

PONTIFICAL ATHENAEUM REGINA APOSTOLORUM ROME (ITALY)

FACULTIES OF THEOLOGY, PHILOSOPHY Y BIOETHICS

SCIENCE, PHILOSOPHY AND THEOLOGY: A POSSIBLE DIALOGUE?

Professors:

Prof. Rafael Pascual, L.C., Ph.D.

Tel. 0039 06 66 52 71. Email: [rpa@legionaries.org](mailto:rpa@legionaries.org)

Prof. Amador Pedro Barrajón, L.C., S.T.D.

Tel. 0039 06 66 527 800. Email: [pbarrajon@legionaries.org](mailto:pbarrajon@legionaries.org)

Consultant on scientific matters:

Prof. Georg Hülsenbeck, L.C., Ph.D.

Tel. 0039 06 66 52 71. Email: [atenra52@cesroma.lc.com](mailto:atenra52@cesroma.lc.com)

#### A. THE INSTITUTION PRESENTING THE COURSE

Pontifical Athenaeum Regina Apostolorum

The Pontifical Athenaeum Regina Apostolorum is a young institution of superior studies in the Catholic Church recognized by the Holy See, from which it received its Pontifical status. In undertaking an in depth study on themes related to faith and culture in order to reflect on the great themes of the faith in the light of the serious problems facing contemporary society at the dawn of the third millennium we hope to establish fruitful dialogue among the men of our times.

The Pontifical Athenaeum Regina Apostolorum, accredited by the Congregation for Catholic Education to issue Bachelors, License and Doctors degrees, in three faculties, Theology, Philosophy and Bioethics, and diplomas from the Superior Institute of Religious Sciences, Teleconferencing Center, Masters Programs in Bioethics and Consultative Psychology, and the Center of Formation for Seminary Formators.

The Athenaeum was authorized and established in 1993 by the Congregation of the Legionaries of Christ. At present there are more than 50 professors and a student body of around 2000 students.

#### B. THE COURSE: “SCIENCE, PHILOSOPHY AND THEOLOGY”

##### 1) Course justification

The course responds to the need to establish a interdisciplinary relationship among the Athenaeum’s three current faculties with present concern for both professors and student to justify and promote dialogue between the more humanistic disciplines, such as

theology and philosophy, and the natural sciences, in order to avoid a rupture that could be disastrous for our culture.

With the recent establishment of our Bioethics faculty, possibly the first of its kind, such a dialogue has been seen as urgent and necessary. For this reason, the Athenaeum wants to offer a licentiate course in all three faculties as an effective means to meet this goal.

## 2) Course division

The course is divided into a general introduction and five main parts. The introduction deals with preliminary epistemological questions, which are extremely important in approaching our theme in accord with the threefold knowledge of reality, using John Paul II in his encyclical letter *Fides et Ratio* as a guide.

In the first part, we will present concrete models of dialogue between philosophy and theology. We will begin with the emblematic 'Galileo case' to study the relationships between scientist, philosophers and theologians in this concrete situation. The second model is the theory of evolution. We know that, from its beginning, this theory provoked a number of doctrinal disputes among scientists and theologians. The passing of time has helped to clarify the situation. Nevertheless, there are still large questions, on the part of scientific theory itself, which even though it has confirmed various scientific details, it still leaves many big questions completely unanswered, as well as on the part of theology, which though it admits the possibility of evolution it puts a number of conditions for a plausible theory to be accepted.

The second part deals with the theme of the origin of the universe and the subsequent dialogue among physics, philosophy and theology. In effect, the most recent cosmological theories become of greater interest every day to believers, especially those of the Judeo-Christian tradition, which affirm the creation of the universe by God. Here not only will we confront scientific theories, such as the Big Bang, but also the philosophical interpretations of these matters. Thus it will be necessary to expose, on one hand, what religious tradition says on the theme, especially from a Christian perspective, and on the other what philosophy and the new theories of astrophysics affirm.

Man is the central theme of the third part. Philosophy, theology and science all offer us different perspectives on man. But is this not just fragmentary knowledge? Is it possible to reconcile what theology tells us about the soul, corporeity, and eschatology with what other sciences say on the matter? For some, their respective positions are definitively irreconcilable. Nevertheless, we maintain that there is a fundamental unity within the diverse elements that compose the human person capable of creating an integral humanism, which embraces the whole reality of the human being in all its richness and diversity.

The fourth part centers on the ethical problems, which present themselves to science, philosophy and theology. Although the ethical problems relative to the three fields are manifold, we shall center on the ones that concern us more today, i.e., those related to the

theme of human life. As a result, there is a more incessant demand placed on the new science of bioethics, before the urgent need to answer with moral certitude the great dilemmas, which advances in the fields of medical and genetic technology impose.

We cannot conclude without mentioning the possibility of creating a new spirituality that encompasses science, philosophy and theology (making up the conclusion of the fifth part of the course), i.e., the creation, which the ancients called wisdom and Judeo-Christian tradition considers a divine gift. The study of this new spirituality and the characteristics of wisdom that surmount all fragmentation of knowledge will be the principle themes of the last part of the course.

3) Course duration: 48 class hours

4) Accreditation: 4 credits (two hours per week, two semesters).

5) Student capacity: 40 max.

6) Level: License Degree

6) Class schedule:

On Wednesdays, units I-II (from 8.30 to 10.30 a.m.): two units of 45 min. each for assigned teaching, and 30 min. for discussion and questions.

First part: from February 20 to May 29, 2002.

Second part: from October 16 2002 to January 15 2003

7) Teaching institution: Pontifical Athenaeum Regina Apostolorum

Via degli Aldobrandeschi, 00163

Roma, Italia

8) Course evaluation:

Participation: 30%

Final examination (for the semester): 70%

Participation is measured by class attendance and class participation, especially in the accomplishment of the weekly assignments that the professors will indicate.

9) Proposed group activities:

1. Visit to the Pontifical Academy of Sciences at the Vatican City, in order that the students can get to know its history, statutes, publications, and members, and so that they can see in it the Church's desire to institutionalize constructive dialogue with the scientific world.

2. Visit to the Vatican's Astronomical Observatory in Castelgandolfo, so as to become familiar with its scientific activity.

3. We expect a few special interventions from the area of science, faith and culture of the Pontifical Council on Culture, as well as a few conferences on current scientific topics, conferred by an eminent scientist.

## C. OUTLINE OF THE COURSE

### INTRODUCTION

Chapter 1: Problems involved with the relationship between science, philosophy y theology

1. Actual relevance of the theme
2. Different ways of conceiving the relationship between science and theology
3. The solution proposed in the encyclical Fides et ratio
4. The need for philosophical mediation

Duration: 4 units

### FIRST PART: SCIENCE, PHILOSOPHY AND THEOLOGY IN DIALOGUE

Chapter 2: The ‘Galileo case’. Introduction and historical context

1. Importance of the ‘Galileo case’; emblematic character
2. Historical context. From Copernicus to Galileo
3. The Galileo trial. The more significant aspects

Duration: 4 units

Chapter 3: Evaluation of the ‘Galileo case’

1. The Church’s revision of the case
2. Errors and attainments involved in the process
3. Lessons for the future: no more ‘Galileo cases’

Duration: 4 units

Chapter 4: The theory of evolution: Preambles

1. What does biological evolution mean?
2. Brief historical overview. Precursors; Lamarck and Darwin. Diffusion; successive stages
3. Actual situation
4. Limits and actual problems with evolutionism

Duration: 4 units

Chapter 5: Faith and the theory of evolution

1. Different positions: incompatibility, compatibility, integration
2. Problems that arise when facing the science – philosophy – theology relationship

3. The Magisterium's current position
4. Two particular questions: the beginning of life and the origin of the human soul

Duration: 4 units

## SECOND PART: PHYSICS, ORIGIN AND CREATION OF THE WORLD

Chapter 6: The question of the universe's origin. A brief historical overview

1. Ancient thought. Plato and the demiurge; Aristotle and the eternity of the world
2. The medieval Christian vision: creatio in tempore. Augustine, Bonaventure and St Thomas Aquinas
3. The modern era: the Copernican revolution. An infinite and eternal universe? Nicholas Cusano, Giordano Bruno, Isaac Newton. Olbers' Paradoxes. Kant and the antinomy of the world's eternity.
4. Contemporary scientific cosmology. A world in dynamic expansion. Einstein relativity. Cosmological models. Hubble; Lemaître and the Big Bang
5. Current cosmological models. The problem of the beginning

Duration: 4 units

Chapter 7: The Judeo-Christian doctrine of creation

1. Creation in the Bible (Gen. 1; Books of Wisdom; New Testament)
2. The theological reflection of the Christian tradition: Augustine, St Thomas Aquinas
3. The Magisterium's teaching. Nicean Symbol; Lateran Council IV; Vatican I; The teaching of John Paul II

Duration: 2 units

Chapter 8: The challenges of scientific cosmology before philosophy and theology

1. The question of beginning and the question of origin
2. Chance or finalism? The proposals of anthropic principle and intelligent design
3. The challenge of S. Hawking. Is there any room left for a creator?
4. The destiny of the universe

Duration: 2 units

## THIRD PART: SCIENCE AND ANTHROPOLOGY

Chapter 9: Man as a study topic

1. Man is studied by himself
2. Philosophical anthropology
3. Man and the natural sciences
4. Man and the psychological sciences
5. Theological anthropology

Duration: 3 units

Chapter 10: The relationship between the body and the soul, the mind and the brain

1. The philosophical-theological problem of the soul
2. The body-soul unity
3. The mind-brain relationship
4. Man, the boundary of two worlds

Duration: 3 units

Chapter 11: The man and immortality

1. The immortality of the soul in philosophy
2. The immortality of the soul in theology
3. Physics and immortality

Duration: 3 units

#### FOURTH PART: QUESTIONS ON BIOETHICS

Chapter 12: Science and ethics

1. What does ethics mean?
2. Types of ethics
3. The relationship between ethics and science
4. Examples of the ethical-scientific relationship

Duration: 3 units

Chapter 13: Bioethics

1. The beginnings, diffusion and definition of Bioethics
2. Bioethics, an interdisciplinary science
3. The Bioethical method
4. Life in its different forms
5. The moral principles of Bioethics
6. The great Bioethical fields
7. Bioethics committees

Duration: 3 units

Chapter 14: Bioethics and the human person

1. The notion of the human person
2. Person and individual
3. The human nature of the embryo
4. The personal identity and statute of the human embryo
5. God, Creator of life in general and particularly of human life

Duration: 3 units

#### Chapter 15: Bioethics and the human body

1. The biological perfection of the human body
2. The body and its values
3. Different understandings of the body
4. The Christian-‘Personalist’ understanding of the body
5. The human person, the soul and the body
6. Commercialization, the worship and sale of the body
7. The body, health and aesthetics.
8. Corporeity and Bioethical problems. Sacredness of human life.

Duration: 3 units

### FIFTH PART: TOWARDS A MORE SPIRITUAL SCIENCE

#### Chapter 16: Science and openness to life

1. Man seeking sense to his life
2. Science and meaning of life
3. Science and miracles
4. Sense of mystery
5. Transcending science: science linked to faith

Duration: 3 units

#### Chapter 17: Science and spirituality

1. The need for spirituality
2. Prayer and science
3. Mysticism and science
4. Science, philosophy and faith in dialogue
5. The spirituality of science
6. Science, wisdom and sanctity

Duration: 3 units

### D. SYLLABUS

#### INTRODUCTION

#### Chapter 1: Difficulties in the relationship between science, philosophy and theology

The relation between science, philosophy and theology has been seen from different points of view throughout the course of history. In antiquity it seemed that the problem was never raised, since it served as the unifying concept of knowledge. Nevertheless, with the successive divergence of various orders of knowledge, first off between theology and philosophy, and then between philosophy and the natural and human sciences, the problem concerning their relation between one another became pressing. Recently different models or figures of the ways of relation have been posited that have been

developing for some time. Among these are those models proposed by Lambert: concordism, discordism and articulation. Likewise we will study the proposal of the recent encyclical *Fides et Ratio*, analyzing the way of conceiving the relation between reason (science and philosophy) and faith (theology). We will insist, finally, on the mediating role that philosophy plays as the necessary bridge between science and theology.

#### Bibliography:

BARBOUR I.G., Tipos de relación entre ciencia y teología, in RUSSELL R.J. - STOEGER W.R. - COYNE GEORGE V., *Física, filosofía y teología. Una búsqueda en común*, EDAMEX - UPAEP, México D.F. - Puebla, 2002, pp. 29-61 (orig. inglése: *Ways of Relating Science and Theology*, in *Physics, Philosophy and Theology: a Common Quest for Understanding*, Vatican City, 1988, pp. 21-48).

COTTIER G., Mediazione filosofica nei rapporti tra scienza e fede, in IDEM., *Le vie della ragione. Temi di epistemologia teologica e filosofica*, San Paolo, Cinisello Balsamo, 2002, pp. 285-301 (orig. fr.: *Médiation philosophique dans les rapports entre la science et la foi*, in POUPARD P., *Science et foi*, Desclée International, Tournai 1982, pp. 103-121).

HESS P., 'God's Two Books': Revelation, Theology, and Natural Science in the Christian West, Conferencia en el Encuentro Internacional sobre «Ciencia y religión: hacia una nueva cultura de colaboración», Puebla, 29 de enero - 1 de febrero 2002 (en curso de publicación).

LAMBERT D., *Sciences et théologie, Les figures d'un dialogue*, Ed. Lessius, Bruxelles, 1999 (Cap. III, *Les trois modes d'interaction des sciences avec la théologie*, pp.73-129).

PASCUAL R., La filosofía como mediatrice tra la scienza e la fede, in «Alpha Omega», 3 (2000), pp. 353-361.

POLKINGHORNE J., *Ciencia y teología, Una introducción*, Sal Terrae, Santander, 2000 (1: El área de interacción: pp. 15-43).

RUIZ DE LA PEÑA J.L., *Teología de la creación*, Sal Terrae, Santander, 19964 (cap. 7: relaciones fe-ciencia: Consideraciones generales, pp. 201-217).

## FIRST PART: SCIENCE, PHILOSOPHY AND THEOLOGY IN DIALOGUE

### Chapter 2: The Galileo case. Introduction and historical context

The Galileo case is paradigmatic for the studying the relation between science, philosophy and theology, not only due to its historical-cultural repercussion, but also due to the concrete elements that came into play. It cannot be doubted that it has become a type of myth or dark legend of itself, favored by famous theatrical of Bertolt Brecht. That is why, for the purpose of objective analysis, it is fitting to know what really happened,



along with the concrete historical context within which it took place. From this analysis it is possible to ascertain the complexity of factors that enter into play, of the cultural, theological, and even human order.

#### Bibliography:

AA.VV., *The Louvain Lectures (Lectiones Lovanienses) of Bellarmine and the Autograph Copy of his 1616 Declaration to Galileo*, Specola Vaticana, CittB del Vaticano, 1984, pp. 3-47.

BALDINI M. (ed.), *Galileo Galilei. Le lettere copernicane*, Armando, Roma 1995, 142 p.

BATTISTINI A., *Introduzione a Galilei*, Laterza, Roma, 1989, 193 p.

BERETTA F., *Le procPs de Galilée et les archives du Saint-Office, Aspects judiciaires et théologiques d'une condamnation céLPbre*, in «*Rev. des Sciences Phil. et Théol.*» 83 (1999), pp. 441-490.

CARROLL W.E., *Galileo, Science and the Bible*, en «*Acta Philosophica*», 6 (1997), pp.5-37.

D'ADDIO M., *Il caso Galilei. Processo, scienza, verità*, Studium, Roma, 1993, 237 p.

FANTOLI A., *Galileo per il copernicanesimo e per la Chiesa*, Libreria Editrice Vaticana, CittB del Vaticano, 1993, 447 p. (ed. ingl.: *Galileo for Copernicanism and for the Church*, Vatican Observatory Publications, CittB del Vaticano, 1996, 567 p.).

FAVARO A., *Galileo e l'inquisizione. Documenti del processo galileiano esistenti nell'archivio del S. Uffizio*, Giunti Barbèra, Firenze, 1983, 165 p.

GIACCHI O., *Considerazioni giuridiche sui due processi contro Galileo*, in AA.VV., *Nel terzo centenario della morte di Galileo Galilei*, Vita e Pensiero, Milano, 1942, pp. 383-406.

LONCHAMP J.P., *Il caso Galileo, Paoline*, Milano, 1990, 123 p.

MESSORI V., *Leyendas negras de la Iglesia*, Planeta, Barcelona, 1996, (IV. Galileo y la Iglesia, pp.117-138).

PAGANO S.M. (ed.), *I documenti del processo di Galileo Galilei*, Archivio Vaticano, CittB del Vaticano, 1984, col. "Collectanea A.V.", 280 p.

PASTOR L., *Historia de los Papas*, Gustavo Gili, Barcelona, 1944-48 (vol. 25, pp.226-239: Pablo V y Galileo; vol. 28, pp.287-304: Urbano VIII y Galileo); vers. ital: *Storia dei Papi, Storia dei Papi nel periodo della Restaurazione Cattolica e della Guerra dei Trent'anni*, vol.XII: Leone XI e Paolo V (1605-1621), pp. 209-220; vol. XIII: Gregorio

XV (1621-1623), Urbano VIII (1623-1644), pp. 625-640, Desclée & C. Editori Pontifici, Roma 1943.

ROSSI P. (ed.), Il pensiero di Galileo Galilei. Una antologia dagli scritti, Loescher, Torino, 1994, col. "Classici della Filosofia", 188 p.

SELVAGGI F., La responsabilità del Bellarmino nella condanna di Galileo, in «Giornale di metafisica» 23 (1968), pp. 185-245.

VIGANÒ M., I documenti del processo di Galilei, in «La Civiltà Cattolica» 135 (1984/4), pp. 357-365.

### Chapter 3: Evaluation of the Galileo case

The fact of re-evaluating this study of the Galileo case, with the intention of recognizing those errors that were there and making prejudices in the relation between faith and reason disappear, is full of meaning. Its aim was not just a purification of memory, or another mea culpa on the part of the Church, but above all it was a way to learn the teachings that came afterwards, so as to avoid cases of a similar sort in the future.

#### Bibliography:

AA.VV., Galileo Galilei, 350 ans d'histoire 1633-1983, Desclée International, Tournai, 1983, pp.283 (trad. ital.: Galileo Galilei, 350 anni di storia (1633-1983). Studi e ricerche, Piemme, Casale Monferrato, 1984).

ARTIGAS M., Lo que deberíamos saber sobre Galileo, in «Scripta Theologica» 32 (2000), pp. 877-896.

BERTI, E., Implicazioni filosofiche della condanna di Galilei, en «Giornale di Metafisica», 5 (1983), pp.239-261.

BRANDMÜLLER W., Il caso Galileo, Conflitto fra scienza e Chiesa?, Paoline, Roma 1970.

BRANDMÜLLER W., Galilei e la Chiesa ossia il diritto ad errare, Libreria Editrice Vaticana, Città del Vaticano, 1992, 226 p. (trad. esp.: Galileo y la Iglesia, Ed. Rialp, Madrid, 1987, 200 p.).

COYNE G.V. - HELLER M. - ZYCINSKI J. (eds.), The Galileo Affair: a Meeting of Faith and Science. Proceedings of the Cracow Conference 24 to 27 May 1984, Specola Vaticana, Città del Vaticano, 1985, 179 p.

DALLAPORTA N., Il caso Galileo ed il rapporto scienza-fede, in Av.Vv., Nicolb Dallaporta: scienza, metascienza e metafisica, CEDAM, Padova, 1994, pp.125-134.

PONTIFICIA ACADEMIA SCIENTIARUM, Copernico, Galilei e la Chiesa, fine della controversia (1820). Gli atti del Sant'Uffizio, Olschki, Firenze, 1992, 495 p.

PONTIFICIA ACADEMIA SCIENTIARUM, Einstein - Galileo. Commemorazione di Albert Einstein, 1979, Libreria Editrice Vaticana, Città del Vaticano, 1980, 83 p.

POUPARD P., Apres Galilee. Science et foi: nouveau dialogue, Desclée de Brouwer, Paris, 1994, 265 p. (trad. ital.: POUPARD P. (a cura di), La nuova immagine del mondo. Il dialogo tra scienza e fede dopo Galileo, Piemme, Casale Monferrato, 1996, 163 p.).

RIAZA MORALES J.M., La Iglesia en la historia de la ciencia, B.A.C., Madrid 1999 (cap. XII: El caso Galileo, pp. 205-236).

VINATY T., Riabilitazione di Galileo? Osservazioni e riflessioni su un discorso di Giovanni Paolo II, in «Angelicum», 57 (1980), pp.213-256.

WESTFALL R.S., Essays on the Trial of Galileo, Vatican Observatory Publications, Vatican City, 1989, 103 p.

#### Chapter 4: The theory of evolution. Preamble

In order to respond to the questions that theory of evolution raises with regard to the relation between science, philosophy and theology, it is important to begin clarifying what it is all about. That is why we begin with an essential presentation of the theory of evolution: what it consists in, how it came about, its history, variants have been posited, the various interpretations it has received, the aims of its explanation, and finally the present day situation. The study will touch particularly on the epistemological status (hypothesis, theory, etc.), and those arguments that it advances, and the difficulties that it is facing in current affairs.

#### Bibliography:

AYALA F.J., La teoría de la evolución, De Darwin a los últimos avances de la genética, Temas de Hoy, Madrid, 1994, 237 pp.

AYALA F.J., Teleological Explanations in Evolutionary Biology, in ALLEN C. - BEKOFF M. - LAUDER G. (eds.), Nature's Purposes. Analyses of Function and Design in Biology, The MIT Press, Cambridge (Mass.) 1998, pp. 29-49.

AYALA F.J., The Evolution of Life: An Overview, in RUSSELL R. - STOEGER W. -

AYALA F., Evolutionary and Molecular Biology, Vatican Observatory - CTNS, Vatican City - Berkeley, Cal. 1998, pp. 21-57.

BARSANTI G. (ed.), Teorie dell'evoluzione nell'ottocento, Le Monnier, Firenze, 1989, 215 pp.

BEHE M., Darwin's Black Box. The Biochemical Challenge to Evolution, The Free Press, New York 1996.

GRASSÉ P.P., La evolución de lo viviente. Datos para una nueva teoría transformista, Blume, Madrid, 1977, pp.316.

JOHNSON P.E., Darwin on Trial, InterVarsity Press, Downers Grove, ILL., 19932 (trad. sp.: Proceso a Darwin, ed. Portavoz, Grand Rapids, 1995).

MARCOZZI V., Teorie evoluzionistiche attuali, in «Gregorianum» 62 (1981), pp. 51-73.

MONOD J., El azar y la necesidad. Ensayo sobre la filosofía natural de la biología moderna, Barral, Barcelona, 1972, 216 pp.

MORPURGO G., Capire l'evoluzione. Argomenti di genetica e biologia molecolare, Boringhieri, Torino, 1975, pp.273.

MORPURGO G., Le prove dell'evoluzione, en «Vita, genetica, evoluzione», UTET, Torino, 1979, pp.458-485.

NOGAR R., From the Fact of Evolution to the Philosophy of Evolutionism, in WEISHEIPL J.A., The Dignity of Science. Studies in the Philosophy of Science Presented to William Humbert Kane, The Thomist Press, Washington D.C. 1961, pp. 327-365.

PASCUAL R., L'evoluzionismo nell'attuale dibattito filosofico, in «Il Cannocchiale», gennaio-aprile 2000, pp.177-192.

SOMENZI V. (ed.), L'evoluzionismo. Una antologia dagli scritti di Lamarck, Darwin, Huxley, Haeckel con saggi storico-critici di Montalenti, Omodeo, Cassirer, Farrington, Medawar, Loescher, Torino, 1987, 297 pp.

#### Chapter 5: The theory of evolution and faith

The theory of evolution induces a series of problems on the philosophical level (causality and finalism) and also on the theological level (creation and the origin of man) that cannot be avoided. On the other hand, it is evident that certain versions of the theory of evolution are incompatible with faith. Nevertheless this study aims to view whether this incompatibility be constitutive, or if it would be possible conciliate a theory of evolution (that should not exclude divine causality) with a doctrine of creation, understood in a dynamic way, compatible at the same time with biblical inspiration.

Bibliography:

- ANDERSEN S. - PEACOCKE A. (EDS.), *Evolution and Creation. An European Perspective*, Aarhus Univ. Press, Aarhus, 1987.
- ARNOULD J., *Darwin, Teilhard de Chardin et Cie. L'Église et l'évolution*, Desclée de Brouwer, Paris, 1996, 239 pp.
- ARNOULD J., *L'Église et l'histoire de la nature*, Cerf, Paris, 2000 (Le défi créationniste et la réponse de Jean-Paul II, pp. 83-106).
- ARTIGAS M., *Desarrollos recientes en evolución y su repercusión para la fe y la teología*, in «Scripta Theologica» 32 (2000), pp. 243-267.
- DEMBSKI W.A., *Science and Design*, en «First Things», n° 86 (October), (1998), pp.21-27.
- FACCHINI F., *L'evoluzione umana: evidenze scientifiche, problemi, interpretazioni*, en «Studium», 94 (1998), pp.383-398.
- HAFFNER P., *Evolucionismo y antropología teológica*, en «Humanitas» 5 (2000), pp. 57-71.
- HAFFNER P., *The Impact of Evolutionary Theory on Theological Anthropology*, en «Anthropotes» 13 (1997), pp. 55-68.
- JAKI S.L., *Evoluzione senza scopo*, in «Lo scopo di tutto. Scienza, filosofia & teologia s'interrogano sulla finalitB», Ares, Milano, 1994, pp.37-63 (orig. ing.: *The Purpose of it all*, Scottish Academic Press, Edinburgh, 1990, pp.32-58).
- KRAMER W., *Evolution & Creation». A Catholic Understanding*, Our Sunday Visitor, Indiana, 1986, pp.168.
- MALDAMÉ J.M., *Comment Dieu agit-il dans l'évolution?*, in «Nouvelle Revue Théologique» 123 (2001), pp. 558-573.
- MALDAMÉ J.M., *En travail d'enfantement. Création et évolution*, Aubin éd., Saint-Étienne, 2000, 159 pp.
- MALDAMÉ J.-M., *Évolution et création*, in «Revue Thomiste», 96 (1996), pp.575-616.
- MALDAMÉ J.-M., *L'origine de la vie en philosophie et en théologie*, en «Études», t.386, n.5 (3865), 1997, pp.641-650
- MARCOZZI V., *Alla ricerca dei nostri predecessori*, Ed. Paoline, Cinisello Balsamo 1992, 133 pp.
- MCMULLIN E., *Evolutionary Contingency and the Cosmic Purpose*, in GREGERSEN

N.H. - GÖRMAN U. - WASSERMANN C., *The Interplay between Scientific and Theological Worldviews (I)*, Labor et Fides, Geneva 1999, pp. 91-112.

MONTENAT C. - PLATEAUX L. - ROUX P., *Per leggere la creazione nell'evoluzione*, Borla, Roma 1987 (trad. spa.: *Para leer la creación en la evolución*, Verbo Divino, Estella, 1992).

NICOLAS M.J., *Evoluzione e cristianesimo. Da Teilhard de Chardin a san Tommaso d'Aquino*, Massimo, Milano, 1978, 213 pp.

NOGAR R., *Science de l'évolution, Données scientifiques et pensée chrétienne*, Casterman, Paris - Tournai, 1965, 355 pp.

ORREGO VICUZA F., *Juan Pablo II y la teoría de la evolución*, en «Humanitas» (Chile), n.5 (1997), pp.64-84.

PASCUAL R., *Creación y evolución. A propósito del mensaje del Santo Padre a la Academia de las Ciencias (22 de octubre de 1996)*, in «Sacerdos» 6 (1999), n° 19, pp. 10-17; ed. ital., 3 (1999), n° 12, pp. 24-29; English Edition, 6 (1999), n° 20, pp. 26-32.

RIAZA MORALES J.M., *La Iglesia en la historia de la ciencia*, B.A.C., Madrid 1999, (cap. XIII, *La evolución de las especies*, pp. 237-280).

RUSSELL R.J. - STOEGER W.R. - AYALA F.J. eds., *Evolutionary and Molecular Biology, Scientific Perspectives on Divine Action*, Vatican Observatory - CTNS, Vatican City - Berkeley, Cal., 1998, 551 pp.

## SECOND PART: PHYSICS, ORIGIN AND CREATION OF THE WORLD

### Chapter 6: The question of the origin of the universe. A brief passing through history

The question of the origin of the universe has interested man since antiquity up to the present day. In our brief historical view we are going to center on the area of western culture. We will start with the great philosophers of the Greco-Roman world: Plato and Aristotle. In the medieval period, we will focus on the Christian view, which, on the one hand affirms the temporal beginning of the universe, and on the other takes into question the possibility of a creation *ab aeterno*. Ever since the sixteenth century, beginning with the Copernican revolution, a profound change has taken place in the way the universe is conceptualized, wherein an infinite and eternal universe is proposed, rejecting every absolute point of reference. Such a world, nevertheless, presents itself as problematic, as the paradoxes of Olbers and the antinomies of Kant make evident. From the theory of relativity it is possible to study anew the universe as a whole; thanks to the Hubble, Friedman, and Lemaître, the dynamic principle of the universe is discovered, it is found to be in a state of expansion, seeming to have had a beginning some fifteen billion years ago. The theory of the Big Bang has been imposed on the new study of astrophysics with various modifications.

## Bibliography:

- ARRANZ RODRIGO M., El origen del universo (I). Presupuestos y fuentes de los modelos cosmológicos, in «Religión y Cultura», 42 (1996), pp.101-116.
- ARRANZ RODRIGO M., El origen del universo (II). Principales modelos cosmológicos, en «Religión y Cultura», 42 (1996), pp.361-375.
- ARTIGAS M., Física y creación: el origen del universo, in «Scripta Theologica», 19 (1987), pp.347-373.
- BALDNER S.E., St. Bonaventure and the Demonstrability of a Temporal Beginning: A Reply to Richard Davis, in «A.C.P.Q.» 71 (1997), pp. 225-236.
- BARROW J.D., Le origini dell'universo, Sansoni, Milano, 1995, 148 pp. (orig. ingl.: The Origin of the Universe, BasicBooks, New York, NY, 1994, 150 pp.).
- BERGER A. (ed.), The Big Bang and Georges Lemaître, D. Reidel Publ. Comp., Dordrecht, 1984, 420 pp.
- BIANCHI L., L'errore di Aristotele, La polemica contro l'eternità del mondo nel XIII secolo, La Nuova Italia, Firenze, 1984, 203 pp.
- BONDI H., Steady-state Cosmology, in Atti del Convegno sulla Cosmologia, IV Centenario della nascita di Galileo Galilei, 1564-1964», G. BarbPra, Firenze, 1966, pp. 31-36.
- CARROLL W.E., S. Tommaso, Aristotele, e la creazione, en «Annales Theologici», 8 (1994), pp. 365-376.
- DALES, R.C., Medieval Discussions of the Eternity of the World, Brill, Leiden, 1990, 303 pp.
- DAVIS R., Bonaventure and the Arguments for the Impossibility of an Infinite Temporal Regression, in «A.C.P.Q.» 70 (1996), 361-380.
- EVANS G.R., Philosophy and Theology in the Middle Ages, Routledge, London, 1993 (5. The Cosmos. The Creation of the World: pp. 67-89).
- GAMOW G., La creación del universo, Biblioteca de divulgación científica, Barcelona, 1993, 218 pp.
- GHISALBERTI A., La controversia scolastica sulla creazione «ab aeterno», in «Rivista di Filosofia Neo-scolastica» 60 (1968), pp. 211-230.
- GRATTON L., Origine ed evoluzione dell'universo. Dal big-bang alle galassie, La Nuova

Italia Scientifica, Roma, 1992, 189 pp.

GRATTON F.T.L., Teorías físicas sobre el origen del universo, in «Stromata», 46 (1990), pp. 241-273.

HALLIWELL J.J., La cosmologia quattistica e l'origine dell'universo, in «Le Scienze», 25 (1992), pp.vol. 48, n.282, pp.16-24.

HAWKING S.W., L'origine dell'universo, en «Buchi neri e universi neonati. Riflessioni sull'origine e il futuro del cosmo», Rizzoli, Milano, 1993, pp. 97-112.

HÜNTELMANN R., El Cusano y la primera filosofía moderna de la creación, in «Anuario filosófico» 28 (1995), pp. 649-670.

JOHNSON M.F., Did St. Thomas Attribute a Doctrine of Creation to Aristotle?, en «New Scholasticism», 63 (1989), pp.129-155.

KNASAS J.F.X., Aquinas' Ascription of Creation to Aristotle, en «Angelicum», 73 (1996), pp.487-505.

KREZMANN N., The Metaphysics of Creation, Clarendon Press, Oxford 2001 (cap. 5: Could the Created World have existed for ever?, pp. 142-182).

LEMAÎTRE G.E., The Cosmological Constant, en «Albert Einstein: Philosopher-Scientist», Harper & Brothers, New York, 1959, pp. 439-456.

MC INERNY R.M., Do Aristotelian Substances Exist?, in «Sapientia» 54 (1999), pp. 325-338 (trad. ital.: Aristotele e pensiero cristiano: le sostanze aristoteliche esistono?, in S.L. BROCK, L'attualità di Aristotele, Armando, Roma 2000, pp.117-126).

NOONE T.B., The Originality of St. Thomas's Position on the Philosophers and Creation, en «Thomist», 60 (1996), pp.275-300.

NORTH J., Eternity and Infinity in Late Medieval Thought, in G. TORRALDO DI FRANCIA (ed.), L'infinito nella scienza, Istituto dell'Enciclopedia Italiana, Firenze 1987, pp. 245-255.

ROGERS K.A., St. Augustine on Time and Eternity, in «A.C.P.Q.» 70 (1996), pp.207-223.

SILK J., A Short History of the Universe, Scientific American Library, New York, 1994, 246 pp.

SILK J., The Big Bang, Revised and Updated Edition, W.H. Freeman Co., New York, 1995 (4. Evidence for the Big Bang, pp. 67-88).



SMITH T.L., Aquinas on Aristotle and Creation: Use or Misuse?, en «Sapientia» 55 (2000), pp. 193-216.

TADIC I., Antinomia dell'eternità del mondo. L'antinomia kantiana e la sua problematica presso alcuni filosofi nella cosmologia moderna. Excerpta ex dissertatione ad Doctoratum in Facultate Philosophiae, P.U.G., Roma 1993, 144 pp.

WALZ M.D., Theological and Philosophical Dependencies in St. Bonaventure's Argument Against an Eternal World and a Brief Thomistic Reply, en «A.C.P.Q.», 72 (1998), pp.75-98.

WEINBERG S., The First Three Minutes. A Modern View of the Origin of the Universe, Collins, Glasgow, 1977, 190 pp. (ital.: I primi tre minuti. L'affascinante storia dell'origine dell'universo, Mondadori, Milano, 1991, 216 pp.; spa.: Los tres primeros minutos del universo. Una concepción moderna del origen del universo, Ed. Alianza, Madrid, 1994, 163 p.).

#### Chapter 7: The Judaeo-Christian doctrine of creation

Once the philosophical and scientific visions of the world origin have been studied, we will see the fundamental elements that make up the Judaeo-Christian vision of the world, based on biblical revelation. The doctrine of creation will be presented as it appears in the Old and New Testament, above all in the first chapter of Genesis, alluding to the questions of biblical exegesis that come into play. Next theological reflection will be taken into account, seeing above all its two most significant representatives: Augustine and Thomas Aquinas, and it will conclude with a quick historical sketch of the dogma and Magisterium of the Church on the theme of creation.

#### Bibliography:

BALDNER STEVEN E. - CARROLL WILLIAM E. (trans.), Aquinas on Creation, Writings on the "Sentences" of Peter Lombard 2.1.1. Translated with an introduction and notes by Steven E. Baldner & William E. Carroll, Pont. Inst. of Mediaev. Stud., Toronto, 1997.

DENZINGER H. - HÜNERMANN, Enchiridion Symbolorum, ed. Bilingue, Ed. Dehoniane, Bologna, 1996.

COLLANTES J., La fe de la Iglesia católica, B.A.C., Madrid, 1984.

GIOVANNI PAOLO II, Insegnamenti, Librería Editrice Vaticana, Città del Vaticano, 1979ss.

GUNTON C.E., The Doctrine of Creation, T&T Clark, Edinburgh 1997, 179 pp.

KAISER C.B., Creational Theology and the History of Physical Science. The Creationist

Tradition from Basil to Bohr, Brill, Leiden - New York - Köln, 1997 (cap. II: The Medieval Church and Aristotelian Science (Thirteenth Century to the Fifteenth Century): pp.84-133).

LICCIONE M., Mystery and Explanation in Aquinas's Account of Creation, en «Thomist», 59 (1995), pp. 223-245.

MORALES J., El misterio de la creación, EUNSA, Pamplona, 1994, 336 pp.

PIUS PP. XII, Discourses, in PONTIFICIA ACADEMIA SCIENTIARUM, Discourses of the Popes from Pius XI to John Paul II to the Pontifical Academy of Sciences. 1936-1986, Pontificia Academia Scientiarum, CittB del Vaticano, 1986, pp. 50-84.

RATZINGER J., «In the Beginning...». A Catholic Understanding of Story of Creation and the Fall, Our Sunday Visitor, Indiana, 1990, 107 pp.

RUIZ DE LA PEÑA J.L., Teología de la creación, Sal Terrae, Santander, 1986, 279 pp.

Chapter 8: The challenges scientific cosmology presents to philosophy and theology

The proposals of the current theories concerning the origin and successive evolution of the universe posit a number of questions of both philosophical and theological character. Did the universe have a temporal beginning? Did this universe spring up from nothing, in a spontaneous way, or did it have some transcendent cause? Is its development determined simply by a casual combination of chaotic changes, or is it regulated by a plan, somehow ordering and directing everything? The fact that this scientific cosmology took its origin in the proposal of the anthropic principle and the intelligent design principle (with their various formulations), declares the necessity for a finalism to understand the processes of nature. On the other hand, if it is true that authors such as Hawking are questioned whether some space is left for a creator in this new physics, they themselves recognize that science is not competent to take on such questions concerning the reasons and sense for the existence of the universe.

Bibliography:

AA.VV., Scienza, filosofia e teologia di fronte alla nascita dell'universo, Ed. New Press, Como, 1997, 428 pp.

ARTIGAS M., Ciencia y fe: nuevas perspectivas, EUNSA, Pamplona, 1992, (VII: Cosmos y creación: pp.147-168).

BARROW J.D. - TIPLER F.J., The Anthropic Cosmological Principle, Oxford University Press, New York, NY, 1994, 706 pp.

BERTOLA F. - CURI U., (eds.), The Anthropic Principle. Proceedings of the Second Venice Conference on Cosmology and Philosophy, Cambridge University Press,

Cambridge, 1993, 181 pp.

CARROLL W.E., Big Bang Cosmology, Quantum Tunneling from Nothing, and Creation, in «Laval Théologique et Philosophique», 44 (1988), pp.59-75.

COYNE G.V., Aspetti religiosi della cosmologia moderna, en «Studium», 94 (1998), pp.341-352.

CRAIG W.L. - SMITH Q., Theism, Atheism and Big Bang Cosmology, Clarendon Press, Oxford, 1993, 342 pp.

DALLAPORTA N., Il Principio antropico nell'evoluzione dell'Universo, en «Studium», 94 (1998), pp.329-340.

DAVIES P., Dio e la nuova fisica, Mondadori, Milano, 1994, (I. Scienza e religione in un mondo che cambia; II. Genesi; III. Dio ha creato l'universo?: pp.13-86).

DEMARET J., Création en cosmologie, en AA.VV., «Création et événement. Autour de Jean LadriPre», Peeters, Louvain-la-Neuve - Paris, 1996, pp.37-58.

DEMARET J. - LAMBERT D., Le principe anthropique. L'homme est-il le centre de l'univers?, Armand Colin, Paris, 1994, 301 pp.

DREES W.B., Beyond the Big Bang. Quantum Cosmologies and God, Open Court, La Salle, 1993, 323 pp.

GEORGE M.I., On the Tenth Anniversary of Barrow and Tipler's 'Anthropic Cosmological Principle': Thomistic Reflections on Anthropic Principles, en «A.C.P.Q.», 72 (1998), pp. 39-58.

HAWKING S.W., A Brief History of Time. From the Big Bang to Black Holes, Bantam Books, New York, 1988, 197 pp. (trad. ital.: Dal Big Bang ai buchi neri, Rizzoli, Milano, 1988, 216 pp.; trad. spa.: Historia del tiempo. Del big bang a los agujeros negros, Ed. Crítica, Barcelona, 1989, 245 pp.).

HELLER M., Cosmological Singularity and the Creation of the Universe, en «Zygon» 35 (2000), pp. 665-685.

JAKI S.L., Lo scopo di tutto. Scienza, filosofia teologia s'interrogano sulla finalità, Ares, Milano, 1994 (L'illusione antropica, pp.105-135); orig. ingl.: The Purpose of it all, Scottish Academic Press, Edinburgh, 1990, pp.90-116.

KANITSCHIEDER B., The Anthropic Principle and Its Epistemological Status in Modern Physical Cosmology, in AGAZZI E. and CORDERO A. (eds), Philosophy and the Origin and Evolution of the Universe, Kluwer, Dordrecht, 1991, pp.361-397.

LESLIE J., How to Draw Conclusions from a Fine-tuned Cosmos, in RUSSELL R.J. - STOEGER W.R. - COYNE G.V., Physics, Philosophy, and Theology: A Common Quest for Understanding, Vatican Observatory, CittB del Vaticano 1988, pp. 297-311.

LESLIE J., Universes, Routledge, London, 1996, (cap. 6: Anthropic Explanations, pp. 127-149).

MALDAMÉ J.-M., Cristo e il cosmo, Cosmologia e teologia, San Paolo, Cinisello Balsamo, 1995, 271 pp.

MALDAMÉ J.-M., La création sans concordisme, in «Études» n°3801 (1994), pp. 77-87.

MALDAMÉ J.-M., Le Christ et l'univers. Dialogue entre la théologie et la cosmologie scientifique, en «Angelicum», 74 (1997), pp. 335-357.

MASANI A., La cosmologia nella storia fra scienza, religione e filosofia, La Scuola, Brescia, 1996, (7. La metodologia scientifica di fronte al rinnovato problema del finalismo: il «principio antropico»: pp.364-410).

MORALES J., El misterio de la creación, EUNSA, Pamplona, 1994 (Cap. X: La doctrina de la creación y la ciencia: pp.173-184).

MORANDINI S., Sull'uso teologico del principio antropico. Il cosmo, il senso, l'intelligenza, in «Il futuro dell'uomo», n.1, 24 (1997), pp.37-58.

PÉREZ DE LABORDA A., La ciencia contemporánea y sus implicaciones filosóficas, Cincel, Madrid, 1989 (Los modelos de universo y el problema del origen, pp.103-117; Cosmocentrismo y antropocentrismo: el principio antrópico, pp.118-134).

POLKINGHORNE J., Science and Creation. The Search for Understanding, SPCK, London, 1988, 113 pp.

SANGUINETI J.J., El origen del universo. La cosmología en busca de la filosofía, Universidad Católica Argentina, Buenos Aires, 1994, 431 pp.

SANGUINETI J.J., La creazione nella cosmologia contemporanea, en «Acta Philosophica», 4 (1995), pp. 285-313.

STOEGER W.R., Contemporary Cosmology and its Implications for the Science - Religion Dialogue, in RUSSELL R.J. - STOEGER W.R. - COYNE G.V., Physics, Philosophy, and Theology: A Common Quest for Understanding, Vatican Observatory, CittB del Vaticano 1988, pp. 219-247.

TRESMONTANT C., Ciencias del universo y problemas metafísicos, Herder, Barcelona, 1978, (cap.1: "A partir de la cosmología", pp. 13-62).

WARD K., Religion and Creation, Clarendon Press, Oxford, 1996, (12. "Creation and Modern Cosmology", pp. 287-315).

### THIRD PART: SCIENCE AND ANTHROPOLOGY

#### Chapter 9: Man as object of study

Man has always been an enigma for man. If it has been relatively easy to access the exterior world, self knowledge involves the highest wisdom, as the famous philosopher in Delphos said: "Know Yourself". Thus man has been the object of study by way of the different sciences, be they the natural sciences, or philosophy and theology. The problem to consider here is whether knowledge has been so fragmented as to be impossible to put it together again. Thus a hierarchy and harmonization of knowledge is required to achieve a unified answer – the only kind to respect the unified nature of man in the plurality of his dimensions.

#### Bibliography:

J. DE FINANCE, L'homme, citoyen des deux mondes. La place de l'homme dans la création, Ed. Téqui-Grégorienne, Rome, 1980, pp. 9-221.

R. LUCAS LUCAS, L'uomo, spirito incarnato, Ed. Paoline, Torino, 1993, pp. 195-286.

L. LADARIA, Antropologia Teologica, Piemme, Roma, 1995, pp. 109-174.

J. L. RUIZ DE LA PEZA, Antropología teología fundamental, Sal Terrae, Santander, 1988, pp. 19-90.

P. HAFFNER, The Mystery of Creation, Gracewing, Broughton Gifford, Wiltshire, 1995, pp. 67-88.

#### Chapter 10: The relation of body and soul, mind and brain

In man there exist different dimensions that are hard to reconcile into a unity. From its ancient beginnings, philosophy has tried to decipher the secret of this unity – above all concerning the unity of man's corporal-biological dimension with that of his spiritual dimension (referred to by traditional philosophy and theology as the soul) This chapter the classical problem of the soul from the time of Plato and Aristotle to Christian inspired philosophy - and then to a study of what modern science has to say on the soul. Here the well-known debate concerning the mind and brain and artificial intelligence, which has raised such interest in the last decades, will be presented through the principle authors who have written on the subject. Also the different levels will be distinguished and defended: that of the biological level, the brain; the psychological level, the mind; and the spiritual level, proper to the soul.

#### Bibliography:

R. SWINBURNE, *The Evolution of the Soul*, Clarendon Press, Oxford, 1997, pp. 145-202; 262-312.

W. BROWN - N. MURPHY - H. NEWTON MALONY, *Whatever Happened to the Soul? Scientific and Theological Protait of Human Nature*, Frotress Press, Minneapolis, 1999, pp. 1-30; 175-228.

A. VACCARO, *Perché rinunciare all'anima. La questione dell'anima nella filosofia della mente e nella teologia*, Ed. Dehoniane, Bologna, 2.001, pp. 11-120.

J. L. RUIZ DE LA PEZA, *Crisis y apología de la fe. Evangelio y nuevo milenio*, Sal Terrae, Santander, pp. 155-209.

*The Human Person in Science and Theologie*, ed. K. H. Gregersen, U. Görman, W.D. Drees, Edinburgh, 2.000.

F. CRICK, *The Astonishing Hypothesis. The Scientific Search for the Soul*, Touchstone Books, London-New York-Sidney-Tokyo-Toronto-Syngapore, 1994.  
*Cervello e mente. Un dibattito interdisciplinare*. Ed. S. Chiari, Milano, 1988, pp.17-33.

#### Chapter 11: Man and immortality

Life beyond our earthly existence appears to be a theme reserved exclusively to philosophy or theology. And indeed it has been philosophy or theology that traditionally have spoken out on the immortality of the soul and eternal life. But there are those today that say the theme of immortality belongs to the realm of physics. This chapter will present the principle answers, first philosophical, then theological, to the theme of immortality. The thoughts of the physician F. J. Tipler will also be presented, who presents the jump from physics to the immortality of the soul. A critical judgment will be made on this position, demonstrating that merely from the scientific point of view this is impossible to demonstrate. To do so, philosophy needs to be used to mediate between the positions, using too the facts offered by theology. Some eschatological models will briefly be looked at, as proposed by certain contemporary physicians, and these will be compared to theological acceptations on the end of the universe.

#### Bibliography:

F. J. TIPLER, *La fisica dell'immortalitB. Dio, la cosmologia e la risurrezione dai morti*, Mondadori, Milano, 1997.

J. RATZINGER, *Escatologia. La muerte y la vida eterna*, Herder, Barcelona, 73-153.

J. L. RUIZ DE LA PEZA, *La Pascua de la creación. Escatología*,

P. DAVIES, *Gli ultimi tre minuti. Congetture sul destino dell'universo*, Ed. Sansoni,

1995, pp. 13-30; 89-159.

C. TRESMONTANT, *Le problème de l'âme*, Seuil, Paris, 1953, pp. 149-201.

#### FOURTH PART: QUESTIONS ON BIOETHICS

##### Chapter 12: Science and ethics

Before touching briefly on the theme of ethics of life, it is worth considering the relation of ethics with science. At first they may appear wholly distinct fields. However every activity of man, including that of science carries with it moral implications. It is true that, as Vatican Council II (*Gaudium et Spes*, n. 36) has said, that each field has its autonomy. But this autonomy is conditioned by various factors which go beyond science itself. One of those factors is ethics. Indeed any scientist seeking truth cannot by any means detach himself from the need to do good. You cannot combine scientific skepticism with moral values – that would be impossible. After presenting a synthetic definition of ethics and its philosophical and even theological foundations, this chapter will consider the theme of scientific responsibility with the risks that every human action carries with it; a responsibility that scientists hold with regard society, culture and the scientific community; but above all with regard one's own conscience.

##### Bibliography:

E. AGAZZI, *Il bene, il male e la scienza*, Rusconi, Milano, 1992, pp. 5-24; 48-68; 82-137; 172-299.

M. BUNGE, «Basic Science is Innocent. Applied Science and Technologie can be guilty», en *Nature and Scientific Method*, ed. D. O. Dahstrom, Catholic University of America, Washington D.C., 1991, pp. 95-205.

J. DE FINANCE, *Ethique Générale*, Presses de l'Université Grégorienne, Rome, 1967, pp. 7-90.

A. LÉONARD, *El fundamento de la moral*, BAC, Madrid, 1991, pp. 3-14; 325-348.

##### Chapter 13: Bioethics

Without a doubt, one of the most absorbing subjects studied today by a growing number of persons is that of the ethics of life. Amazing discoveries in the area of genetics and its practical application have aroused, on the one hand, an uncommon interest, and on the other, confusion, misgivings, and fear. Thus, bioethics has been born, a new and complex discipline on account of its interdisciplinary character, since aspects come into play that are not strictly biological, medical, philosophical, theological, juridical, social, economic, pedagogical, or political. The present chapter makes only the modest claim of introducing the basics of bioethics, its particular methodology, its origins, the moral principles that govern it, and the main fields of study to which it can be applied.

#### Bibliography:

E. SGRECCIA, Manuale de bioetica. Manuale di etica medica, Vol. 1, Vita e Pensiero, Milano, 1999, pp. 3-104; 139-283.

H. T. ENGELHART J JR., Manuale di bioetica, Il Saggiatore, 1999, pp.35-154.

D. GRACIA, Fondamenti di bioetica. Sviluppo e metodo storico, San Paolo, Torino, 1993, pp. 371-614.

G. RUSSO, Bioetica fondamentale e generale, SocietB Editrice Internazionale, Torino, 1995, pp. 157-380.

M. TREVIJANO ETCHEVERRIA, ¿Qué es bioética?, Ed. Sígueme, Salamanca, 1998, 11-150.

E. BONET, ¿Es Dios una hipótesis inútil? Evolución y bioética. Ciencia y fe, Sal Terrae, Santander, 2.001, pp. 137-180.

#### Chapter 14: Bioethics and the Person

If the person is situated at the center of philosophical and theological reflection, it will have the same place in the ethics of life. Thus, in this chapter, we will pause to consider the concept of the human person that is theologically equivalent to man, created in the image and likeness of the Creator. This concept, unknown to ancient philosophy, slowly permeates the western cultural domain through the theological reflections of the first centuries of the Christian era, and goes on to become the cornerstone around which not only classical philosophy, but also the modern conception of civil society is founded. The central interest of the ethics of life is the well being of the human person from the moment of its conception. From there comes the importance of expounding the statute of the embryo from a multidisciplinary point of view: scientific, philosophical, and theological. The chapter closes with the proposition of a personalist bioethics, that is, a bioethics centered on the person as the highest and untouchable good of medical activity and genetic investigations and technology.

#### Bibliography:

R. LUCAS LUCAS, Antropología y problemas bioéticos, BAC, Madrid, 2.001, pp. 67-110.

Identity and Statute of Human Embryo, Proceedings of Third Assembly of the Pontifical Academy for Life, Vatican City, February 14-16, 1977, ed. J. de Dios Correa Vidal- E. Sgreccia, Libreria Editrice Vaticana, CittB del Vaticano, 1999, pp. 48-205; 317-404.

D. TETTAMANZI, Nuova bioetica cristiana, Piemme, Casale Monferrato, 2.000, pp. 37-



49; 73-119.

E. SGRECCIA, *Manuale de bioetica. Manuale di etica medica*, Vol. 1, Vita e Pensiero, Milano, 1999, pp. 105-138.

## Chapter 15: Bioethics and the Human Body

One of the most serious problems that bioethics presents for philosophical and theological reflection is that of the value and the very concept of the human body. Relegated by many currents throughout history as a diabolical creation, exalted by other philosophies and modes of thought, the body of man and woman has been and is for every one of us something like a “sign of contradiction.” What is the value of our body, what is its greatness, its dignity? Science has discovered for us the marvelous workings of this living, nearly perfect machine that is our body in each one of its parts. Philosophy has revaluated corporality as one of the essential components of the human person. Theology itself, meditating on the mystery of the Incarnation of the Word, has thrown into relief the dignity of the body of the human person. The chapter presents a simple philosophical-theological basis for the value of the human body, which, in an unbreakable unity with the soul, makes up the essence of every man and every woman. To these metaphysical and theological considerations are then added those that are ethical and those proper to bioethics, which, from the perspective of Christian theology, are centered on the value of human life from its beginning.

### Bibliography:

E. SGRECCIA, *Manuale de bioetica. Manuale di etica medica*, Vol. 1, Vita e Pensiero, Milano, 1999, pp. 105-138.

S. SPISANTI, *Il corpo nella cultura contemporanea*, Queriniana, Brescia, 1990, 71-116.

R. LUCAS LUCAS, *Antropología y problemas bioéticos*, BAC, Madrid, 2.001, pp. 15-28.

D. TETTAMANZI, *Nuova bioetica cristiana*, Piemme, Casale Monferrato, 2.000, pp. 120-139.

B. ASHLEY, O.P., *Theologies of the Body. Humanist and Christian*, The Pope John Center, Braintree, Massachusetts, 1995, 148-250.

GIOVANNI PAOLO II, *Uomo e donna lo creb. Catechesi sull'amore umano*, CittB Nuova Editrice-Libreria Editrice Vaticana, 1995, pp. 71-92; 205-254.

## FIFTH PART: A SPIRITUALITY FOR SCIENCE

### Chapter 16: Science and the meaning of life

Man is not only faced with immediate problems concerned with the how, but also metaphysical ones dealing with the why. These questions have to do with the meaning of life. Does all human activity, including scientific activity, have sense to it? A strong contemporary current, commonly referred to as weak thought, has turned to existential nihilism as the only sincere solution to the complicated puzzle of existence. In this chapter, while we see what different men have had to say about man and the sense of his life, we will ask the question what light does contemporary science shed on the question. Given its methodological limits, science arrives to the point where the very questions that the scientist poses become meta-scientific. Hence the scientist himself is called to go beyond and transcend these limits, since he, as a man, must also ask the question concerning his existence. In this sense, he should even ask himself what is the meaning of science in man's life, what is its function, what is its vital relation with possessing true happiness. The chapter concludes with the need for a scientific spirituality, a theme which will be developed in the following chapter.

#### Bibliography:

- K.-H. MENKE, *L'unicità di Gesù Cristo nell'orizzonte della domanda sul senso*, San Paolo, Cinisello Balsamo (Milano), 1999, pp. 5-46; 133-141.
- J. M<sup>a</sup>. RUPERT Y CANDAU, *El sentido último de la vida*, Gredos, 1958, pp. 127-268.
- J. L. RUIZ DE LA PEÑA, *Crisis y apología de la fe*, Sal Terrae, 1995, pp. 53-64.
- M. ARTIGAS, *Ciencia y fe. Nuevas perspectivas*, Eunsa, Pamplona, 1992, pp. 193-214.
- D. DUBARLE, *Approches d'une théologie de la science*, Cerf, Paris, pp. 77-116.
- L. FERRY, *El hombre-Dios o el sentido de la vida*, Tusquets, Barcelona, 1997, pp. 11-52.
- V. MARCOZZI, *El sentido de la vida humana, Razón y Fe*, Madrid, 1967, \*\*\* (226-39)

#### Chapter 17: Science and spirituality

Today there is a renewed search for spirituality and prayer. Science is not immune to this search. The proof of this is the numerous attempts to bring God and science together. Rationality alone suffocates man; he needs transcendence. Thus in this chapter we will study the different forms of contact that science and scientists have with spirituality. First, we will see what is meant by spirituality and what is needed to attain it. Then, we will consider the ties between prayer and science, which will allow us to return at the end of the course to the union that exists between faith and reason, the two wings that raise man to the knowledge of the truth. This will allow us to expose, as a conclusion, our position in defense of harmony between science, philosophy and theology, exposed by John Paul II in the encyclical *Fides et Ratio*. The last two sections will be dedicated to the need to establish a spirituality proper to science and scientists, so that the urgency of building a bridge between science, wisdom and holiness, to quote St Bonaventure, for

whom the passage to holiness was made easier through science and wisdom. All of this requires and demands fruitful dialogue among the three stages of knowledge: science, philosophy and theology.

Bibliography:

J. MARITAIN, *Disistinguere per unire o i gradi del sapere*, Morcelliana, Brescia, 1981

A. P. BARRAJÓN, *La sabiduría cristiana según San Buenaventura*, PPU, Barcelona, 1998, pp. 355-372.

D. DUBARLE, *Approches d'une théologie de la science*, Cerf, Paris, pp. 155-200.

CH. A. BERNARD, *Teologia spirituale*, Ed. Paoline, Cisinello Balsamo (Milano), 1987, pp. 19-29; 69-97; 509-524.

G. THILS, *La santidad cristiana*, Ed. Sígueme, Salamanca, 1960, pp. 465-478; 511-531.

GIOVANNI PAOLO II, *Fides et Ratio*, capítulos 3-4; 6-7. *I Papi e la Scienza*, ed. M. Gargantini, Jaca Book, Milano, 1985, pp. 13-42; 81-112.