.

Six years as Rector of NTUA and eight years as Head of School of Chemical Engineering made him very competent in organising matters, such as research and coordination of projects and personnel.

When he was elected as Rector, the University had a debt of 500 million drachmas. Six years later it had a surplus of 11 billion drachmas, as a result of organising research and managing the University Assets. The National Technical University of Athens became the second in rank European University in obtaining competitive European Projects. The return of its other assets rose from below 1% to above 8%, a level at which it still is.

As Rector he also established the concepts of Continuous Education, Service Laboratories (which offer, paid for, services to clients), the "Industrial Linkage" University Office. He also organised the Post-Graduate studies and introduced into the Engineering Curriculum topics in Humanities. The Library and all other Administrative functions were electronically organised and controlled via a sophisticated network of optical fibres.

He was the Editor of the book "On the Scientific Truth about Macedonia", in English, that was distributed through the Ministry of Foreign Affairs to all Universities around the world.

He has been an invited speaker to Hellenic Communities abroad (New York, Australia, etc) and to many places in Greece.

His laboratory of Computational Mechanics contributed to the improvement of the Athens air pollution (nefos), and has assisted local communities throughout Greece to improve their environmental conditions (examples include, the proper placing of a power plant in Lesvos, refusing the installation of a Chinese port in south Crete, installing a Centre for accident prevention and management in west Attica and performing the Seveso studies on behalf of the relevant Ministries). It is also worth mentioning, the development of an internationally Innovative Computer system, FIREMENTOR, for the early warning and management of forest fires.

He was co-ordinator of two European Projects in Energy Efficiency in Process Technology, and he is currently co-ordinating a LIFE project on e-Symbiosis. He has been a scientific partner in several others and in many Greek-funded ones.

He is currently involved in sustainable Development, and studies with his Ph.D students alternative forms of Energy (wind turbines, fuel cells and photovoltaics) .

His contribution to teaching is also considerable, and his views on modern educational tools have found support in the student population.

He has clear ideas on Education, Culture and the role of the University in the modern era, which he has published in the national press of Greece and presented in Scientific Conferences in Europe.

Among his other activities, a very important one was the development under his leadership of "The Lavrion Technological Park", as an incubator of innovation. This Park links today University Research and Market Development.

Finally, he created a Post-graduate Centre in Metsovo (North Western Greece) which works successfully until now, to honour the Metsovo Donors, who helped, in the 19th Century, create NTUA (Metsovion Polytechnion).

Prof. dr.dr.h.c. ΜΑΡΚΑΤΟΣ, ΝΙΚΟΛΑΟΣ-ΧΡΗΣΤΟΣ του ΓΡΗΓΟΡΙΟΥ.

Ομότιμος Καθηγητής ΕΜΠ

Καθηγητής Ανάλυσης και Σχεδιασμού Θερμοφυσικών Διεργασιών και Συστημάτων, Σχολή Χημικών Μηχανικών Ε.Μ.Π., Πρόεδρος Σχολής, Senior Visitor στο Department of Applied Mathematics & Theoretical Physics του Πανεπιστημίου Cambridge και Bye - Fellow του Selwyn College του Πανεπιστημίου Cambridge (2002-2003). Visiting Professor University of Surrey (2001-2011). Επίτιμος Διδάκτωρ Πανεπιστημίου Σόφιας. Fellow of the Royal Society of Arts (FRSA). Πρώην Πρύτανης ΕΜΠ.

Γεννήθηκε στην Αθήνα, την 1η Μαρτίου 1944, υιός του Γρηγορίου Ν. και της Αικατερίνης Ι. Μαρκάτου.

Αποφοίτησε από το 1ο Πρότυπο Γυμνάσιο Αθηνών το 1962. Το ίδιο έτος, εισήχθη με εξετάσεις στο τμήμα Χημικών Μηχανικών του Εθνικού Μετσόβιου Πολυτεχνείου (ΕΜΠ). Κατά τη διάρκεια των σπουδών του συμμετείχε ενεργά στο φοιτητικό κίνημα για την Ειρήνη και τη Δημοκρατία. Ολοκλήρωσε τις σπουδές του τον Ιούνιο του 1967, πρώτος σε σειρά επιτυχίας μεταξύ όλων των σπουδαστών του Πολυτεχνείου. Έλαβε πέντε υποτροφίες [κρατικές (ΙΚΥ) και Πετρεϊάκι] και τρία βραβεία (βραβείο Θωμάϊδη 1966, 1967 και βραβείο Χρυσοβέργη 1967). Υπηρέτησε τη στρατιωτική του θητεία από τον Οκτώβριο 1967 μέχρι τον Οκτώβριο του 1969 στο Σώμα Υλικού Πολέμου του Στρατού Ξηράς.

Από το Νοέμβριο του 1969 μέχρι το Σεπτέμβριο του 1970 εργάστηκε στη "BIOXPOM - Procter & Gamble Hellas" ως προϊστάμενος διεργασιών.

Το 1969 έλαβε Μεταπτυχιακό Δίπλωμα στη Διοίκηση των Επιχειρήσεων από το Οικονομικό Πανεπιστήμιο Αθηνών. Από το 1970 μέχρι το 1974 παρακολούθησε μεταπτυχιακές σπουδές στο Imperial College of Science and Technology του Λονδίνου, απ' όπου και έλαβε το δίπλωμα D.I.C. (Diploma Imperial College) και το Διδακτορικό Δίπλωμα Μηχανικής, το έτος 1974. Ο τίτλος της Διδακτορικής Διατριβής του ήταν "Transport Processes Through Wavy Interfaces". Το 1974 κατέλαβε θέση μετα-διδακτορικού ερευνητή στον τομέα Ρευστοδυναμικής και Θερμοδυναμικής του Τμήματος Μηχανολόγων Μηχανικών του Imperial College και εργάστηκε με τον διεθνούς φήμης καθηγητή D.B. Spalding, FRS, με τον οποίο εξακολουθεί να συνεργάζεται μέχρι σήμερα.

Παράλληλα, μέχρι το 1984, εργάστηκε στην εταιρία CHAM Ltd (Concentration Heat and Momentum, Limited) στον τομέα των υπολογιστικών μεθόδων για την επίλυση προβλημάτων μεταφοράς μάζας, θερμότητας και ορμής, ιδιαίτερα σε προβλήματα με έντονη τύρβη καθώς και σε χημικά αντιδρώντα συστήματα. Αρχικά εργάστηκε ως διευθυντής του Τμήματος Αεροδιαστημικής (1976) και κατόπιν (από το 1977 και μετά) ως διευθυντής της Διεύθυνσης Ανάπτυξης Εφαρμογών όλων των ερευνητικών Τμημάτων της εταιρείας, με γνωστικά αντικείμενα στις περιοχές της Ρευστοδυναμικής, Θερμοδυναμικής και Φαινομένων Μεταφοράς, στην Αεροδιαστημική, καθώς και τη Μηχανική Περιβάλλοντος και Διεργασιών. Κατά την περίοδο αυτή, εξελέγη "εξωτερικός ακαδημαϊκός σύμβουλος" των υποψηφίων διδασκόντων του Imperial College που είχαν λάβει υποτροφίες από το SRC (Scientific Research Council) της Αγγλίας.

Το Δεκέμβριο του 1982 εξελέγη Αν. Καθηγητής στη γνωστική περιοχή της Μαθηματικής Μοντελοποίησης και Ανάλυσης Διεργασιών στο Τμήμα Μαθηματικών και Επιστήμης των Υπολογιστών [School of Mathematics and Scientific Computing] του Πανεπιστημίου του Greenwich, Λονδίνο. Το Μάιο του 1983 δημιούργησε το Κέντρο Μαθηματικής Μοντελοποίησης και Ανάλυσης Διεργασιών στο ίδιο Τμήμα και διορίστηκε Διευθυντής του. Το 1984 έγινε Αναπληρωτής Καθηγητής στο ίδιο Πανεπιστήμιο. Από τον Απρίλιο του 1983 εργάστηκε παράλληλα ως Επισκέπτης Καθηγητής στη μονάδα Υπολογιστικής Ρευστοδυναμικής του Imperial College.

Από το 1974 εργάστηκε ως τεχνικός σύμβουλος σε πολλά Ερευνητικά Κέντρα, Κρατικά Ιδρύματα, Υπουργεία και Βιομηχανίες στο Ηνωμένο Βασίλειο, τις ΗΠΑ, τη Γερμανία, τη Γαλλία, την Ιαπωνία και αλλού. Ενδεικτικά αναφέρονται τα ακόλουθα:

- Combustion Engineering (U.S.A.)
- KWU-Siemens (W. Germany)
- NASA-Langley Research Centre (U.S.A.)

- NASA-Lewis Research Centre (USA)
- Admiralty Experimental Works (United Kingdom)
- National Maritime Institute (United Kingdom)
- Ishikawajima-Harima Heavy Industries (Japan)
- Mitsubishi (Japan)
- Westinghouse Co. (USA)
- Boeing (USA)
- British Leyland (United Kingdom)
- SNPE (France)
- British Aluminium (United Kingdom)
- Imperial Chemical Industries, ICI (United Kingdom), κ.τ.λ.,

Τον Ιούνιο του 1980 έλαβε από το Συμβούλιο Εφευρέσεων της NASA πιστοποιητικό αναγνώρισης και βραβείο, που του απενεμήθη με το σκεπτικό ότι η εργασία του αποτελεί : "Δημιουργική ανάπτυξη πρωτοποριακής τεχνολογίας, που θεωρείται σοβαρή συνεισφορά με μελλοντικές συνέπειες στην Αεροδιαστημική και σε άλλα πεδία της επιστήμης", ("Creative development of innovative technology which is considered as a serious contribution with future consequences in aerospace and other fields of science").

Το 1985 εξελέγη Καθηγητής του Τμήματος Χημικών Μηχανικών του Εθνικού Μετσόβιου Πολυτεχνείου και τα έτη 1990 και 1992 εξελέγη δύο φορές, Πρόεδρος του ίδιου Τμήματος, θέση που διατήρησε μέχρι και το 1994. Εξελέγη Πρύτανης του Εθνικού Μετσόβιου Πολυτεχνείου δύο φορές, τα έτη 1991 και 1994. Επανεξελέγη Πρόεδρος της Σχολής Χημικών Μηχανικών το 2006 και το 2008.

Από το 2002 Senior Visitor στο Department of Applied Mathematics & Theoretical Physics του Πανεπιστημίου Cambridge και Bye - Fellow του Selwyn College του Πανεπιστημίου Cambridge και για δέκα χρόνια Επισκέπτης Καθηγητής στο Πανεπιστήμιο του Surrey UK.

Τα ερευνητικά του ενδιαφέροντα εντάσσονται στις γνωστικές περιοχές της Μαθηματικής Μοντελοποίησης Φαινομένων Μεταφοράς, της Ρευστοδυναμικής και των Φυσικών Διεργασιών, της Μεταφοράς Θερμότητας και Μάζας, της Καύσης, των Διεργασιών Περιβαλλοντικής Μηχανικής, καθώς και της επίλυσης των διαφορικών εξισώσεων που περιγράφουν τα παραπάνω φαινόμενα με υπολογιστικές μεθόδους. Επίσης, στις γνωστικές περιοχές της ανάπτυξης πολύπλοκων αλγορίθμων για τη μελέτη περιβαλλοντικών και βιομηχανικών διεργασιών με ιδιαίτερη έμφαση στη γενικότητα και την ανάπτυξη φιλικών-προς-το-χρήστη εφαρμογών λογισμικού, σε περιβάλλον γραφικών. Η ερευνητική του ομάδα περιλαμβάνει επιστήμονες με υψηλή ειδίκευση στην προσομοίωση με υπολογιστή, στη σχεδίαση μηχανολογικού εξοπλισμού και διεργασιών, καθώς και στις περιβαλλοντικές μετρήσεις, παρακολούθηση και έλεγχο. Διδάσκει και προπτυχιακά και μεταπτυχιακά μαθήματα.

Είναι μέλος των ακόλουθων επιστημονικών και επαγγελματικών φορέων:

- Τεχνικό Επιμελητήριο της Ελλάδας (TEE) (1967)
- University of London Convocation (1974)
- Engineering Council of Great Britain (Chartered Engineer, C.Eng. 1977)
- Institution of Chemical Engineers (Fellow, FICHe 1976)
- American Institute of Chemical Engineers (MAICHe 1977)
- American Institute of Aeronautics and Astronautics (MAIAA, 1979)
- British Council for Computer Simulation (UKSC, 1978)
- International Society for Computational Methods in Engineering (MISCME, 1979)
- Society for Computer Simulation (Simulation Councils, Inc. USA 1979)

Είναι κριτής επιστημονικών περιοδικών και βιβλίων, μέλος της συντακτικής επιτροπής πολλών διεθνών επιστημονικών εκδόσεων, καθώς και τοπικός εκδότης του διεθνούς περιοδικού "Applied Mathematical Modelling" (regional editor). Έχει δημοσιεύσει μεγάλο αριθμό (άνω των 200) πρωτότυπων ερευνητικών εργασιών σε διεθνή περιοδικά με κριτές και πρακτικά συνεδρίων και έχει διατελέσει επιστημονικός υπεύθυνος πολλών χρηματοδοτούμενων από εθνικούς και κοινοτικούς πόρους ερευνητικών προγραμμάτων, ενώ έχει επίσης διατελέσει επιστημονικός υπεύθυνος σε πολλές ερευνητικές εργασίες και μελέτες. Είναι ο συγγραφέας τριών διδακτικών βιβλίων στην Ελληνική γλώσσα και ο εκδότης άλλων δύο βιβλίων στην Αγγλική γλώσσα. Επίσης, έχει δημοσιεύσει πολλά άρθρα στον εθνικό τύπο και σε Ευρωπαϊκά fora με αντικείμενο την ανώτατη εκπαίδευση των Μηχανικών και τη Στρατηγική της Ανώτατης Παιδείας στην Ευρώπη. Τέλος, έχει διοργανώσει πολλά διεθνή συνέδρια και έχει συμμετάσχει σε τιμητικές, οργανωτικές και επιστημονικές επιτροπές πολλών άλλων, ενώ έχει προσκληθεί και διδάξει σε πολλά μέρη του κόσμου.

Διατέλεσε Δημοτικός Σύμβουλος στο Δήμο Αθηναίων από το 1994 έως το 1998.

Είναι Πρόεδρος της Έκκλησης της Ακρόπολης για την Ειρήνη, τον Πολιτισμό και το Περιβάλλον και του Κέντρου Κοινωνικών και Πολιτικών Ερευνών «Σταύρος Καλλέργης».

Τα βιογραφικά του στοιχεία έχουν συμπεριληφθεί σε πολλές βιογραφικές εκδόσεις, όπως το "WHO's WHO in Frontier Science and Technology", το "WHO's WHO in America", το "WHO's WHO in the world", το "WHO's WHO in Science and Engineering" και αλλού. Εξελέγη Διεθνής Προσωπικότητα ("International Man of the Year") κατά τα έτη 1994, 1995, και 1996. Είναι ισόβιο μέλος του International Biographical Association (IFBA), των Η.Π.Α. Είναι μέλος της Ακαδημίας Επιστημών της Νέας Υόρκης. Τέλος εξελέγη Fellow της Βασιλικής Εταιρείας Τεχνών, UK (FRSA), το 2006. Η θέση αυτή του μέλους της Βασιλικής Εταιρείας Τεχνών είναι άκρως τιμητική καθώς αντιστοιχεί σε θέση Ακαδημαϊκού της Μεγάλης Βρετανίας.

Ένα μικρό δείγμα των επιστημονικών επαγγελματικών επιδόσεων του δίνεται σε συντομία παρακάτω.

Ξεκίνησε την πρώτη ολοκληρωμένη μελέτη για την αναβάθμιση του Ελαιώνα και οδήγησε στην τροποποίηση του Νόμου 84/84.

Συνέβαλε στην ελάττωση του "Νέφους στην Αθήνα" (ΑΘΗΝΑ SOS '94, ΥΠΕΧΩΔΕ).

Με μελέτες του θεράπευσε πολλά περιβαλλοντικά προβλήματα που προκαλεί η βιομηχανία (π.χ. Οσμές από την Interchem Αυλίδας Ευβοίας, ρύπανση ατμόσφαιρας και θάλασσας από τη βιομηχανία ξυλείας Shelmann, Δήμος Ληλαντίων, αριστοποίηση εγκαταστάσεων διυλιστηρίου Petrola Ελευσίνας, καύση RDF από την τσιμεντοβιομηχανία Ηρακλής και πολλά άλλα).

Συμπαραστάθηκε στην Τοπική Αυτοδιοίκηση απανταχού της χώρας, στη διεκδίκησή της για καλύτερη ποιότητα ζωής και πράσινη ανάπτυξη (π.χ χωροθέτηση ΔΕΗ στη Λέσβο και ενίσχυση της προσφυγής στο ΣτΕ της Τοπικής αυτοδιοίκησης Μανταμάδου, ακύρωση κινέζικου διαμετακομιστικού κέντρου στο Τυμπάκι Κρήτης επί Υπουργίας Κεφαλογιάννη, κ.α.). Δημιούργησε Κέντρο Επιχειρησιακής Ετοιμότητας για μεγάλα Βιομηχανικά Ατυχήματα (με ηλεκτρονικούς υπολογιστές που λειτουργεί στη Νομαρχία Δυτικής Αττικής, στην Πυροσβεστική και στην Γ.Γ. Πολιτικής Προστασίας και εκπόνησε τις μελέτες των ΣΑΤΑΜΕ (Σχέδια για μεγάλα βιομηχανικά ατυχήματα).

Εκπόνησε μελέτες Seveso για τα υπουργεία Ανάπτυξης, ΠΕΧΩΔΕ και Απασχόλησης και οργάνωσε εκπαίδευση των Επιθεωρητών Ασφάλειας. Πέτυχε τη συναίνεση της Βιομηχανίας στην εκπόνηση Σχεδίων Ασφάλειας με καθορισμένους όρους.

Ανέπτυξε το επιχειρησιακό σχέδιο FIREMENTOR (παγκοσμίως πρωτότυπο) για τη διαχείριση πυρκαγιών δασών και το εφαρμόζει πιλοτικά στην Πεντέλη. Γι' αυτό το σχέδιο που χρηματοδοτήθηκε από τα προγράμματα ανταγωνιστικότητας ενδιαφέρθηκαν η Πολιτεία της Καλιφόρνια και η Αυστραλία.

Συμμετείχε, είτε ως συντονιστής είτε ως μέλος, σε πολλά ευρωπαϊκά προγράμματα με θέματα όπως περιβάλλον, εξοικονόμηση ενέργειας, ασφάλεια πτήσεων, βελτιστοποίηση αναπτυξιακών διαδικασιών, κ.α.

Ασχολείται με την πράσινη ανάπτυξη στη μορφή των εναλλακτικών μορφών ενέργειας, όπου δημιούργησε υπολογιστικό σύστημα για την αριστοποίηση της μικτής χρήσης ανεμογεννητριών, φωτοβολταϊκών και κελιών καυσίμων.

Τέλος μεγάλη είναι η επαγγελματική ενασχόλησή του με τα θέματα Παιδείας όπου έχει προωθήσει μέσω του τύπου και των άλλων ΜΜΕ σαφείς προτάσεις για όλες τις βαθμίδες

εκπαίδευσης, την αξιολόγηση, σύγχρονες μεθόδους διδασκαλίας, τις εισαγωγικές εξετάσεις, τη δια βίου εκπαίδευση κ.τ.λ.

Εξελέγη Δημοτικός Σύμβουλος Αθηναίων το 1994-98 (τρίτος κατά σειρά σταυρών).

Είναι γνωστή η κοινωνική, πολιτική και πολιτιστική δραστηριότητα του υποψηφίου.

Ανέλαβε το Πολυτεχνείο το 1991 σε περίοδο παρακμής ως Πρύτανης και το ανέδειξε όχι μόνο σε σοβαρό Εκπαιδευτικό-Ερευνητικό Τεχνολογικό Ίδρυμα αλλά και σε Κέντρο Πολιτισμού, διοργανώνοντας δεκάδες πολιτιστικές εκδηλώσεις με συμμετοχή του πνευματικού και πολιτικού κόσμου.

Από χρεωκοπημένο Ίδρυμα κατά 500 εκατ.δραχμές το ανέδειξε σε δεύτερο στην Ευρώπη στα ανταγωνιστικά προγράμματα Πανεπιστήμιο με εισροές 11 δις δραχμές.

Δημιούργησε τους θεσμούς της δια βίου εκπαίδευσης, των εργαστηρίων παροχής υπηρεσιών, θεμελίωσε τα μεταπτυχιακά προγράμματα, εισήγαγε ανθρωπιστικά μαθήματα κ.λ.π.

Πρωτοστάτησε στη δημιουργία του Τεχνολογικού-Πολιτιστικού Πάρκου Λαυρίου για την προώθηση της Πρωτότυπης Τεχνολογίας καθώς για τη διατήρηση της Βιομηχανικής Παράδοσης και συνέβαλε στην άμβλυνση της ανεργίας που μαστίζε στις αρχές της δεκαετίας του '90 το Λαύριο.

Προσπάθησε να δημιουργήσει το Πανεπιστήμιο του Μεγάλου Αλεξάνδρου στο Ελληνικό Σχολείο του Chatby στην Αλεξάνδρεια της Αιγύπτου και πραγματοποίησε πολιτιστικά δρώμενα εκεί μαζί με την εκεί Ελληνική Κοινότητα.

Συνέλαβε την ιδέα και υπήρξε επί σειρά ετών διοργανωτής της "Συνάντησης των Αθηνών" (The Athens Summit) και προσκάλεσε διεθνούς ακτινοβολίας προσωπικότητες όπως τον Γκορμπατσώφ, τον Σιμόν Πέρεζ, Υπουργούς Παιδείας των Ευρωπαϊκών χωρών, τον Πήτερ Ουσίνωφ, τον τότε Πρόεδρος της Κύπρου Βασιλείου, κ.α.

Τις συναντήσεις αυτές παρακολούθησε σύσσωμος ο πολιτικός και πνευματικός κόσμος της χώρας, ο Πρόεδρος της Δημοκρατίας, και πλήθος κόσμου.

Υπήρξε ο εκδότης του βιβλίου για τη Μακεδονία "On the Scientific Truth about Macedonia" στα Αγγλικά, το οποίο διανεμήθη μέσω του Υπουργείου Εξωτερικών σε όλα τα Πανεπιστήμια του κόσμου.

Υπήρξε ομιλητής, κατόπιν προσκλήσεων στον απόδημο Ελληνισμό της Νέας Υόρκης και της Αυστραλίας καθώς και σε πλείστα όσα επαρχιακά πολιτιστικά κέντρα στην Ελλάδα.

Είναι πρόεδρος του Ιδρύματος Κοινωνικών και Πολιτικών Μελετών "Σταύρος Καλλέργης" της "Εκκλησίας της Ακρόπολης" για την Ειρήνη, το Περιβάλλον και τον Πολιτισμό και υπήρξε πρόεδρος του Ιδρύματος ιστορικών μελετών "Ιωάννης Καποδίστριας" και μέλος του ΔΣ του Ωδείου Αθηνών.

Μέσω της εκπομπής του στο κανάλι SEVEN (που διήρκεσε πάνω από τρία χρόνια) "Φάκελος Παιδεία" προώθησε στο ευρύ κοινό την ιδεολογία της Παιδείας και του Πολιτισμού. Από την εκπομπή αυτή πέρασαν οι τότε Υπουργοί, Υφυπουργοί, Γραμματείς κλπ Παιδείας και δημιουργήθηκε πολύ γόνιμος κοινωνικός προβληματισμός.

Τέλος μέσω της εκπομπής του στην ΕΤ3 "Ανθρώπων Έργα" προωθήθηκαν στην κοινωνία τα Τεχνολογικά Ερευνητικά επιτεύγματα της σύγχρονης εποχής μας.

Τον Ιανουάριο του 2012 εξελέγη ΠΑΜΨΗΦΕΙ από την Σύγκλητο του ΕΜΠ Ομότιμος Καθηγητής με πολύ κολακευτικά σχόλια.

MARKATOS, NICOLAS – CHRIS.

Chemical Engineering Educator, Researcher, Administrator
University Rector – National Technical University of Athens
Fellow of the Royal Society of Arts (FRSA)

Born in Athens, Greece, 1st March 1944.

Home : 8 Kilkis & Scra St
 152 36 Athens,
 Greece.

Office : National Technical University of Greece
 Zografou Campus
 157 80 Athens
 Greece.

E-mail address: n.markatos@ntua.gr.

Qualifications

Chartered Engineer (C.Eng) Fellow of the Institution of Chemical Engineering (FIChE).

1967 - Diploma Chemical Engineering at the National Technical University of Athens, Greece.

1969 - M.A. in Business Administration at the Athens School of Economics, Greece.

1973 - Diploma Imperial College, University of London, UK.

1974 - PhD in Engineering, Imperial College, University of London, UK.

Employment History

1969-1970 - Process Manager in Procter & Gamble Hellas Industry in Athens, Greece

1973-1975 - Research Fellow at Imperial College London, UK.

1975-1978 - Group Leader CHAM Ltd, London, UK.

1978-1982 - Technical Manager CHAM Ltd, London, UK.

1982-1985 - Reader at University of Greenwich, London, UK.

1982-1985 - Director of Section of Mathematical Modeling and Process Analysis, University of Greenwich, London, UK.

1985-to date - Professor of National Technical University of Athens, Greece.

1986 - Director Computational Fluid Dynamics Unit.

1990-1994 & 2006-2010 - Head of Chemical Engineering Department.

1991-1997 - Rector.

Temporary Assignments

2002-2003 - Senior Visitor, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, UK.

2002-2003 - Fellow, Selwyn College, University of Cambridge, UK.

2002-2011 - Visiting Professor University of Surrey, UK.

Consulting & other roles & affiliations

- Consultant to NASA Langley Research Center, National Maritime Institute, Combustion Engineering Boeing, British Leyland, & others.
- Visiting Lecturer Computational Fluid Dynamics Unit Imperial College, University of London, 1983-86.
- Referee International Journal Heat and Mass Transfer, Transactions of AIChE, Chem. Engineering Process, others.
- Editor : Computational Fluid Mechanics, 1987, Internal Combustion Engines, 1990. Co-editor journal Applied Math. Modeling, 1985 -.
- Author 4 books, over 220 scientific papers in field. Contributor of many articles to scientific publications.
- Recipient Certificate of Recognition Inventions Council NASA, 1980, others.
- Fellow Institute of Chemical Engineers, U.K.
- Member AIAA, AICE, N.Y. Academy of Sciences, Technical Chambers Greece.
- University of London Convocation, Engr. Council Gt. Britain (Chartered Engr)
- Member of International Society of Computational Methods in Engineering
- Member of Society for Computer Simulation.

Implemented major projects in the Energy and Environmental Engineering fields.

Dr Markatos has participated with his team in over 12 European Projects. He was coordinator of a JOULE Project on Energy Efficiency in the Process Industry, and ARTEMIS (Application Research and Testing for Emergency Management Intelligent Systems).

Awarded a Doctorate Degree Honoris Causa from the Institute of Chemical Technology and Metallurgy Sofia, Bulgaria, 1996.

He is currently coordinating a LIFE project on e-Symbiosis.



Europass Curriculum Vitae

Personal information

First name(s) / Surname(s)	Nicolas-Christos Markatos		
Address	8,Kilkis Str., 152 36 Nea Pendeli (Greece)		
Telephone(s)	+30 210 7723126	Mobile	+30 6944332795
Fax(es)	+30 210 7723228		
E-mail(s)	n.markatos @ ntua.gr		
Nationality	Greek (holder also of a British Passport).		
Date of birth	01/03/1944		
Gender	Male		

Desired employment / Occupational field

Work experience

Dates	15/10/1986 - 09/05/2011
Occupation or position held	Professor, Head of Department, Rector
Main activities and responsibilities	Research, teaching and Administration. Particularly active in organising and managing University Research which was developed during my terms as University Rector
Name and address of employer	National Technical University of Athens (NTUA) 9,Heroon Polytechniou Str., 157 80 Athens (Greece)
Type of business or sector	Research and Teaching
Dates	01/01/1980 - 15/10/1986
Occupation or position held	Reader and Director of Centre for Numerical Modelling and Process Analysis.
Main activities and responsibilities	Research and Teaching .I also developed a Research Centre for Numerical Modelling and Process Analysis at the University of Greenwich, London, UK.
Name and address of employer	University of Greenwich Woolwich Arsenal, SE 23 London (UK)
Type of business or sector	University
Dates	30/11/1973 - 01/01/1980
Occupation or position held	Applications Manager
Main activities and responsibilities	Managing Projects, mostly Research ones at the, then, innovative field of Computational Fluid Dynamics (CFD).
Name and address of employer	CHAM Ltd. 40,High Street, Wimbledon Village, SW19 5AU London (UK)
Type of business or sector	Consulting, Software Development, Research in CFD
Dates	01/10/1969 - 05/10/1970
Occupation or position held	Process Engineer

Main activities and responsibilities Safety and Cost Engineer .Optimising performance , and lowering costs.
 Name and address of employer Procter and Gamble ,Hellas (VIOCHROM)
 Agia Varvara, Athens (Greece)
 Type of business or sector Industry

Education and training

Dates	01/10/1962 - 01/07/1967
Title of qualification awarded	Diploma in Chemical Engineering
Principal subjects / occupational skills covered	Chemical and Process Engineering
Name and type of organisation providing education and training	National Technical University of Athens (University) Patission Str., Athens (Greece)
Level in national or international classification	Master of Engineering
Dates	01/09/1967 - 01/07/1969
Title of qualification awarded	Master in Business Administration
Principal subjects / occupational skills covered	Business Administration
Name and type of organisation providing education and training	Athens School of Economics (ASSOE) (University) Patission Str., 142 32 Athens (Greece)
Level in national or international classification	MA
Dates	07/10/1970 - 01/03/1974
Title of qualification awarded	Diploma Imperial College
Principal subjects / occupational skills covered	Chemical Engineering and Chemical Technology
Name and type of organisation providing education and training	Imperial College (University) 7,Prince Consort Road, SW7 London (UK)
Level in national or international classification	Diploma
Dates	07/10/1970 - 01/03/1974
Title of qualification awarded	PhD
Principal subjects / occupational skills covered	Engineering
Name and type of organisation providing education and training	University of London, Imperial College (University) 7,Prince Consort Road, SW7 London (UK)
Level in national or international classification	Doctorate

Personal skills and competences

Mother tongue(s) **Greek**

Other language(s)

Self-assessment

Understanding	Speaking	Writing
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European level (*)

English

French

Listening		Reading		Spoken interaction		Spoken production			
C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user
A1	Basic User	A1	Basic User	A1	Basic User	A1	Basic User	A1	Basic User

(*) Common European Framework of Reference (CEF) level

Social skills and competences

Chairman of Institutes of Culture and Political Debate , e.g. The Kallergis Institute for Historical and Political Studies, The "Acropolis Appeal" for Civilisation ,Humanity and Environmental Protection, etc. Six years as Rector I organised many events, such as "The Athens Summit" that attracted international interest and had as speakers, among others, Mikhail Gorbachev , Simon Perez, Peter Ustinov, Neal Kinnock, and many more.

Organisational skills and competences

Six Years as Rector of NTUA and eight years as Head of School of Chemical Engineering made me very competent in organising matters such as research and coordination of projects and personnel.
When I was elected as Rector, the University had a debt of 500 million drachmas. Six years later it had a surplus of 11 billion drachmas, as a result of organising research and managing the University assets. The National Technical University of Athens became the second in rank European University in obtaining competitive European Projects. The return of its other assets rose from below 1% to above 8%, a level at which it still is.
Among my other activities, an important one was the development under my leadership of "The Lavrion Technological Park", as an incubator of innovation. This Park links today University Research and Market Development.
Finally, an effort was made to create the University of Alexander the Great in Alexandria, Egypt, at the premises of the old Hellenic Schools .Although the project started successfully it was never accomplished because of problems the Ministry of Foreign Affairs had, then, with Egypt. It may be well worth retrying now.

Technical skills and competences

Awarded a NASA Certificate of Recognition for the development of innovative technology, of benefit to Humanity. Other awards for technical skills.200 Publications of original technical work in Process Design , Environmental Protection, Turbulence, Multi-phase Flows, Computational Flow Dynamics.
Co-ordinator, Scientific Officer, or prime researcher in many European Projects . Consultant to many Industries and Public Organisations in Greece, UK, USA, Sweden, China, Japan, etc.
Over 1200 citations and h-factor of 24.
My CV is included in many WHO's WHO in USA, UK, Greece.
Awarded an honorary Doctorate from the University of Sofia, Bulgaria.

Computer skills and competences

Excellent. Main activity Computational Fluid Mechanics.

Other skills and competences

Writing text for education and research and delivering rather interesting speeches.!

Driving licence(s)

B

Additional information

220 papers,4 Books .Associate Editor of International Scientific Journal (Applied Mathematical Modelling).
Visiting Selwyn College , Univ. of Cambridge, UK, and visiting Fellow of same(2002-2003).
Visiting Professor University of Surrey(2001-todate).
Doctor Honoris Causa, University of Sofia,Bulgaria.
Fellow of The Royal Academy of Arts , UK .

"ON THE REDEFINITION OF THE UNIVERSITY ROLE IN THE NEW ERA"

Prof. dr. Nicolas C. Markatos, DIC, PhD, CEng, FICHe, FRSA

Head of School

School of Chemical Engineering

Former Rector

National Technical University of Athens

Abstract

This paper reflects on the role of the University in Society and its purpose is to contribute to the development of social awareness of University missions and needs. It is not a "Scientific" paper in the literary sense of the word and it does not present results and methodologies. A discussion is given of topics such as university-society relation, educational quality, use of new technologies and the importance of media and the integrative role of the University. It is suggested that, although Universities must change internally to meet the new challenges, they should still maintain their institutional autonomy and academic freedom, continue to produce the social forces of debate and innovation and keep out of them all those interests whose legitimacy derives simply from their potential to provide the University with additional funding.

1. The role and influence of the "stakeholders"

Lately, much discussion is going on about the role of the Universities in the rapidly changing, "globalized", "knowledge-based" society. In many cases, the terminology used could be considered irrelevant if measured in the so-called "old-fashioned" way. First of all, to a very great extent, society "changes" rapidly because of the rapid technological change that flows from the Universities themselves.

Terms like "client", "customer" and "services" used to be out of the cultural context of the University, and had been considered as terminology related to business. Things seem to have changed (have they really?) as virtually everything in life today tends to be considered as "business". As we all know, business is about profit for those who take the risks. How can these terms be re-defined to cover the relation

between University and Society? Who are the "clients" and what are the anticipated "profits"? What will be the future of those who do not fulfill the clients' demands?

Let us point out what we consider to be the most important role of the University today as ever : the evolution of culture, the identification of real social needs and the partial, at least, fulfillment of those needs. We insist on needs, as opposed to desires, since the latter are dictated to Society by the market. Giving up this role could easily lead us to a market-centered analysis of education, culture and the role of Institutions in fulfilling Society's real needs. However, this would imply the recognition of the infallible, almighty Market as defined in the current financial climate, as the driving force of History itself. Are we mature enough to accept such a responsibility, or is the pursuit of "wealth for wealth" and "development for development" that blinds our view of History?

Those who stand for such a new order of things, present the following "simple" argument: Universities have to satisfy their students needs. If all that students demand is knowledge required to find a job, then that is all that Universities should provide. "Successful" Universities (are supposed to) have "satisfied clients", that is, graduates who have a "good" job (or a job at all!). Culture and development of Historic consciousness are of second priority. I might say that this is a naive line of argument, but I will not. In fact this is a very sophisticated argument that is supported by the current state of the job market. If we took into consideration the undeniable fact that the market is driven rather by the pursuit of wealth than by the desire for society's development, we would have implicitly and sub-consciously accepted that it is the logic of profit that determines the role of Universities, which is of course absurd. Furthermore, is it not the Market itself ever requiring innovations to its structure and operation? Who can implement those innovations, if not University graduates who are able, however, to question the market's functions ? This is precisely why Universities must keep their distance from the market place; that is, in order to produce graduates who are able to debate and innovate.

The University is a Social and Professional institution based on well-accepted concepts such as institutional autonomy and freedom of teaching and research. It cannot be governed by non-academic managers and external interests without compromising its socially attributed self-determination.

2. Institutional autonomy and academic freedom

During the last ten years or so, the vast majority of public Universities has suffered the harsh reality of two contradictory trends : an increase in the services expected of Universities and a drop, in real terms, in the financial resources at their disposal.

The increase in financial pressure upon Universities is caused by both external and internal causes. Externally, we are told that Universities cannot escape the consequences of globalization in the world today and the heightened environment of competition that this creates. For Universities, financial resources are harder to obtain because competition from other activities is stiffer and costs are controlled by both private and public bodies more rigorously. At the same time we are told by every Government in the World that Education is today the State's first priority ! Internally, Universities face pressure on their unit costs, sometimes because of their mistakes, e.g. their resource management tends to be very rigid and inefficient. Universities must, therefore, question themselves on their activities. There is no doubt, that they must adapt better to society's expectations, share tasks among themselves, enhance their administrative efficiency and improve transparency in terms of teaching and research activities. This does not mean, however, that they have to participate or even contribute to today's head-on, mega-competition that leads to winner-take-all situations, because then they would compromise their role. There is, simply, a clear need to re-structure and also to find additional source of funding. What they certainly should not do is to compromise academic freedom and autonomy for the sake of financial profit, for the sake of the administrators' definition of "efficiency". The only profit a University must recognize is the Educational profit, that is a sum of knowledge, culture, ethics and social issues. The problem of University funding is beyond the field of commercial economics, and University policy cannot be based solely on the criterion of financial efficiency. Education (and fundamental research of course) is a "collective good" and as such it should be offered only by public institutions freely to everyone, irrespective of financial status. After all, the same is true for all other collective goods (e.g. Defense, Security e.t.c.). This does not create an inequity because the differences in financial status are reflected upon the different tax-rate scales. All that is, therefore, needed is some administrative restructuring in order to reinforce decision-making procedures and improve flexibility.

The Universities must defend the cause of the, extremely important, social role they play in the transmission and acquisition of new knowledge and the critical analysis

of Society's needs. They must demand an increased proportion of GNP to be spent on education, showing simultaneously that they are changing in their structures, and not in their principles, so as to fulfill their mission in a better way. They must still try to find additional funding, either as no-strings-attached donations, or primarily by making material, laboratory and human resources available, within the framework of applied research and life-long learning. Training, applied research and life-long education are private goods and as such they may be offered either by public or private Institutions and may involve fees.

We therefore reach the following question: how can Universities retain their autonomy and academic freedom on the one side and still be able to attract the funding required to survive, on the other. This leads us, I suppose, to the definition of freedom: can there be freedom without the means to exercise it? In a market-centered context, the answer is "no"; the freedom of the individual is limited not only by the freedom of others but also by their financial power. It seems reasonable that those who pay can have specific demands, so that good use of their investment is being made.

Even the above argument, that may describe the general order of things in the market area, does not hold true for Universities. The funding of Universities is not equivalent to financial investments. In a quite generic definition of the term "investment", such funding can be viewed as an investment of Society to those structures that will turn the wheel of Historical evolution. This should be the main demand from Universities. The fulfillment of the market needs is only one of the many facets of their role. Another facet is the contribution to the definition of Society's development targets. This can be easily forgotten under the pressure of "satisfying the market's needs", which is by no means the most important part of the Universities' role.

In this context, academic freedom and self-determination of Universities cannot be compromised for any management-oriented and market-centered model of operation. The main "investor" in the "University business" is Society itself; not the market, not any profit-seeking agent. It is therefore only Society who is entitled to "demand" anything from Universities and who should expect "profits" from their activity, not in terms of direct material wealth, but in terms of evolution. University leaders must and can define coherent institutional identities and University targets,

by a decision-making process based on the consensus of constituent departments, staff and students.

3. New technologies and the importance of the media

Another topic that has stimulated a number of vivid discussions is that of the use of new technologies and media in education. The rapid development of new technologies has implications for the provision of higher education. New learning environments have been proposed and communication of knowledge has become possible through many new media, especially new interactive digital networks and services. It is proposed that the instructional process can be partly or even fully automated. There are also several cases where discussion for new pedagogical frameworks is made. It is also often supported that the delivery of knowledge can be made not only by traditional institutions, but also by media organizations. Before proceeding further, it is useful to make a few definitions.

Culture is everything persons receive from their social environment, in terms of social behaviour, ethics, customs, and values. It is not a collection of knowledge items, but the conception of the historical evolution by the individual. This only partially corresponds, but is not limited, to an amount of knowledge. *Training* is a process for delivering knowledge. Strictly speaking, training has little to do with the formation of person's character and social-behaviour code, but only with their ability to do a more or less specific job. *Education* is a social service that covers both culture and training. It is usually offered by community as an organized social process for delivering culture, ethics and values, as well as vocational training. Education aims at reproducing the social structures and develop a consciousness that will lead to further evolution of Society.

Therefore, the point to be made here is that, perhaps, the new media can be used for training, but not for the delivery of culture that is and has to retain its social character. We should not abandon the concept that the educational systems' main intent should be the production of active and useful citizens. It is a fact, of course, that current educational paradigms are subject to great change, using new technologies and media. However, what will be the social implications of replacing classrooms with networks and other media tools? We must strongly support the argument that technology and new media must supplement, not substitute,

traditional learning processes. The new tools and media should not redefine the notion of pedagogy which is, and must remain, in the core of every educational system, and involves necessarily interaction between students and teachers. This interaction is necessary to bring people together, to counteract the isolation of learners, to help the student to acquire the skills of managing the wealth of information available and to develop intellectually.

Technology must be regarded as a tool to achieve goals, not as an end in itself, and should be judged against University aims; especially in the undergraduate classroom, where academic tuition is not only a procedure of delivering "bare" knowledge content, but also an opportunity for discussion and development of critical thought and of critical assessment of knowledge.

No matter what help can the new media and telecommunications networks provide, it is still not clear whether the inspiration and living paradigm existing "in the air" in any live tuition, can be delivered through a multimedia high-speed network.

In this context, technology is expected to support, but not substitute classroom academic tuition, and should reduce, not increase, the gap between students and teachers. That is why private enterprises designing educational delivery systems, computer firms, publishers, TV and the like will never become competitors of the University. The University must use innovative approaches to teaching, based on the use of new technologies (computer-aided learning, self-instruction courseware, virtual laboratories, teleteaching and videoconferencing) to help improve the quality of both teaching and learning, without of course compromising the live classroom and seminars debates and the student Café discussions. On the other hand, Universities should certainly use distance learning techniques for continuing and adult education, after answering convincingly the following questions:

- How should the knowledge content be organized, structured and presented in order to be used effectively in distance learning environments?
- How should distance learning co-exist with traditional methods of teaching?
- What subject areas are best offered for delivering through distance learning and at what level of specialization?

- How will the certification of distance learning courses be made?
- What administrative structures are required to support distance learning activities?

4. International relations and globalization

"Globalization" in the post-modern world does not mean more than the reign of market forces, and its consequent increase in competition. The University should, however, maintain its socially attributed distance from both, market and competition. Furthermore, Universities, by their very name, have always had links and contacts that reach well beyond their nation; and knowledge is universal. Therefore, globalization, in admittedly another context, is already well known to the University.

The meaning of "knowledge-based" society disintegrated recently in only the notion that continuous vocational training is necessary in a world where "production requirements keep changing with the application of new knowledge". We can be rather skeptical about this notion as only a small percentage, about 12%, of the knowledge produced annually finds its way to implementation in production.

Why, I wonder, should Universities accept the above misconceptions, invented and promoted by administrators, and not react in the direction of restoring the proper meaning of matters such as the above.

Many documents of the European Union's (EU) SOCRATES programme refer to the development of an awareness of a common European origin among the citizens of the EU. This awareness will contribute to the creation of a community where free movement of persons, capital and goods will be possible, despite different regional identities. It is clear to us, that according to the EU, the lack of that awareness has been at least partially responsible for the unsatisfactory fulfillment of the "free movement" idea. By means of the SOCRATES programme, Universities are called upon to contribute to the development of this awareness of a common European origin among citizens, and thereby to undertake a very significant historical role in the evolution of the EU.

The rapid progress of science leads to the introduction of new production processes and the forms of labour relations change radically. As we mentioned earlier, we are now speaking of a knowledge-based society and of a broad market that will determine the development of new service-products in accordance with the customer's requirements.

Again, this concentration of attention to market requirements, and the linking of investments with new products, while looking for common cultural fields on a foundation that the Universities have to prepare, is for us a matter of considerable concern. As it has been already apparent, the "European dimension" in education for us is not so much associated with market requirements as with the evolution of culture itself.

We believe that there can be no "European dimension" without a synthetic acceptance of diversity in the multi-cultural, multi-lingual Europe, without a pluralistic linguistic policy, without the development of a historic conscience among European citizens. For us, "awareness of a common origin" does not mean oblivion of history or leveling off of the civilisations that were developed in Europe: it means, first of all, knowledge and critical consideration of historic truth, a recognition of the contribution, of the role, of the historic offering and the diversity of each constituent of culture that future historians will call "the European civilisation of the third millennium".

Another descriptive term frequently used with respect to the future European society is the "society of learning". The terms "culture", "education", "learning", "vocational training", which refer to complementary activities in every modern society and are provided by various types of institutions, are often confused with terms denoting the ways in which they are performed, such as "distance learning", "life-long education", "multimedia education" etc., while the notion of education, the Greek word is "παιδεία", is artfully avoided and all institutions offering "post-secondary" education are placed on an even footing.

Problems of this nature are not new: however, they assume added relevance in view of the debate concerning the redistribution of roles among institutions of tertiary education. This redistribution is obviously associated with the distribution of labour and the specificity of development of the economies of EU - member states.

The Universities may link the strategy of educational development at all levels with the strategy of development of their countries and it is within this framework that they should consider the SOCRATES programme. We believe that the "European dimension" in education is not the goal but the means of achieving the national aims of an equal and dignified coexistence in the cultural and financial space that will be the Europe of tomorrow. In our opinion, it is significant that the SOCRATES programme lays emphasis for the first time on education rather than training, which means that the utilisation of EU resources is now being oriented towards education.

At a time when education budgets in all countries are shrinking, when the cost of education keeps rising, when technology advances and adjustment costs for the Universities are high, when teaching and learning methods evolve rapidly, and our civilisation is going through a deep and multiform crisis, co-operation among Universities is an obvious necessity. Co-operation will help to ensure economies of scale and will enable the co-operating Universities to take advantage of the skills of teaching-staff members of other Universities. Forming a global knowledge network among all Universities (or rather many collaborating networks of more or less similar institutions) seems a very good idea, provided that this development will be designed to work the other way round from commercial "globalization", e.g. to close the development gap, rather than making it even deeper.

5. The abstract notion of quality

Universities are suddenly inundated with recommendations as to how to improve Quality. Quality remains a rather abstract notion, as it means vastly different things to different people, and the issue behind it has only come to the fore recently, as governments reduce budgets, whilst expecting increased services for fewer resources. Seen in this context, the real issue here has very little to do with "quality" per se, but rather with who sets the criteria involved in its definition; and, therefore, who controls the academic life. Thinking for a second that, from its earliest days, the purpose of the University has been to define "quality", to pass it over to Society and to forward it in time, one can indeed be very suspicious for this latest rediscovery of "quality". In the academic context, different types of "quality" need to be examined: that of teaching material, that of the delivery method, that of the student's work and, most important of all, that of the learning process. These "quality" matters have already been traditionally examined by faculties, departments, institutes and

laboratories in the Universities and have been bread-and-butter of our academic work. The latter is a holistic process involving teaching, research and interaction with students and it is wrong to sub-divide the task into its simplest and often meaningless components.

These sub-divisions (job control sheets, etc.) are relevant to Industry and Business and to control the progress of great Technical Works but they are totally irrelevant to the University environment, as are also the league-tables of University classifications. The Universities are, of course, morally obliged to give account to students for the quality of teaching they receive, to Society and State for the overall services the latter get and for money spent. They can do so by themselves internally (most have been traditionally doing it) and produce self-evaluation reports, freely available for all to see, judge and comment. They could also consider establishing an ISO-type standard for verifying the quality of education. What they should not do is to allow non-academic consultants and "quality assurers" to infringe on academic freedom and autonomy. We should keep out of the University all those interests whose legitimacy does not derive simply from their potential to provide the University with additional funding.

6. The integrative role of the University

So, what is the role of the University in the near future? What is the content of the services Universities should provide to Society? Must Society be seen as a "client", in which case a "pragmatic" analysis leads us to the acceptance of the market-centered, client-server model? Is the "new order of things" defined by administrators, by the new technology tools and media and by the market orientation? Or is it really that old recipes are re-baptized with new names, that old ideas for social control now discover new tools and invent new definitions in order to appear more appealing and "innovative"? What is actually old, is not the conception of University as a *studium generale*. It is instead the effort to determine the content of University education not by the social needs, but by the financial interest that is old.

Culture is neither something an educational Institution can communicate "virtually", nor a necessary evil on the side of market-dominated education. The multi-faceted crisis of our era, in the consumer-centered world we have built, has its causes in the

lack of visions (political and others) for the future, in the lack of historic consciousness. It is common knowledge that the most important role in the resolution of this crisis is to be played by the content of culture and education: not by the market, not by the tools and the new media, which can only play a complementary role in education. University education should entail culture, training and social issues. Universities serve the community and provide more than knowledge. They identify social needs and ensure the upkeep of the human element of moral judgment, beyond technical performance and achievement. They produce the social forces of debate and innovation, so much needed by Society today. They also play a role as places of socialization, as well as a role in the social integration. Universities are characterised by the high degree of autonomy they grant their teachers and researchers and by the democratic character of decision-making processes, based on consensus (students being included in these processes). As a result, questions about the quality of teaching and research and whether University activities match the needs of Society or not, must be left to the Universities themselves. Universities must also be left free to retain their, socially attributed, distance from the market place, so that they are able to question it, rather than be controlled by it.

The academic neutrality and the critical spirit Universities impart or should impart place them among the very few social establishments that legitimately influence Society, by setting cultural, technical, ethical and moral standards. To do so, Universities need clearly defined targets and procedures, to alleviate the subjective nature of social evolution.

University missions and needs are, unfortunately, poorly known, among the public at large. Constant work to explain is thus necessary, and Universities must raise their voice more audibly in relevant public debates. It is our hope to have contributed to the development of such a social awareness.

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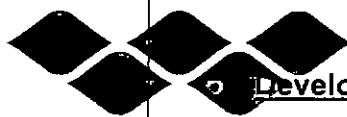
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