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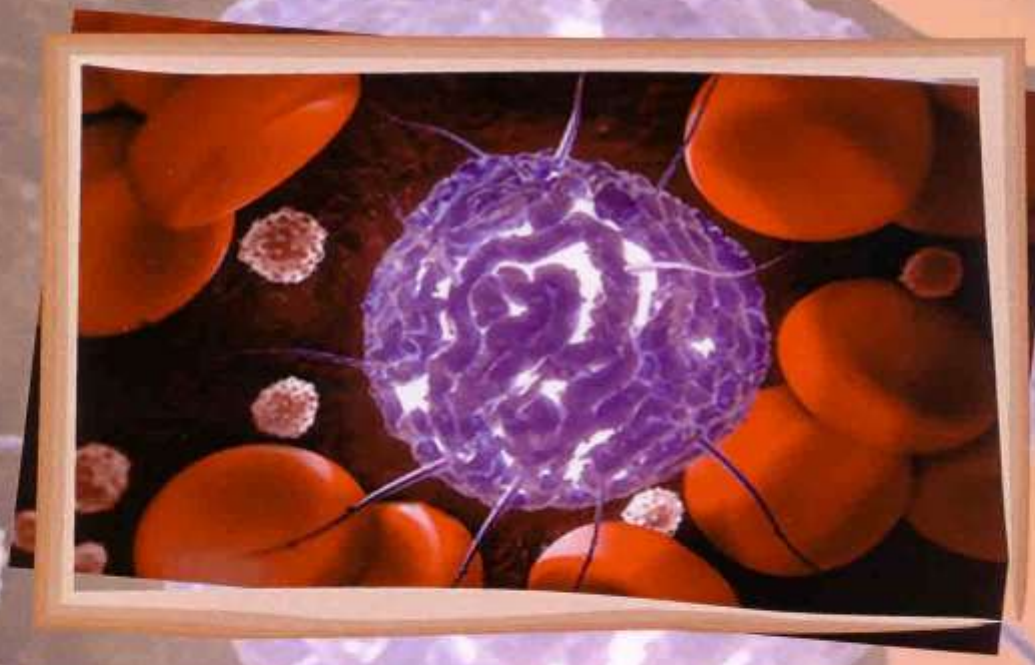

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Editorial: Trafny / Smith 4

STUDIA **6**
- What are Stem Cells?- Overcoming Misconceptions 6
- Where Do Stem Cells Come From? 8
- Stem Cell Therapy and Hearth Failure - A Potential Paradigm Shift in Treatment of Chronic Hearth Disease 10
- Umbilical Cord Blood Banking 12
- Targeting Autoimmune Diseases with Adult Stem Cell Therapy 14
- Considerations to Create a Cell-based Therapeutic. The Pharmacy of the Future, Make Versus Buy: the Decision to Outsource Cell-based Manufacturing 15
- Ending The Dispute Over Stem Cell Therapies 17
- Humanism in Stem Cell Research: Necessary Conditions for Optimization 19
- Education as a Challenge: Necessary Tool for a Better Future 21
- Will Advances in the Life Sciences Change our Vision of Man? 23

DE NAVITATE DICASTERII **26**
- XVI Seduta Pubblica delle Pontificie Accademie 26
- Messaggio del Santo Padre in occasione della XVI Seduta Pubblica delle Pontificie Accademie 28
- Gaudi en Roma 31
- 15° Tertio Millennio Film Fest 34
- An Azerbaijani Concert Comes to Town 37
- Ciencia y fe en la Ciudad Santa 38
- Nuova Fondazione in Vaticano dedicata al dialogo tra la scienza, la teologia e la filosofia 39

MISCELLANEA **40**
- 36° sessione della Conferenza Generale dell'UNESCO 40
- A Hungarian Success Story: the Fifth World Science Forum 42
- Declaration of the Budapest World Science Forum 2011 on a New Era of Global Science 45
- Entre ciel et terre 49

BANDO DI DUE CONCORSI **52**

RECENSIONES **53**

LIBRI **55**

LITTERÆ AD EDITOREM MISSÆ **58**

PONTIFICIUM CONSILIUM
DE CULTURA

Medicine continues to change and it is critical that we understand the issues that face adoption of this new era in regenerative medicine. The International Conference on *Adult Stem Cells: Science and the Future of Man and Culture* held at the Aula Nuova del Sinodo in Vatican City between November 9th through 11th, 2011, gathered together the foremost experts in adult stem cell research, Church leaders, policymakers, ethicists, government representatives, ambassadors to the Holy See and representatives of the stem cell therapeutic business community. This event accentuated how far we have come scientifically from fifty years ago when the first adult stem cell article was published by Till and McCulloch. At the same time, the conference highlighted the importance of the need to gain a better understanding of Man and culture and begin to broadly reflect on the possible interaction not only between natural sciences and ethics, but also between natural sciences and humanities.

The purpose of the conference was to bring together the foremost experts in adult stem cell research, Church leaders, policymakers, ethicists, government representatives, ambassadors to the Holy See and representatives of the stem cell therapeutic business community to understand the impact this new medicine will have on culture and on people's faith, unite us all toward the common goal of ending needless human suffering by the advancement of stem cell therapies. Faith and science do not need to be in opposition to one another. People do not have to choose between their faith and science.

Robin L. Smith

We need to look closely at the conditions of a possible dialogue across disciplines and perhaps among institutions. The term "dialogue" indicates a special type of relation where people meet each other and communicate to each other. It is real, alive, dynamic and due to perfection relationship based on open, respectable, humble and free from prejudices desire of knowledge which is rich with curiosity and orientated to the truth. The need for dialogue is one of the important reasons why this conference was organized.

The conference was an expression of mutual effort of the Pontifical Council for Culture and biopharmaceutical company NeoStem as well as their charitable organizations STOQ and the Stem for Life Foundation. Those institutions, so heterogeneous and apparently focused on very different goals, have reached a common understanding through close and dynamic collaboration. This partnership is critical as by joining forces, we can work together and produce the biggest social impact.

At this conference we found that beyond death rates and suffering, behind the grief and loss, there lies so much hope – and real people whose lives have been transformed by adult stem cell therapies. Four patient advocates attended to speak about their experiences with adult stem cell therapy and we look for the time in the not too distant future where adult stem cell therapy can be common place and standard of care in modern medicine.

Science has a major impact on the future of man, as it remains one of the most influential factors in the future of culture. The exploration and understanding of this

Msgr. Tomasz Trafny

horizon appears not only as a fascinating adventure, but above all as an imperative and a clear sign of responsibility toward the Church and towards humanity. For that reason there are a few specific expectations coming from this initiative. The Church aims at offering a positive message centered on dialogue and mutual listening, showing, at the same time, that excellent research can be promoted without violating ethical or religious principles. Secondly, we want to promote interdisciplinary reflection in which basic research, clinical protocols, bioethical issues, as well as matters of philosophical and theological anthropology might be addressed in a single encounter stimulating reflection and debate on some issues and challenges that arise in the large horizon of interactions between scientific and cultural investigations, and that can have a significant impact on the future of man.

The Vatican conference was only the first step within an articulated itinerary developed to foster the highest levels of scientific research on adult stem cells and to explore the cultural, ethical and human implications of their use. We need to educate individuals that hundreds of millions of people globally are suffering from debilitating and life threatening illnesses for which adult stem cells may be part of the treatment regimen and these solutions come without the ethical dilemma posed by the use of embryonic stem cells. The Catholic Church has a great reach Church supporting over 5,000 hospitals, 17,000 outpatient units, 16,000 nursing homes, and over 85,000 other health care facilities. There are over 400,000 catholic priests serving the Church's 1.1 billion members which contains over 17% of the world's population. We also need to find financial resources to advance the clinical trials so that these therapies can be evaluated to answer questions of potency, dose, safety, and best delivery mechanism and time of administration so that in the not too distant future we will be able to use adult stem cells routinely to rebuild damaged tissue and repair organs, such as the heart, pancreas, blood vessels, retinas, and wounds. We take the challenge of translating the results of the very sophisticated medical sciences to an audience which goes beyond the narrow circle of experts and, therefore, to open a channel of communication between the scientific communities and the general public. It is an attempt to address the content to those who rarely have the scientific medical-biological training: representatives of the Episcopal conferences, politicians and ambassadors to the Holy See, governmental representatives, Workers of non-profit organizations and even businesses. From this first attempt, we want to develop further courses for students and tools for researchers that want to explore more deeply important topics within the multidisciplinary context.

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President of *The Stem for Life Foundation*

Msgr. Tomasz TRAFNY
Head of *Science and Faith Department*
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WHAT ARE STEM CELLS? OVERCOMING MISCONCEPTIONS

Dr. Maximo G. Gomez, Ph. D.

Dr. Maximo G. Gomez, Ph.D. is a member of the Board of Directors for the Stem for Life Foundation and one of television's most respected medical journalists.

The field of stem cells has been so clouded by controversy and misconceptions that few people truly understand what stem cells are, what their potential is and how much research is being done with them. In fact, when we asked people on the street to tell us about stem cells, the answers ranged from "cells that can help you stop smoking" to "ways to grow body parts" to even "a technique for choosing your baby's gender and appearance".

The reality is that stem cells are early stage cells that can divide and develop into various specialized cell types in the body. They can also self-renew to produce more stem cells.

There are two types of stem cells – embryonic stem cells and adult stem cells. In mammals, including humans, adult stem cells act as a repair system for the body, replenishing and healing adult tissue. These adult stem cells are found in children as well as adults and can be found in many tissues and organs.

What makes these cells exciting is their remarkable capacity to transform or become any number of different cell types... with some limitations. Usually they can only become cells of the same tissue type. This means that adult stem cells could be used for what are called cell-based therapies, offering the possibility of a renewable source of replacement cells and tissues to treat diseases including Alzheimer's disease, spinal cord injury, stroke, burns, heart disease, diabetes, arthritis and more.

So what are these remarkable cells? What do they look like? And, more importantly, what makes them different from – and more powerful than – most other cells? Let's start with some highly simplified and abbreviated basic cell biology.

Most of us think of a cell as a ball of liquid or gel filled with a bunch of tiny structures just floating around inside. In fact, a cell is an incredibly complex and orderly organism where literally trillions of chemical reactions are happening every second. The outside of a cell is a semi-fluid envelope called the cell membrane. Embedded in the membrane are large sugar and protein molecules that regulate how things like nutrients and waste pass in and out of the cell as well as help transmit signals to the cells interior. The control center of the cell, the nucleus, contains genes made up of various combinations of DNA. Some genes help cells become bone... others to become skin, muscle, liver cells and so on. This is what's called "differentiation".

In an embryonic stem cell, virtually all genes are "open for business", meaning the stem cell not just contains

Dr. Maximo G. Gomez, Ph. D.

all of the genetic code needed to turn it into every type of cell in the human body, but it's all available for use. But, as an embryonic cell starts to differentiate – as it starts to become a specific type of cell – DNA that's not needed for that particular cell type to function begins to shut down. Inactive genetic material or "heterochromatin" is formed... and while the unneeded genes are still present, they're just not accessible.

We used to think that was the end of the story... that "adult" cells were fully and irreversibly differentiated and only capable of making more copies of themselves. But now we know better. It turns out we keep some stem cells around. Technically they are "progenitor" cells – meaning that while many of their genes have shut down... not all have. So, they can be re-programmed or reactivated to a certain extent... to make more of the tissue they're found in. For our purposes, we'll call them "adult" stem cells. And we're now learning that these adult stem cells are found in many, perhaps most, tissues in the body.

These "adult" or "somatic" stem cells are generally what we call "multipotent" – meaning they can become several different types of cells... but usually only within the same broad tissue type. For example, neural stem cells can become brain and other nervous system cells, but not muscle or blood.

More recently, however, it's been found that adult stem cells might be able to become cells of different tissue types, which is called trans-differentiation. These cells are said to be "pluripotent"... the example here is bone marrow stem cells that may be able to differentiate or mature into liver, lung, gi tract and skin. It's thought that these pluripotent cells are the cells we call "VSELs"... short for very small embryonic-like stem cells.

But now, scientists have figured out an even neater trick: how to take fully differentiated cells and revert or reprogram them into stem cells. It's done by taking the "shut down" genes and opening them up for business again... either by unwinding the tightly wound, inactive DNA... or by inserting some key genes that the cell needs to revert to its embryonic-like state. This is usually done using viruses with the needed genes engineered into them. The virus then does what it often does best, inserts its genetic material into the human cell's DNA.

When these cells are cultured, some of them actually dedifferentiate. Not only do they look like embryonic cells... they have the potential to become many different tissues. All of this is happening even as you read this. There are at least 3500 clinical trials going on right now using adult and/or transformed cells to treat diseases ranging from leukemia to orthopedics to heart disease.

Think about what this means. We are on the brink of a whole new way of treating disease: cellular therapy... harnessing the power of nature, the potential locked inside our own cells, to repair, treat and even cure some of the most difficult diseases of mankind. Not with drugs or surgical procedures that can leave us scarred or damaged or suffering from serious side effects, but with cells. In the future your doctor might prescribe, instead of pills, custom-made cells to treat your disease...and made from your own cells!

Medicine will never be the same.

WHERE DO STEM CELLS COME FROM?

Denis Rodgerson, Ph.D.
Mariusz Z. Ra, M.D., Ph.D.

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Mariusz Z. Ratajczak, *M.D., Ph.D., D.Sci, is the Henry and Stella Hoenig Endowed Chair in Cancer Biology and the director of the Developmental Biology Research Program at the University of Louisville's James Graham Brown Cancer Center.*

Stem cells are primitive, unspecialized cells that can renew themselves by cell division, producing either new (daughter) stem cells or cells (progenitor cells) that will differentiate into specialized cells such as red blood cells, muscle cells, or nerve cells. The major task of stem cells in adult tissues is to repair/rejuvenate tissues that are damaged due to the aging process, disease or trauma. The human body develops from the most primitive remarkable stem cell that is an oocyte fertilized by a sperm. This earliest stem cell at the beginning of our life is named a zygote. During the first stages of embryonic development stem cells show a broad potential to differentiate into cells from many different tissues in the developing body and are named pluripotent. With time pluripotent stem cells become gradually restricted in their ability to contribute to a broad variety of tissues and become committed to only one given type of stem cell in the adult tissues (e.g., blood stem cells, liver stem cells, neural stem cells). However some evidence exists that a number of the pluripotent stem cells from early stages of embryogenesis may survive into adulthood as a population of so-called very small embryonic-like stem cells (VSELs). These pluripotent stem cells that will be discussed latter, can be thought of as a "back-up" population for more differentiated tissue-committed stem cells and could be employed as ethical source of stem cells isolated from the adult tissues in the regenerative medicine.

Until recently, stem cells, considered from view of potential clinical applications, were grouped into two main categories: **embryonic stem cells (ESCs)** and **adult (somatic) stem cells (ASCs)**. ESCs are derived from developing embryos. The production of embryonic stem cells necessitates the destruction of the embryo. There are no current stem cell therapies using ESC's as the problems associated with these cells with respect to their inherent tumorigenesis, and other issues that precipitate regulatory interventions that are not as yet, resolved. Additionally, ESCs can never be autologous (where the cells are one's own) and will be rejected by the patient's immune system and thus are deprived of a major attribute achievable with ASCs. Moreover the technologies to differentiate ESCs into different types of tissues achieved so far in laboratories worldwide are far below expectations. While much of the regulatory restriction on embryonic stem cell research may have been removed by the current U.S. administration, considerable concern about moral, ethical and religious issues still remain.

Adult stem cells are now the basis of essentially all successful stem-cell based therapies. By definition, an adult stem cell is an *undifferentiated* cell found among differentiated cells in a post-natal tissue or organ, can renew itself, and can differentiate through progenitor cells to yield the major specialized cell types of the tissue or organ (e.g., blood cells, liver cells, neural cells). In a living organism, the primary role of *adult stem cells* is the maintenance and repair of the tissue in which these cells are found. ASCs employed for therapeutic purposes may either be autologous (isolated from the patient's own tissues) or allogeneic (derived from a donor). In general, most regenerative therapies are based on autologous cells, thus avoiding problems with rejection, graft-versus-host disease and transmission of infectious diseases.

ASCs to be employed in the clinic can be obtained from several sources. The relatively easily accessible sources of

ASCs are hematopoietic tissues including bone marrow, umbilical cord blood and peripheral blood following mobilization by pharmacological agents. These tissues are convenient source of hematopoietic stem cells, however, they also contain other types of ASC such as endothelial progenitors, mesenchymal stem cells and as mentioned above, VSELs. ASCs may also be collected from other non-hematopoietic sources such as adipose tissues, placenta, and even deciduous teeth or by small aspirates of myocardium. While these non-hematopoietic sources do indeed provide ASCs, the quantities are limited and are significantly less than that required for a cell dose for most conditions. It has been suggested that the inadequacy of ASC quantities obtained from various sources can be overcome by expanding the ASCs outside of the body. This has unfortunately proven to be a difficult task, since ASCs tend to differentiate under expansion conditions, and thus the number of stem cells is not increased. For the present, the preferred source of ASCs for most therapies will be collection from peripheral blood, which allows for flexibility in the number of cells obtained with a minimum of discomfort to the donor. Mounting evidence, demonstrates that ASCs restricted to given tissues (e.g., hematopoietic stem cells or mesenchymal stem cells) unfortunately possess limited differentiation potential and do not contribute to other non-hematopoietic types of cells (e.g., cardiomyocytes).

Mariusz Z. Ratajczak, M.,D., Ph. D.

However, instead these cells are a potent source of growth factors, cytokines and bioactive lipids and these factors secreted by ASCs make major contributions in most of the currently reported positive results in clinical trials employing ASCs. Based on this they could be successfully employed in the current cell therapies in regenerative medicine before true pluripotent stem cells isolated in sufficient quantities from adult tissues and successfully expanded *ex vivo* will be employed in the clinic. Such a potential source of pluripotent stem cells for regenerative medicine is VSELs. It is hypothesized that the pluripotent VSELs that are found in the adult bone marrow, and also sequestered in many, or all, of the organs of the body in what are called stem cell niches, where they are available for rejuvenation and regeneration of cells of the specific organ. Possibly VSELs are a dormant and quiescent population of stem cells deposited during embryogenesis in developing tissues, a specialized population of primitive stem cells that actively contribute to long term regeneration and that, after being mobilized into the peripheral blood following stress, can contribute to tissue and possibly organ regeneration. The role of VSELs in the regeneration of tissues for the treatment of stroke, autoimmune diseases, retinopathies, osteoporosis, wound healing, and orthopedic conditions is under investigation but early studies have been very promising. The demonstration that VSELs can be obtained from human adult peripheral blood opens the possibility of achieving all the positive benefits of the embryonic stem cells without the negative attributes such as tumorigenesis. Of even greater potential is the ability to obtain un-expanded pluripotent stem cells in quantities sufficient for therapies, and for *autologous* use, which, as previously stated, is impossible with embryonic cells. There is even evidence in pre-clinical work, that high levels of circulating VSELS may be linked to longevity. It has been postulated that novel therapeutic strategies employing these cells in regenerative medicine may become the "key to longevity".

STEM CELL THERAPY AND HEART FAILURE A POTENTIAL PARADIGM SHIFT IN TREATMENT OF CHRONIC HEART DISEASE

Roberto Bolli, M.D.

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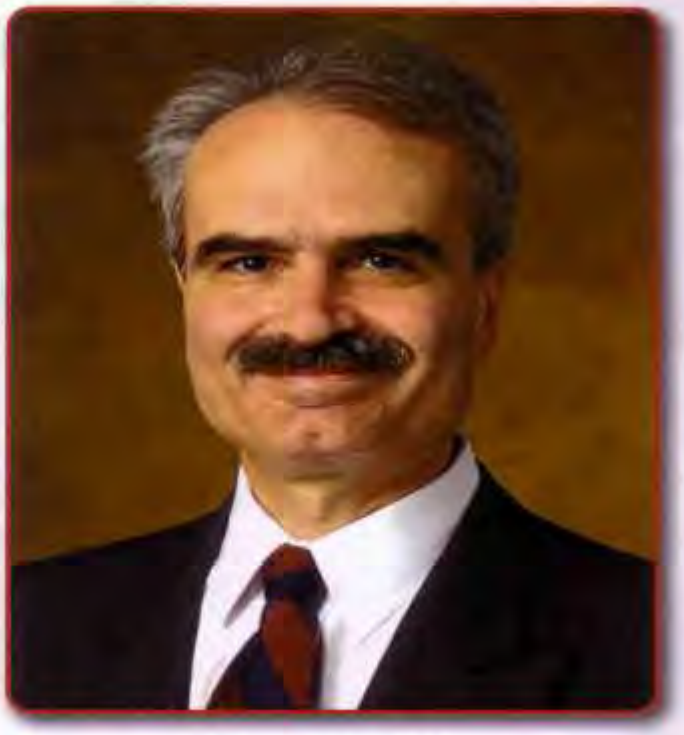
A lot of attention has been focused on cell therapy in a wide range of indications from oncology, where cell-based therapies are used to activate the immune system to fight cancer, to immunology, in which stem cell transplant has shown promise for treating diseases such as lupus or even diabetes. But one of the most exciting areas for cell therapy today is in cardiology.

It often surprises people that one of the largest areas of unmet medical need remains in cardiology. In an era of drug eluting stents (devices that keep arteries open), pacemakers and defibrillators as well as an arsenal of optimized pharmacological (drug) therapies that help control a beating heart, the mortality rate associated with heart attacks and congestive heart failure (when the heart loses its ability to pump blood to the body well enough to sustain life) is still extraordinarily high. In fact, in the case of severe heart failure, a five year mortality rate as high as 50% remains, and the outlook is worse than for colon or breast cancers.

The good news is that a paradigm shift of how cardiac disease is treated is well underway. Companies such as Baxter, NeoStem, MesoBlast, and Cytori are working on novel approaches using adult stem cells. In the case of Baxter and NeoStem, both companies are utilizing the body's natural repair mechanism for ischemic injury, which is to deliver adult stem cells and, in particular, cells that express certain markers (CD 34+) to the site of the ischemic insult. These cells have been known to be potent protagonists of angiogenesis (eliciting new blood vessel formation). Baxter is pioneering the use of these cells to treat ischemic areas of a damaged heart muscle, to strengthen the heart itself, and stop the progressive deterioration caused by chronic atherosclerosis. NeoStem is also pioneering the use of the CD 34+ cells but in a slightly different way - to treat the heart soon after an initial heart attack, strengthen the healthy tissue, and prevent the onset of congestive heart failure. Both of these approaches are "autologous", using one's own cells to treat the heart. The hope is that by concentrating and delivering these cells in a therapeutically effective dose, the na-



Roberto Bolli, M.D.

tural powers of these cells to create new blood vessel formation, responding to the ischemic injury, can be leveraged. Baxter is beginning a Phase III clinical trial for congestive heart failure, the last step prior to approval, and NeoStem is beginning their Phase II trial for treatment after an acute myocardial infarction, both in the United States. In my lab we are working, in collaboration with Dr. PieroAnversa at the Brigham and Women's Hospital, on using a person's own c-kit positive, lineage negative cardiac stem cells (CSCs) to improve cardiac function after an infarct and have published very exciting Phase 1 data in The Lancet. We were able to show that by administering 1 million autologous CSCs by intracoronary infusion, the ejection fraction (a standard measure of the heart's pumping ability) improved and size of the infarct decreased in patients after a myocardial infarction, implying that the cells induced regeneration of new heart muscle. Another interesting approach is being taken by Cytori, using stem cells that are derived from adipose tissue (your fat) and introducing the purified cells back to where they are needed. Cytori has reported encouraging Phase II clinical data in heart attack patients and expectations are that we will see this product advance to pivotal trials. Another company that has acquired a lot of attention in the cell therapy space is Mesoblast. This Australian cell therapy company came into the spotlight when specialty pharmaceutical company Cephalon acquired rights to the company's cardiology program for a $130 million payment and an equity stake in the company. For many, this validated the commercial potential of cell therapy. What the acquirer seemed to understand is the potential of this company's allogeneic cells (other people's cells) to be packaged in an off-the-shelf, pills-in-a-bottle model, and utilized to treat cardiac disease in a way that traditional drug therapy has just not had success doing. Every year, over 1.7 million people have a heart attack in Europe, and over 1.1 million in the United States. These therapies in development today provide hope to millions who suffer as a result of this unmet medical need. These therapies also hold promise to alleviate the economic cost of caring for these patients with a viable, cost effective cell therapy that can alter the deleterious cascading effects of heart attacks.

UMBILICAL CORD BLOOD BANKING

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Lee F. Clough, RN, HP (ASCP)

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Lee F. Clough, RN, HP (ASCP) is the Director of Clinical Affairs and Apheresis for Progenitor Cell Therapy, a NeoStem company.

Umbilical cord blood contains stem cells – mostly hematopoietic stem cells. The hematopoietic stem cells are the cells that are used in treating hematopoietic (blood – leukemia and lymphoma) and genetic disorders. There are different types of transplants depending on whom the donor of the stem cells is:

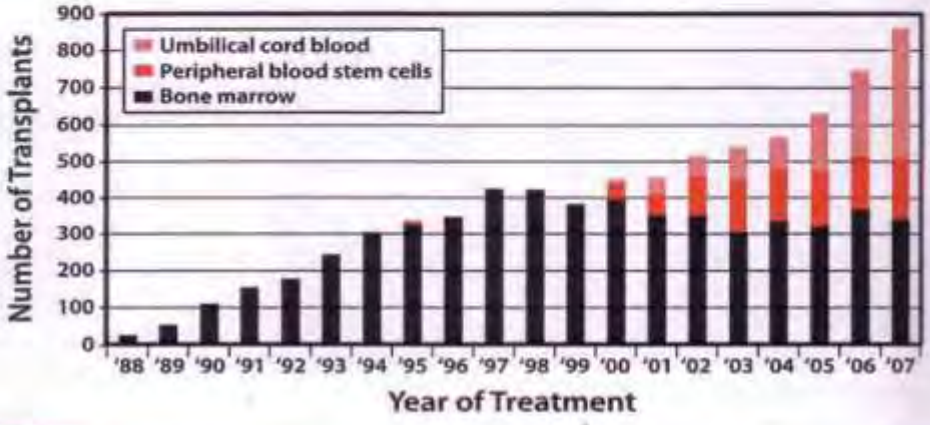
- Autologous transplant – cells are from the same person.
- Allogeneic transplant – cells are not from the same person.
- Allogeneic related – cells are from a related family member.
- Allogeneic unrelated – cells are from anyone and are not from a related family member.

Stem cells may also be collected from:

- Bone marrow – stem cells are collected from the marrow of the bone.
- Peripheral blood stem cells – stem cells are collected by a process called apheresis and requires venous access from the patient/donor.
- Umbilical cord blood – stem cells are collected from the umbilical cord after the baby is born.

So how we have arrived at this point in history where parents have the option to collect and store their child's umbilical cord blood for potential future stem cell transplants? In 1973, a team of physicians performed the first unrelated bone marrow transplant. In 1988, the first cord blood transplant was performed in France. The parents of a baby who had Fanconi Anemia were expecting their second child and utilized the umbilical cord blood from their second child to treat their first child. The first umbilical cord blood transplant was successful, thus beginning the new era in treatment of cancers and blood disorders and brought hope to many families unable to find a bone marrow match. After this first sibling-donor cord blood transplant was successful, the National Institutes of Health (NIH) awarded a grant to Dr. Pablo Rubinstein to develop the world's first cord blood program and cord blood bank.

In 1984, Congress passed the National Organ Transplant Act which included a request to evaluate unrelated marrow transplantation and the feasibility of establishing a national donor registry. The National Marrow Donor Program (NMDP), a separate nonprofit organization, was created. and took over the administration of the database needed to match a donor with a recipient in need of a transplant. The program began with bone marrow donations, and then added peripheral blood donations and cord blood donations. Over the years, the percentages of each of these dona-



tions have changed and currently there are a greater percentage of cord blood units being used for transplants. The NMDP has grown to 9 million donors and nearly 145,000 umbilical cord blood units

In 1992, a patient with leukemia was successfully transplanted with cord blood instead of bone marrow. Today, cord blood stem cells have been used in more than 20,000 transplants worldwide in the treatment of nearly 80 diseases. There is a new FDA Guidance, effective October 20, 2011, that impacts all public cord blood banks since these banks provide cord blood for allogeneic cord blood transplants intended for hematopoietic reconstitution in patients with specified indications.

Healthcare providers, in many states, are now mandated by law to council pregnant women about the choices in umbilical cord blood donation. Most states require healthcare providers to council pregnant women by the beginning of their third trimester. The choices pregnant women have in reference to umbilical cord blood are to discard and not store the umbilical cord blood, publicly bank the umbilical cord blood, or to privately store their umbilical cord blood.

Private cord blood banks enable parents at their infants birth to collect their child's cord blood and store it for potential future medical use. If the child, or a family member would ever require a cord blood transplant, the private cord blood bank will work with the potential recipient's physician to see if the cord blood is a match and then will work with you to release the cord

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Lee F. Clough

blood for transplant. The odds of an individual needing a stem cell transplant by age 70, using their own cells or from someone else, are estimated at 1 in 217.1 No accurate estimates exist for the likelihood of children needing their own stored umbilical cord blood, but according to the American Academy of Pediatrics, an estimated 1 in 1,000 to 1 in 200,000 use the umbilical cord blood that is stored.

There are many clinical trials (www.clinicaltrials.gov) underway that are currently using cord blood to determine if chronic diseases like type 1 diabetes, cerebral palsy, hydrocephalus, and several others can be cured or improved with a cord blood transplant. The "future is now" and scientists are working with the FDA to provide an efficacious way to develop cures for the many diseases and illnesses that afflict people around the world.

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TARGETING AUTOIMMUNE DISEASES WITH ADULT STEM CELL THERAPY

Dr. Richard K. Burt M.D.

Richard K. Burt, M.D. is Chief of the Division of Immunology, Department of Medicine, Feinberg School of Medicine, Northwestern University and a pioneer of adult stem cell treatments for autoimmune disease.

Autoimmune diseases, such as multiple sclerosis, systemic sclerosis, lupus, and type 1 diabetes, occur when the body's immune system develops a flaw in its ability to tell the difference between its self and outside cells. What is normally the body's defense system becomes its enemy. There are more than 80 known types of autoimmune disease and they affect more than 583 million people worldwide. That is approximately eight out of every hundred people in the world today.

Institutions such as the Northwestern University, Feinberg School of Medicine, has a Division of Immunotherapy that focus is on applying stem cells or immune cells toward innovative approaches to autoimmune disease management and organ regeneration. All ongoing clinical studies for stem cell therapies may be located on www.clinicaltrials.gov. These clinical trials involve collaboration with the Divisions of Rheumatology, Nephrology, Gastroenterology, and the Departments of Neurology, Dermatology, and Vascular Surgery in innovative approaches and active protocols for the treatment of lupus, multiple scleroses, rheumatoid arthritis, systemic sclerosis, Crohns disease, chronic inflammatory demyelinating polyradiculopathy (CIDP), type I diabetes, polymyositis, sarcoidosis, Devics (neuromyelitisoptica), and Wegeners, as well as peripheral vascular disease.

We divide the process of autologous transplantation for a patient into four phases. Phase I is retrieval of disease specific questionnaire, outside records and biopsy samples, followed by pre-transplant testing. Phase II is mobilization, wherein a patient is given stem cell mobilizing agents that encourages the release of adult stem cells from the bone marrow to the peripheral blood. Phase III is the harvest of the stem cells through the process of apheresis and is followed by a 2 week rest interval to assure sterility testing of the collected stem cells before Phase IV, conditioning/transplant. In this final phase, the patients' cells are returned to them in a manner very similar to a blood transfusion. The patient remains in the hospital on an average 10 days after stem cell infusion to ensure recovery.

We have pioneered the use of hematopoietic stem cells to treat autoimmune diseases with pre-clinical animal studies that began more than 25 years ago. This work has been supported with funding from the National Institutes of Health, Lupus Foundation of America, National MS society, as well as a generous philanthropic donations, and our own committed passion to work long hours to find answers to today's most disabling and puzzling medical problems.

Dr Burt was honored in 2006 by the magazine *Scientific American* as one of the top 50 people worldwide for improving humanity and in 2010 by *Science Illustrated* for pioneering one the 10 greatest medical advances (stem cells for autoimmune diseases) of the decade. Dr Burt publishes in numerous medical academic journals including *The Lancet* and *Journal of the American Medical Association* and some of his clinical stem cell trials are being run in Universities worldwide. Please refer to www.stemcell-immunotherapy.com for more information.

Dr. Richard K. Burt. M. D.

CONSIDERATIONS TO CREATE A CELL BASED THERAPEUTIC: THE PHARMACY OF THE FUTURE MAKE VERSUS BUY: THE DECISION TO OUTSOURCE CELL-BASED MANUFACTURING

Dr. Robert A. Preti, Ph.D.

***Robert A. Preti**, Ph.D. is Co-Founder and President of the Progenitor Cell Therapy (PCT), a founding member of the International Society for Cellular Therapies (ISCT, formerly the International Society for Hematotherapy and Graft Engineering), and serves on the Editorial Board for the society's journal, Cytotherapy. He also serves in his fourth term as Director for the AABB.*

Over the past 20-25 years, our understanding of the therapeutic potential of the cell has continually gained momentum and promise. In order to realize this potential many obstacles need to be overcome, including those related to regulatory, clinical, scientific, and financial concerns. In the end, we must devise robust and affordable manufacturing paradigms for these most innovative and unique therapies, ones that recognize that "change" is central to their development from concepts to commercial realities. It is within this context that the concept of Quality Systems and Comparability establish themselves as critical to the successful manufacturing and development program.

A successful manufacturing strategy must therefore be based from 'the inside' on a multi-parametric characterization, with an eye towards comparability, and build in potency and biological characterization approaches as early as possible. The most successful strategy is built in consultation with regulatory authorities (such as FDA and EMA, European Medicines Agency), and is built upon a solid Quality System on 'the outside' as guided by regulations such as the FDA's Current Good Tissues Practices (21 CFR 1271) and Current Good Manufacturing Practices (21 CFR 210/211).

Planning a solid product characterization strategy is the sole manner through which one can ensure that process, reagent, equipment, facility and other changes do not negatively impact the cell product, and to avoid unnecessary delays and cost. From early in development, one must have commercialization in mind, building in ele-

ments that will allow for ultimate automation, scale-up, and delivery, and based up a solid product characterization profile to effectively control these changes at the time at which they are most efficiently implemented.

A robust quality system and product characterization strategy can support the development of various cell products, as well as those of different types (i.e. patent-specific or universal ("off the shelf"), scaffold products, and the like. 'Off-the-shelf' products, defined as those from which many patient doses can be derived from a single donor's cells, have an apparent cost-of-goods advantage over patient-specific products, as product lots more readily scale-up through automation, and leverage of material, labor, and facilities. While large batch sizes have an advantage in that resemble production runs of traditional therapeutics, the economics related to the use of these production runs must take into account that these cell product analogs require cold-chain distribution, shipping, storage, bed-side preparation, and infusion/application that may be considerably more complicated than those of patient-specific products. Further, the more complex a cell product, especially those involving combinations of cells, with or without biomaterial scaffolds and those that rely on maintenance of their organizational structure for activity, such as bladders, skin an blood vessels, the more difficult to envision production, cryopreservation and storage of these on a large, off-the-shelf scale. Therefore, it is clear that there is a place for both patient-specific and off-the-shelf therapeutics in regenerative medicine.

Regenerative medicine also requires a delivery system adequately designed to maintain product control from cellular acquisition to re-infusion. A key component of such a system is an adequate logistics and transportation network capable of accomplishing the coordinated movement of cellular material to accommodate patient and clinical schedules. The ideal system includes relevant control elements of cGMP to result in a most efficient procedure for shipping human cells between physicians' offices, medical centers and laboratories for treatment or for long term preservation.

Much progress has been made over the past 20 years as the commercial reality of cell therapies have arrived, and the age of wide-scale application of blockbuster products is soon to be realized as data emerges from the numerous cell therapy trials currently underway.

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ENDING THE DISPUTE OVER STEM CELL THERAPIES

Hon. Tommy G. Thompson
Former United States Secretary of Health and Human Services

*The Honorable **Tommy G. Thompson** was elected Governor of Wisconsin in 1986 and served in that position until his appointment as the United States Secretary of Health and Human Services in 2001 where he was nation's leading advocate for the health and welfare of all Americans.*

For much of the last decade, Americans, and indeed much of the world, have debated the ethics and morality surrounding embryonic stem cell research. The idea of extracting live human cells from embryos has inspired considerable vitriol from both sides, and rightly so. On one side of the issue we have those who support this kind of research. This group claims the 'right to life' movement is impeding the progress of science, while those who disagree believe the opposition sacrifices the sanctity of human life in the pursuit of life-saving cellular therapies.

As the former Secretary of Health and Human Services, I had a front row seat for this ugly dispute, which continues to divide our nation today. Organizations, faith groups, businesses and politicians leaped into the fray, investing considerable dollars and passion in defense of their position. This argument has served no one, especially the hundreds of millions of people around the world suffering from disease and dangerous medical conditions. However, today's science has made this argument obsolete.

Hon. Tommy G. Thompson

When I speak to my fellow citizens about adult stem cell therapies, most of them are thoroughly confused. They believe these therapies are on the distant horizon and employ human cells from live embryos, or that these therapies fall short of the potential of their embryonic siblings. Both views are patently false. The reality is that adult stem cells, which exist in nearly every tissue in our bodies and have been used in medical treatments for over 30 years, can now do nearly everything that the distant horizons of embryonic stem therapies one day hope to achieve. And most importantly, not one single human embryo is destroyed. It is the ongoing, polarizing debate that has clouded a proper understanding of this issue.

It may come as a surprise, but last week The Vatican hosted the first-ever International Conference on Adult Stem Cells. Business leaders, ambassadors to The Holy See, health ministers from around the world, doctors, theologians, researchers and adult stem cell patients, all gathered within the walls of the Vatican to take part in this historic partnership, the first of its kind in over 1500 years of Vatican history. This landmark initiative flows from the efforts of two extraordinary individuals: Dr. Robin Smith, The President of The Stem For Life Foundation and CEO of NeoStem, who, joined by Father Tomasz Trafny of The Vatican's Pontifical Council For Culture, conceived of a working partnership between the foundation and Council and brought it to the attention of Pope Benedict XVI, who committed one million dollars of Vatican funds to support its work over the next five years. Its

mission is to 'wake up' the world to the here-and-now uses of adult stem cell therapies, and to form a collaborative network of scientists and doctors devoted to the advancement of adult stem cell therapies. The Pope himself met with the leaders of this partnership this past weekend to discuss The Vatican's historic engagement on this issue and plans for the years ahead.

While embryonic stem cell research hopes to one day employ live cells from human embryos for the treatment of disease in others, to date there is not one single embryonic treatment used in medical practice, and their safety and efficacy is years from being proved. Adult stem cells, by comparison, exist in nearly every tissue of our own bodies and have been used for over 30 years. Bone marrow and cord blood treatments are the most well known examples. However, in clinics and hospitals around the world, adult stem cells are already being used to regrow new organs, such as bladders, and are being used to reboot immune systems, reversing heart disease, cancer and countless auto immune disorders ravaging hundreds of millions of people around the world.

Most people have no knowledge of this, and this tragic reality is a consequence of the ugly argument over embryonic stem cell research. That day has to end. Instead of fighting about 'what not to do' with embryonic stem cell research, it is high time that we focus on 'what can be done' with adult stem cell therapies. Right now, if we invest in these treatments, we can cure diabetes, heart disease, cancer, Parkinson's and Alzheimer's and too many auto immune disorders to count. Right now, we have the potential to regrow nearly all of our organs - and even limbs, something we owe our men and women in uniform, who risk their lives to serve our country. And finally, the day when victims of spinal cord injuries rise up from their wheelchairs is no longer a fantasy.

For years now, industry groups have called on the Obama administration to forge a national strategy on regenerative medicine, but to date, nothing has been done. And we need to do this right now. Our task could not be more urgent. Right now, one out of every eight Americans has diabetes, a scourge on our nation that is already costing us $200 billion dollars a year. And if that number is not shocking enough, consider the fact that by 2050 one third of all U.S. citizens will have diabetes.

Hon. Tommy G. Thompson and
Cardinal Gianfranco Ravasi

It is for this reason that I have called on President Obama to create a presidential-level commission for regenerative medicine. This group should be comprised of leaders from private enterprise, individuals who have deep experience translating the best scientific research into here-and-now, commercial cures. This commission, in my view, should evaluate all of the federal programs in existence and the best of private research, and make specific recommendations to our President on how to get things done fast. For starters, NIH must better integrate its research in cellular therapies, which, despite the recent creation of a Regenerative Medicine Center, is still spread out over the NIH's 28 Institutes and Centers; and the Department of Defense must further its groundbreaking research into tissue generation and wound healing.

In order to turn back the tide of human suffering, we must rally as a people behind the vital role of adult stem cell therapies.

HUMANISM IN STEM CELL RESEARCH: NECESSARY CONDITIONS FOR OPTIMIZATION

P. Kevin T. Fitzgerald, S.J.

Kevin T. Fitzegerald, Ph.D., Ph.D. is an Associate Professor and the Dr. David Lauler Chair of Catholic Health Care Ethics in the Center for Clinical Bioethics at Georgetown University. His research efforts focus on the investigation of abnormal gene expression in cancer and on ethical issues in biomedical research.

The goal that is most often touted by those who argue for aggressively pursuing stem cell research is to provide benefits, treatments and cures, to the patients who seek healing and relief from their terrible and tragic illnesses. I wish to propose that a key, but often missing, part of this effort to bring healing to those in need is transparency. Transparency not only in the informed consent sense of letting patients know the potential risks and benefits of a procedure, but more importantly in the larger sense of our limitations and our goals regarding these patients and this research.

To begin with, we need to do a much better job acknowledging the limitations of our concepts and our understanding of what it is we are trying to do. We should learn from the results of biomedical research in the past 10-15 years and admit that we don't know nearly as much about health and disease as we thought we knew. On the stem cell front, we hear repeatedly of how some researchers have to struggle against dogmas in the research community regarding the limitations of adult stem cells in order to bring better treatments to their patients.

This lack of understanding extends to the terms we use to discuss stem cell research. In stem cell debates the term "embryo" is employed with an alarming lack of precision. There are now several ways one can create an embryo that are different from the normal interaction of sperm and egg. Current research indicates that one would find differences among these abnormally created embryos if one looked at their protein levels or gene expression assays. Would differences on that molecular level equate to differences on a moral or ontological level? For instance, we know that fertilization can result in cellular masses, such as complete hydatidiform moles, which often require surgical removal. So with all these variations, both molecular and organismal, how can anyone make claims regarding the moral or ontological status of human embryos based on inferences such as the percentage of embryos lost in natural conception? We need much more rigorous and robust reflection here, as well as more honesty about what we do and do not know.

By being more transparent about our lack of understanding in stem cell research and treatment, the damage hype causes to our fundamental goal of helping patients will become all the more apparent and all the more treatable itself. However, a second area of focus also needs to be addressed if we are to advance toward our goal of helping patients.

This second focus is revealed when people respond to the lack of understanding mentioned above by arguing that this lack is best addressed by doing all the research that is scientifically indicated. Though this increase in research is presented as the logical response to our lack of knowledge, it is not necessarily the logical response in terms of the goal of the biomedical project itself – to bring healing to patients. While more research may generate more ideas and products, the amount of benefit actually achieved by patients is sadly lacking. There are currently several efforts within the research world to create more rigorous standards for research and development that will better insure patient benefits, such as comparative effectiveness research. Effectiveness research has already revealed that merely spending more money on research may not only cause harm by producing more ineffective development of treatments and products, but also this increased spending can cause additional harm if the research funds are ob-

P. Kevin T. Fitzgerald, S.J.

tained by taking them away from other healthcare efforts such as preventive medicine, health education, clean water infrastructure and access to the effective treatments we already have. After all, if overall patient benefit is the goal, many more will be helped now by these public health efforts than our current stem cell research is likely to benefit for decades, if ever. And while additional funding for research need not necessarily take away resources from public health efforts, tragically it too often is a zero sum situation. The proposed focus on transparency in research and healthcare does not result in the abolition of biomedical research or publicly supported research funding. Instead what occurs is research that conforms more closely to the broadly embraced goals of more effective and more widespread patient care. In addition, it will also allow us greater freedom to acknowledge the limitations of our technologies and treatments, and thereby reduce inappropriate patient expectation and exploitation. Ultimately this transparency increases that treatment we can always give in abundance to our patients – care. What is truly clear is that real healing results most from the giving of real care.

EDUCATION AS A CHALLENGE: NECESSARY TOOL FOR A BETTER FUTURE

Anthony J. Cernera, Ph.D.
President, International Federation of Catholic Universities

Anthony J. Cernera, Ph.D. is currently serving his second term as president of the International Federation of Catholic Universities, the oldest and largest international association of Catholic Universities. He is a professor of theology and a former president of Sacred Heart University.

Tom Brokaw, in his new book, *The Time of Our Lives*, writes: "As a journalist and a fully engaged citizen, I am both excited and more than a little unnerved by the magnitude of the changes we have seen and the prospects of those yet to come. We are swept up in a storm of new technologies that are at once unifying, liberating and terrifying".

We are certainly living in a world undergoing profound change and transformation. Our times are one of those epoch making moments in history, like the emergence of agriculture or the industrial revolution. The scientific-technological revolution, of which we are in the midst, has presented us with changes so profound that most of us do not even begin to comprehend them. Yet in our hearts we know that there is a fundamental shift occurring, one that affects humanity's very self-understanding. We have the opportunity to make significant progress in the advancement and enhancement of human life and well being. Yet we also have the potential for great harm and destruction.

What are some of the challenges that we face as we go forward and what is the role of education in such a context?

The profound hermeneutical dislocation of our global era leads to the experience that the old metaphors and language that explained our experience are no longer adequate for many people. We are in search of a new interpretative language and metaphors for our experience. In addition, there is the emergence of what has been called an excessive individualism which is not isolated to the western world but appears to be ever more pervasive globally.

An additional challenge facing the human community in the second decade of the twenty first century is the increasing triumph of instrumental reason, that kind of rationality we draw on when we calculate the most economic application of means to a given end. Increasingly, the best measure for success is maximum efficiency, the best cost-output ratio. Added to this challenge is the significant withdrawal of many people from constructive engagement in the political dimensions of the human community and the privatization of religion in western public life.

These various challenges contribute to a pervasive sense of the loss of meaning and purpose in life. In the face of these challenges, there is an eclipse of concern about our end or goal as human beings. Towards the end of his life, E.F. Schumacher, the German born British economist, described the contemporary society as "rich in means and poor in purpose" in which "we are not using the facilities the Creator has put at our disposal for the purpose of attaining our end. We don't even think about what our end is."

In such a context the purposes of education need to be re-affirmed so that education is not reduced to mere training. Education seeks to strengthen students' capacities (and professors in this regard are lifelong students) to deal with the challenges facing the human community, to expand their horizons, enrich their intellects and deepen and transform their spirits. Education, as classically understood, invites the students to accept responsibility for their actions and for the welfare of others. John Henry Newman captured this a century and a half ago when he wrote: "The man who has learned to think and to reason and to compare

Anthony J. Cernera, Ph.D.

and discriminate and to analyze, who has refined his taste and formed his judgment, and sharpened his mental vision, will not indeed at once be a lawyer, or a statesman, or a physician, or a man of business, or an engineer, or a chemist... but he will be placed in that state of intellect in which he can take up any one of the sciences or callings I have referred to with an ease, a grace, a versatility, and a success to which another is a stranger".

This kind of education traditionally referred to as "liberal education", urges upon us humility of mind, a hospitality to other points of view as well as an intentionality to be open to correction and new insight. Such an education mitigates the challenges that we confront as a human community and fosters a more humane world for our children.

Part of the purposes of a liberal education is captured in the words "perhaps" and "thoughtfulness". The word "perhaps" reminds us of the importance of tolerance and a deep sense of intellectual humility. It is what Socrates was suggesting when he said that the unexamined life is not worth living. The word "thoughtfulness" suggests two dimension of a liberal education. First, it invites us to be considering things deeply and carefully. Secondly, it invites us to be considerate of one another; the thoughtful person thinks deeply and also cares about other human beings. Education at its best is assists men and women to be thoughtful in both senses of the word.

The kind of education that is suggested here is vital to our efforts to create a better tomorrow. For Christians and Jews as well as people of good will engagement in this kind of education is part of God's action of repairing and renewing the world. We are privileged to work at this noble task of education whether we are formally "teachers" or not.

WILL ADVANCES IN THE LIFE SCIENCES CHANGE OUR VISION OF MAN?

P. Nicanor Pier Giorgio Austriaco, O.P., Ph.D.

P. Nicanor Pier Giorgio Austriaco, O.P., Ph.D. is Associate Professor of Biology at Providence College and a Catholic priest in the Order of Friars Preachers.

How would recent discoveries in the life sciences affect our understanding of who we are as human beings? I would like to begin my brief presentation this morning by highlighting the fact that many of the ethical disputes that we have in the stem cell biology arise from disagreements over philosophical presuppositions and not scientific ones. To illustrate this claim, I would like to explore the philosophical anthropology that is presupposed by many molecular biologists and secular philosophers and then contrast it with the philosophical anthropology that is inherited by the Catholic tradition from Aristotle. I then propose that insights from the emerging science of systems biology can help us reconcile both worldviews.[1]

The vision of the human being that is presupposed by modern biology – In fact modern science in general – has its roots in what is called the mechanical philosophy of the seventeenth century. Rene Descartes, the father of modern philosophy, is often linked to this intellectual tradition. This view sees the human organism as a machine made up of interacting parts like a clock. Moreover, it claims that if you understand how the parts of the living thing function together then you understand that living thing, in the same way that comprehending how the parts of a clock work together leads one to understand the clock.

This mechanistic worldview has been incredibly productive. For example, in my own research laboratory at Providence College, my students and I are seeking to understand the mechanisms behind programmed cell death in yeast by identifying both the molecules involved and their interactions with the other parts of the cell. Biologists routinely study cells, tissues, and organs, by examining how their parts work together. In a sense, the parts are more than the whole.

However, I suggest that this mechanistic worldview has also led to some profound philosophical difficulties in our understanding of ourselves as human beings. For example, there is a lot of good empirical data that suggests that 98% of the atoms of our bodies is replaced every 650 days or so. Given this observation, I can ask a simple question: Are you the same organism that you were three years ago if practically all of the atoms in your body have been replaced since then?

Now, if you replace all the parts of a clock, our common sense view suggests that you have a new clock. In fact, if I have a clock and I take all of its parts and replace them with new ones, while simultaneously taking the old parts and reassembling them into another clock, most people would say that the reassembled clock is the original clock while the clock with new parts is a new clock. However, we would not say the same about ourselves. We would not say that we are created anew every few years. So, how then do we explain the identity and continuity of living organisms that change yet remain the same? How do we explain the fact that we understand ourselves as enduring throughout our entire lifespan – seventy years or eighty for those of us who are strong (cf. Ps 90:10) – while undergoing continuous change every day of our lives?

An ancient solution to this philosophical problem, which I suggest is compelling, has roots in the thought of Aristotle who lived about four hundred years before the birth of Christ. In order to understand the Catholic Church's moral teaching regarding the status of the human embryo – the guiding principle behind her eth-

[1] For more extensive discussion not possible in this brief and introductory presentation, and for references to the scientific and philosophical literature, see my published essays, "On Static Eggs and Dynamic Embryos: A Systems Perspective" *National Catholic Bioethics Quarterly*2(2002) 659–83; "Immediate Hominization from the Systems Perspective," *National Catholic Bioethics Quarterly*24(2004) 719–38; and "The Soul and Its Inclinations: Recovering a Metaphysical Biology with the Systems Perspective," in *The Human Animal: Procreation, Education, and the Foundations of Society*; Proceedings of the X Plenary Session, 18-20 June 2010, The Pontifical Academy of St. Thomas Aquinas (Vatican City: The Pontifical Academy of St. Thomas Aquinas, 2011), pp. 48-63.For other recent defenses of the coherence and explanatory power of hylomorphic theory, see David Oderberg, "Hylemorphic Dualism," *Social Philosophy and Policy* 22 (2005) 70–99; and John Haldane, "A Return to Form in the Philosophy of Mind," *Ratio* 11 (1998) 253–77.

P. Nicanor Pier Giorgio Austriaco, O.P., Ph.D.

ical view of stem cell research – you have to understand this Aristotelian conceptual framework called hylomorphism, because it is the basis for the Church's philosophical anthropology. The hylomorphic view is that all living substances – yeast, elephants, and human beings – are composed of two metaphysical principles called form and matter. Form is what makes something what it is – a dog is a dog because of its dog form and an elephant is an elephant because of its elephant form – and matter is the stuff out of which that living organism, in a sense, is organized and brought into being by the form.

There are three aspects of this metaphysical theory that I would like to emphasize here. First, hylomorphism is a *substantial* view. It highlights the reality that substances are real and that they can be distinguished from mere aggregates. The classical example of an aggregate is a pile of stones. I think that most reasonable individuals would agree that there is something truly different between you as a living organism and a pile of stones. We have an integrity, a unity, and a purpose that piles of stones do not have. Next, hylomorphism is also a holistic view. With living organisms, the whole is really real and can be truly distinguished from its parts. Indeed, the whole is greater than the sum of the parts. There are properties of the whole that cannot simply be attributed to the parts working together as parts. In other words, we are not mere collections of our atoms. We are more than that. We are alive. Finally, hylomorphism can explain the stable dynamism of living organisms. Living substances are stable because their form perdures throughout all the change that they endure during their lifetimes. In these three ways, hylomorphic theory is a better description of our commonsense experience of ourselves as human organisms than its mechanistic rival.

The question at hand, therefore, is this: How can we translate this classical view of the human person into a language that contemporary biologists and philosophers can understand? I propose that insights from the emerging field of systems biology can help us with this task.

Systems biology posits that living cells are networks of molecules that are organized in a particular way. For example, biologists have used microarray technology – a technology that can be used to study the behavior of all the genes in a living sample simultaneously – to demonstrate that T cells, one class of the white blood cells in the human body, express different genes from B cells, the other primary class of white blood cells in the immune system. Therefore, each cell type has a unique genetic signature. Each can be defined by the particularly unique subset of molecules that they express and the unique interactions among them. This discovery – that particular kinds of cells can be defined by the molecular interactions they contain – has been extended to the organismal level as well. We now know that different organisms as a whole can also be defined by the unique molecular interactions among the molecules that they express. These species-specific interactions are often depicted as "hairballs" that depict the complex interplay of the molecules in the organism. A yeast hairball is strikingly different from a human hairball. As human beings, our molecules are organized in a particular way – the human way – that is stable, dynamic, and unique.

In light of these discoveries, I suggest that systems biology allows us to recover a more holistic and substantial view of living organisms that more accurately describes the human being than the mechanistic alternative. I propose that an organism is informed matter, defined here as molecular matter organized in a species-specific network with its particular *telos*. Recall that according to Aristotle, the form constitutes every being as a specific kind of thing with specific causal powers. The organized network of molecules has a parallel function. It manifests the form. In contrast, the matter is the "stuff" out of which the living thing is made. It is not the molecules themselves, but the most fundamental constituent of the "stuff" that living organisms are made off.

Notice that there are parallels between this conceptual framework, which I have called systems hylomorphism, and the classical Aristotelian hylomorphic worldview that is presupposed by the Catholic moral tradition. First, it is a substantial perspective. The molecular network of a living organism is real and constitutes a whole. It is also a holistic perspective because the whole living network can be distinguished from its molecular parts. Significantly, systems biology has challenged life scientists to see that this whole cannot simply be reduced to its parts. There are emergent properties that can only be predicated of the whole that comes into being when the parts are organized in a particular way. Finally, it is a dynamic perspective. Molecular change is real – molecules enter and leave the system continuously – but the persistence of the living network is real too. In the end, this perspective can more robustly account for the stable dynamism of the living organism – again, our commonsense experience of ourselves as organisms – than the mechanistic account.

The differences between the mechanistic and hylomorphic views lead to significant ethical disagreements. Let me take one that impacts stem cell research. If a living organism is seen as a machine, then development is akin to the making of a clock. A clock comes into being when it is able to function as a clock. That is how you know that it is a clock. Thus, for moderns who implicitly hold to a mechanistic anthropology, the human being comes into being when the organism is able to function as a human being properly functions. Here arises the widely held conviction today that the human organism properly comes into being only when he is able to think or to dream or to feel. This happens days, if not weeks, after fertilization.

However, with the hylomorphic perspective, which I have argued is the better account than its mechanistic rival, we can see that the development of a living organism is the unfolding of the molecular process defined by the intra-molecular interactions established at fertilization that continues till death. Thus, properly understood, the human being as a substantial entity has his origins in conception when the union of sperm and egg give rise to the species-specific network that will govern the behavior of the living system until death. As such, both the human embryo and the human adult it will develop into should have the same moral status since, in truth, they are the same substantial being simply existing at two different moments in time.

In closing, as a Catholic scholar, I have spoken of souls and substances to describe living things, but my scientific colleagues and friends at M.I.T. and elsewhere, are not able to understand what I am saying. With the systems perspective that I have sketched here, however, I can now speak about state cycles and scale-free networks to approximate these metaphysical realities. In the end, it is my hope that this work of translation will facilitate a conversation between divergent philosophical anthropologies that will help us to move beyond the impasse that predominates much of ethical discussion surrounding stem cell research today.

XVI SEDUTA PUBBLICA DELLE PONTIFICIE ACCADEMIE

Il 30 novembre 2011 si è tenuta la XVI Seduta Pubblica delle Pontificie Accademie, appuntamento ormai tradizionale dell'ultima parte dell'anno. Quest'ultima edizione è stata organizzata dalla Pontificia Accademia Romana di Archeologia e dalla Pontificia Accademia *Cultorum Martyrum*, ed ha avuto come tema "Testimonianze e Testimoni. I *martyria* e i campioni della fede". La seduta è stata aperta dal saluto introduttivo di S.Em. il Cardinale Gianfranco Ravasi, Presidente del Coordinamento tra Accademie Pontificie. Quindi è intervenuto il Cardinale Segretario di Stato Tarcisio Bertone, che ha letto all'assemblea l'articolato e denso *Messaggio* del Santo Padre, riportato di seguito. In esso il Pontefice, oltre a valorizzare e promuovere la ricerca storica e archeologica e l'utilizzo delle nuove metodiche di scavo e di restauro, sottolinea soprattutto la valenza di messaggio insita nelle memorie monumentali, che non può essere trascurata dagli studiosi nella loro "ricerca, motivata proprio dall'interesse per l'esperienza umana, e quindi anche religiosa, che si cela e poi si rivela attraverso le testimonianze materiali, comprese, appunto, come testimonianze, cioè come messaggi che ci giungono dal passato e che, interpellando la nostra intelligenza e la nostra coscienza, contribuiscono ad approfondire le nostre conoscenze e, in definitiva, anche la visione del presente e della stessa nostra esistenza".

Il Cardinale Segretario di Stato ha quindi consegnato, a nome del Pontefice, il Premio delle Pontificie Accademie. Anche quest'anno il Premio è stato assegnato *ex aequo* ad una istituzione, lo *Studium Biblicum Franciscanum* di Gerusalemme, rappresentato da P. Carmelo Pappalardo OFM, e ad una studiosa, la Dott.ssa Daria Mastrorilli. Con l'assegnazione del Premio allo *Studium* di

Da sinistra: Card. Gianfranco Ravasi, Card. Tarcisio Bertone, Mons. Pasquale Iacobone

Gerusalemme il Santo Padre ha voluto sia riconoscere l'eccellenza della scuola archeologica che da decenni opera in Terra Santa sotto la guida di valenti maestri, a cui si devono importantissime scoperte archeologiche, sia incoraggiare e sostenere la presenza cristiana in un territorio che è stato la culla del cristianesimo, ma in cui la presenza cristiana rischia quasi di scomparire a causa delle tensioni che durano da decenni e delle sempre maggiori difficoltà. Alla Seduta ha significativamente partecipato il Custode di Terrasanta, P. Pierbattista Pizzaballa OFM, esprimendo così anche la gratitudine della Custodia per questo riconoscimento pontificio. A completare il quadro, e quindi a motivare ulteriormente l'assegnazione del Premio, è stato proiettato un breve ma intenso filmato, realizzato dalla Rai su un progetto di Franco Scaglia, in cui si rievocava la figura del grande archeologo francescano, recentemente scomparso, P. Michele Piccirillo.

Ha condiviso il Premio la Dott.ssa Daria Mastrorilli, per la sua tesi dottorale su "Il complesso cimiteriale di S. Zotico al X miglio della via Labicana dalla tarda antichità al Medioevo", discussa sotto la direzione del prof. Vincenzo Fiocchi Nicolai presso l'Università degli Studi di Roma "La Sapienza".

Il Santo Padre ha voluto, inoltre, assegnare una Medaglia del Pontificato alla Dott.ssa Cecilia Proverbio, distintasi con la tesi dottorale su "La decorazione delle basiliche paleocristiane: un tentativo per ricostruire i cicli affrescati di S. Pietro in Vaticano e di S. Paolo fuori le mura".

La Seduta è stata, poi, arricchita dalla interessante e documentata relazione del Prof. Fabrizio Bisconti, Soprintendente Archeologico delle Catacombe Cristiane, su "I *martyria* e i campioni della fede".

Il complesso dei *Vocalia Consort* ha proposto durante la manifestazione alcuni brani musicali a carattere religioso.

Alla Seduta, svoltasi nell'Aula Magna del Palazzo San Pio X, ha partecipato un folto pubblico, tra cui diversi Cardinali e Vescovi, un nutrito gruppo di Ambasciatori accreditati presso la Santa Sede nonché Autorità e Accademici delle diverse Pontificie Accademie riunite nel Consiglio di Coordinamento.

Mons. Pasquale Iacobone
Officiale del Pontificio Consiglio della Cultura

MESSAGGIO DEL SANTO PADRE BENEDETTO XVI IN OCCASIONE DELLA XVI SEDUTA PUBBLICA DELLE PONTIFICIE ACCADEMIE

Al Venerato Fratello
il Cardinale Gianfranco Ravasi
Presidente del Pontificio Consiglio della Cultura

In occasione della XVI Seduta Pubblica delle Pontificie Accademie sono lieto di farLe pervenire il mio cordiale saluto, che volentieri estendo ai Presidenti e agli Accademici, in particolare a Lei, Venerato Fratello, quale Presidente del Consiglio di Coordinamento. Rivolgo altresì il mio saluto ai Signori Cardinali, ai Vescovi, ai Sacerdoti, ai Religiosi e alle Religiose, ai Signori Ambasciatori e a tutti i partecipanti a questo significativo appuntamento.

L'annuale Seduta Pubblica delle Pontificie Accademie è diventata, infatti, tradizione consolidata, in cui si offre sia l'occasione di un incontro tra i membri delle diverse Accademie riunite nel Consiglio di Coordinamento, sia l'opportunità di valorizzare, attraverso il Premio delle Pontificie Accademie, istituito dal mio Venerato Predecessore, il Beato Giovanni Paolo II, il 23 novembre 1996, quanti, sia giovani studiosi o artisti, sia Istituzioni, con la loro ricerca e il loro impegno culturale, contribuiscono a promuovere un nuovo umanesimo cristiano.

Desidero, perciò, ringraziarLa per l'attenzione che rivolge a tutte e a ciascuna Accademia, e per l'impulso che ha voluto trasmettere ad esse perché siano davvero, e con efficacia, Istituzioni di qualificato livello accademico a servizio della Santa Sede e di tutta la Chiesa.

La XVI Seduta Pubblica è stata organizzata dalla Pontificia Accademia Romana di Archeologia e dalla Pontificia Accademia "*Cultorum Martyrum*", che vantano entrambe una storia più che secolare, ricca di straordinarie figure di archeologi, studiosi e cultori delle antichità cristiane e delle memorie martiriali.

Il tema proposto per questa Seduta Pubblica, "Testimonianze e Testimoni. I *martyria* e i campioni della fede", ci offre l'occasione per riflettere su un elemento che mi sta particolarmente a cuore: la storicità del cristianesimo, il suo intrecciarsi continuamente con la storia per trasformarla in profondità grazie al lievito del Vangelo e della santità vissuta e testimoniata.

La ricerca storica, e soprattutto quella archeologica, mirano a indagare sempre più accuratamente e con strumenti di ricerca quanto mai sofisticati le memorie, le testimonianze del passato; tra queste rivestono, per noi, un particolare interesse quelle delle antiche comunità cristiane.

Si tratta, evidentemente, di testimonianze materiali, costituite da tutti quegli elementi – edifici ecclesiali, complessi cimiteriali, epigrafi e sculture, affreschi e decorazioni, manufatti di ogni genere – che, se studiati e compresi secondo corrette metodologie, ci permettono di riscoprire non pochi aspetti della vita delle passate generazioni come pure della esperienza di fede delle antiche comunità cristiane, che lascia tracce sempre più consistenti nell'ambiente in cui viene vissuta.

L'indagine archeologica può oggi avvalersi di straordinari mezzi tecnologici per le diverse fasi dello scavo e della ricerca sul campo, come pure per il recupero di manufatti deteriorati dal tempo e dalle più avverse condizioni di conservazione. Penso, ad esempio, all'uso delle immagini satellitari, che si prestano a molteplici forme di analisi, producendo risultati impensabili fino a qualche decennio fa; o all'applicazione della tecnica del laser per il recupero di affreschi ricoperti da incrostazioni, come è avvenuto recentemente nella catacomba romana di Santa Tecla, dove sono stati riscoperti

affreschi di eccezionale valore storico e artistico, tra cui antichissime immagini degli Apostoli.

Ma la tecnologia, pur utilissima, da sola non basta. Sono necessarie, innanzitutto, una reale competenza dei ricercatori, maturata attraverso studi approfonditi e tirocini faticosi, e la loro passione autentica per la ricerca, motivata proprio dall'interesse per l'esperienza umana, e quindi anche religiosa, che si cela e poi si rivela attraverso le testimonianze materiali, comprese, appunto, come testimonianze, cioè come messaggi che ci giungono dal passato e che, interpellando la nostra intelligenza e la nostra coscienza, contribuiscono ad approfondire le nostre conoscenze e, in definitiva, anche la visione del presente e della stessa nostra esistenza.

Se questo può valere per ogni indagine archeologica, a maggior ragione vale quando si studiano i monumenti cristiani, e particolarmente i martyria, le testimonianze archeologiche e monumentali che attestano il culto della comunità cristiana per un campione della fede, per un martire.

Tra i tanti siti archeologici in cui emergono i segni della presenza cristiana, uno eccelle su tutti e suscita un singolare interesse: la Terra Santa, con le diverse località in cui si è concentrata l'attività di ricerca archeologica. Il territorio, già fortemente segnato dalla presenza del popolo di Israele, diviene anche l'ambito per eccellenza in cui ricercare i segni della presenza storica di Cristo e della prima comunità dei suoi discepoli. L'attività di indagine archeologica svolta negli ultimi decenni in Terra Santa, grazie all'impegno di grandi e appassionati ricercatori, come ad esempio Padre Bagatti, Padre Corbo e il compianto Padre Piccirillo, recentemente scomparso, ha portato a notevolissime scoperte e acquisizioni, contribuendo così a definire sempre meglio le coordinate storico-geografiche sia della presenza giudaica sia di quella cristiana.

Altro polo strategico dell'indagine archeologica è certamente la città di Roma con il suo territorio, in cui le memorie cristiane si sovrappongono e si intrecciano con quelle della civiltà romana. Qui a Roma, ma anche in molte altre località dove il Cristianesimo si diffuse già nei primi secoli della nostra éra, si possono ancor oggi ammirare e studiare numerosi elementi monumentali, a cominciare proprio dai martyria, che attestano non solo una generica presenza cristiana, ma soprattutto una forte testimonianza dei cristiani e di coloro che per Cristo hanno donato la propria vita, i martiri. Monumenti architettonici, tombe particolarmente solenni e decorate con cura, ristrutturazioni dei percorsi catacombali o addirittura di quelli urbani, così come tanti altri elementi artistici, attestano che la comunità cristiana, sin dalle origini, ha voluto esaltare le figure dei campioni della fede come modelli e punti di riferimento per tutti i battezzati.

I numerosissimi interventi monumentali e artistici dedicati ai martiri, documentati appunto dalle indagini archeologiche e da tutte le altre ricerche connesse, scaturiscono da una convinzione sempre presente nella comunità cristiana, di ieri come di oggi: il Vangelo parla al cuore dell'uomo e si comunica soprattutto attraverso la testimonianza viva dei credenti. L'annuncio della novità cristiana, della bellezza della fede in Cristo ha bisogno di persone che, con la propria coerenza di vita, con la propria fedeltà, testimoniata se necessario fino al dono di se stessi, manifestano l'assoluto primato dell'Amore su ogni altra istanza. Se osserviamo con attenzione l'esempio dei martiri, dei coraggiosi testimoni dell'antichità cristiana, come anche dei numerosissimi testimoni dei nostri tempi, ci accorgiamo che sono persone profondamente libere, libere da compromessi e da legami egoistici, consapevoli dell'importanza e della bellezza della loro vita, e proprio per questo capaci di amare Dio e i fratelli in maniera eroica, tracciando la misura alta della santità cristiana.

I campioni della fede, lungi dal rappresentare un modello conflittuale col mondo e con le realtà umane, annunciano e testimoniano, al contrario, l'amore ricco di misericordia e di condiscendenza di Dio Padre che in Cristo Crocifisso, il "testimone fedele" (cfr *Ap* 1,5), è entrato nella nostra storia e nella nostra umanità, non per avversarla o sottometterla ma per trasformarla profondamente e renderla così nuovamente capace di corrispondere pienamente al suo disegno di amore.

Anche oggi la Chiesa, se vuole efficacemente parlare al mondo, se vuole continuare ad annunciare fedelmente il Vangelo e far sentire la sua presenza amichevole agli uomini e alle donne che vivono la loro esistenza senten-

dosi "pellegrini della verità e della pace", deve farsi, anche nei contesti apparentemente più difficili o indifferenti all'annuncio evangelico, testimone della credibilità della fede, deve cioè saper offrire testimonianze concrete e profetiche attraverso segni efficaci e trasparenti di coerenza, di fedeltà e di amore appassionato e incondizionato a Cristo, non disgiunto da un'autentica carità, dall'amore per il prossimo.

Ieri come oggi, il sangue dei martiri, la loro tangibile ed eloquente testimonianza, tocca il cuore dell'uomo e lo rende fecondo, capace di far germogliare in sé una vita nuova, di accogliere la vita del Risorto per portare risurrezione e speranza al mondo che lo circonda.

Proprio per incoraggiare quanti vogliono offrire il loro contributo alla promozione e alla realizzazione di un nuovo umanesimo cristiano, attraverso la ricerca archeologica e storica, accogliendo la proposta formulata dal Consiglio di Coordinamento, sono lieto di assegnare *ex aequo* il Premio delle Pontificie Accademie Ecclesiastiche allo Studium Biblicum Franciscanum di Gerusalemme e alla Dott.ssa Daria Mastrorilli.

Desidero inoltre che, come segno di apprezzamento e di incoraggiamento, si offra la Medaglia del Pontificato alla Dott.ssa Cecilia Proverbio.

Augurando, infine, un impegno sempre più appassionato nei rispettivi campi di attività, affido ciascuno alla materna protezione della Vergine Maria, Regina dei Martiri, e di cuore imparto a Lei, Signor Cardinale, e a tutti i presenti una speciale Benedizione Apostolica.

Dal Vaticano, 30 novembre 2011
BENEDICTUS PP XVI

GAUDÍ EN ROMA. ARTE, CIENCIA Y ESPIRITUALIDAD CRÓNICA DE LA EXPOSICIÓN Y ACTOS ACADÉMICOS

Del 24 de noviembre al 15 de enero ha permanecido abierta al público en el *Braccio di Carlomagno* de la Plaza San Pedro la Exposición *Gaudí en Roma. Arte, ciencia y espiritualidad*, organizada por la "Junta Constructora de la Sagrada Familia" y la "Fundació Joan Maragall", del Arzobispado de Barcelona, con el patrocinio, el apoyo y la colaboración del Consejo Pontificio de la Cultura. Más de treinta mil personas han visitado la exposición durante el periodo natalicio y han podido acercarse a la rica personalidad del autor de una de las obras más emblemáticas de la ciudad de Barcelona.

En efecto, la Sagrada Familia se ha convertido en el símbolo de la capital catalana, y en su monumento más visitado. Tras el cierre de las naves y la consagración del templo por el Papa Benedicto XVI en noviembre de 2010, son más de 4 millones de visitantes los que recibe la Basílica de la Sagrada Familia, una obra todavía en construcción, en la que las grúas y los andamios continúan su actividad en el tejado, a más de cien metros de altura, mientras las multitudes invaden el prodigio de luz, color y formas que es el interior del templo. A diferencia de otros monumentos emblemáticos, ya sea la Tour Eiffel, la Estatua de la Libertad o el Coliseo, el mensaje que transmite la Sagrada Familia no es un alarde técnico ni una afirmación de supremacía, sino un canto de alabanza al Creador, como siempre soñó Gaudì, quien imaginaba que los viandantes y viajeros, contemplando desde lejos la silueta airosa y polícroma de las torres, y deletreando el escrito que aparece en ellas, "Santus, sanctus, sanctus", se unirían, aun cuando fuese inconscientemente, al esplendor de la liturgia del cielo.

La exposición ha tratado de transmitir algo de la genialidad del arquitecto catalán y de su proyecto vital, en el que la ciencia, el arte y la espiritualidad se entrelazan hasta fundirse en una única realidad. El visitante ha podido conocer los tres libros en los que se inspiró Gaudí para la Sagrada Familia: el libro de la Escritura y su rico simbolismo; el libro de la naturaleza, obra del Creador; y el libro de la liturgia, a cuyo servicio está el templo. De ahí la rica y fascinante estructura simbólica de un templo, donde no hay un detalle abandonado al azar, donde todo es proporción, armonía, número, que remite a las grandes realidades de la Biblia, del dogma cristiano, de la celebración litúrgica.

La exposición se inauguró el 24 de noviembre, con una amplia representación de la Curia Romana y de la vida social, cultural y política de Barcelona. Hizo las veces de anfitrión el arzobispo de Barcelona, el cardenal Lluís Martínez Sistach e intervinieron también el cardenal Gianfranco Ravasi, la Embajadora de España ante la Santa Sede, el Presidente de la *Generalitat* de Cataluña, Artur Mas, y los presidentes de las dos fundaciones que han organizado la exposición en constante contacto con el Consejo Pontificio de la Cultura. El comisario de la exposición, el Arq. Daniel Giralt-Miracle expuso a grandes líneas el mensaje que la exposición ha querido transmitir.

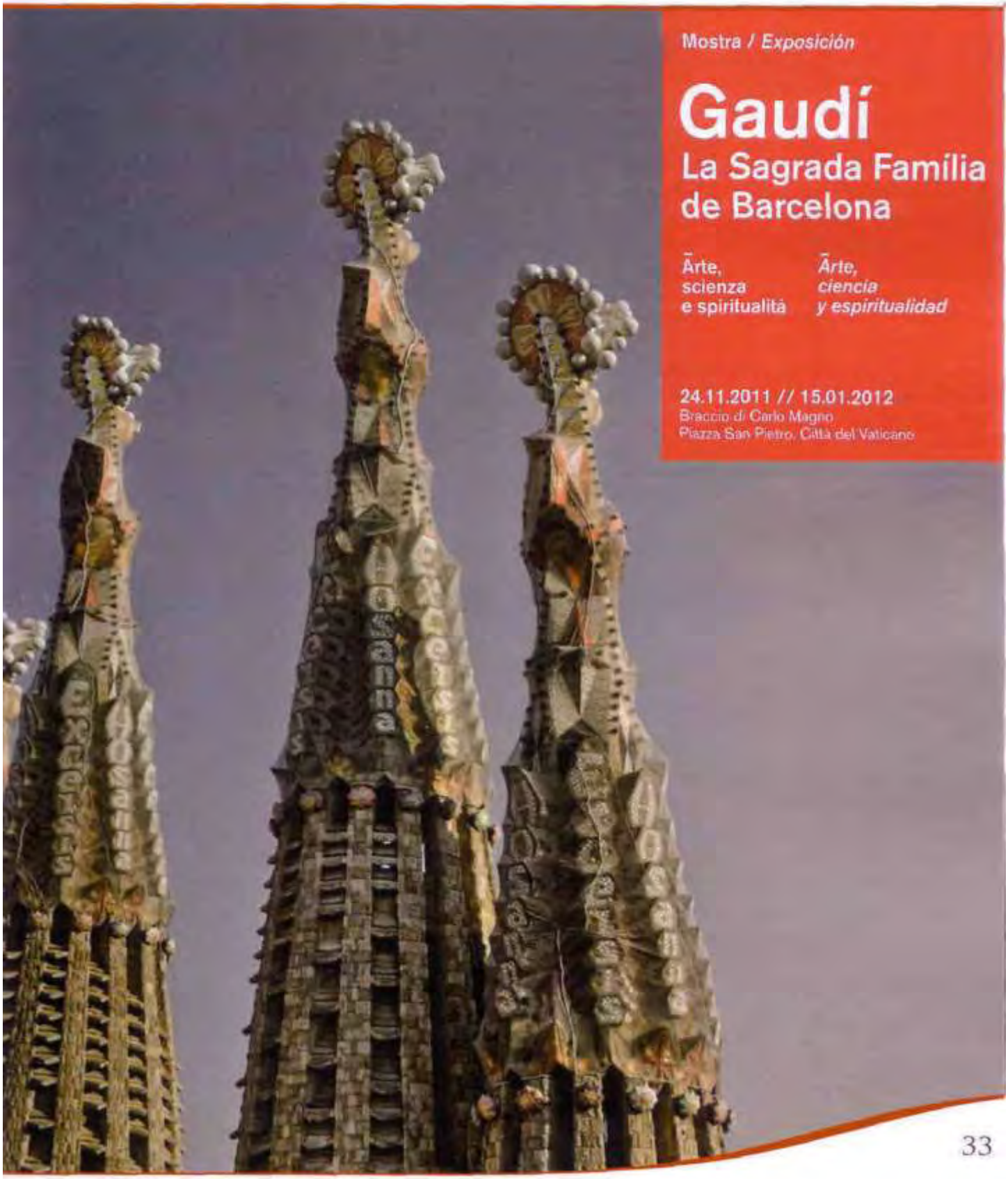
En torno a la exposición han tenido lugar diversos actos, cuyo objetivo era encuadrar la figura de Gaudí en su contexto artístico, histórico y social, así como presentar la actualidad y la necesidad de continuar el diálogo entre la arquitectura y lo sagrado. Sobre este último tema mantuvieron un interesante diálogo público el card. Ravasi y el arquitecto italiano Mario Botta

el pasado 12 de diciembre en la sede del MAXXI, el Museo de Arte del Siglo XXI, diseño de la arquitecta británico-iraquí Zaha Zahid. Un diálogo que ha atraído la atención de el semanario *L'espresso* (28 diciembre 2011), el cual ha recogido íntegramente el coloquio entre el cardenal y el arquitecto. En efecto, Gaudí representa una provocación para todos: ha querido levantar un templo en medio de la ciudad moderna, utilizando el lenguaje eterno de la belleza, pero vertido en formas modernas, comprensibles para el hombre de hoy. Gaudí plantea con fuerza la necesidad de recuperar el diálogo interrumpido entre la Iglesia y el arte contemporánea, so pena de seguir copiando modelos artísticos de otros tiempos, gastados y repetitivos, o bien de continuar produciendo obras de arte sin contacto alguno con la realidad, incapaces de satisfacer las exigencias de la liturgia y del culto.

Continuando las actividades en torno a la exposición, el día 14 de diciembre tuvo lugar en el *Palazzo di Spagna*, sede de la Embajada de España ante la Santa Sede, una mesa redonda en la que intervinieron Gian Maria Vian, director de *L'Osservatore Romano*, y el Prof. Ricard Torrents, primer rector de la Universidad de Vic, quienes disertaron acerca del contexto histórico, social y cultural de la Cataluña de fines del siglo XIX y principios del XX que vio nacer a Gaudí. Los autores establecieron interesantes conexiones entre el ambiente de la *Renaixença* catalana y el *Risorgimento* italiano, que encuadran la figura de Antoni Gaudí.

La exposición *Gaudí en Roma* tuvo su brillante clausura con un concierto de la Escolanía de la Abadía de Montserrat en la Iglesia de Santa María in Trastévere, presidido por el Cardenal Secretario de Estado, Tarcisio Bertone, acompañado por el card. Martínez Sistach. La popular iglesia, testigo de la presencia cristiana de la primera hora en la Urbe, acogió un maravilloso concierto de voces blancas, que interpretaron poemas de Mn Cinto Verdaguer, musicalizados por el monje montserratino Angel Rodamilans, y una selección de cantos populares navideños. Al terminar, resonaron en las naves del templo las notas del Virolai, el himno a la Mare de Déu de Montserrat, interpretado por todos los asistentes. Fue sin duda el mejor broche para una serie de actos que han permitido dar a conocer la figura del Arquitecto de Dios, a quien Mons. Ragonesi, Nuncio en Madrid, denominó "El Dante de la Arquitectura". No queda sino augurarse, como dijo el Cardenal de Barcelona, que podamos pronto ver en los altares a Antoni Gaudí, y convertirlo en patrono de los artistas.

Melchor Sânchez De Toca Alameda
Subsecretario del Consejo Pontificio de la Cultura



Mostra / *Exposición*

Gaudí
La Sagrada Família de Barcelona

Ārte, scienza e spiritualità

Ārte, ciencia y espiritualidad

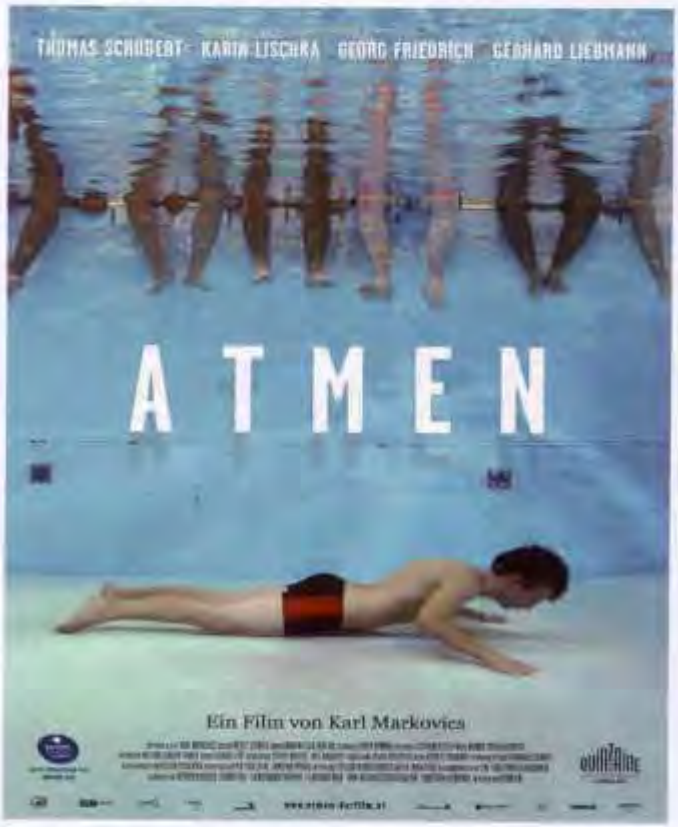
24.11.2011 // 15.01.2012
Braccio di Carlo Magno
Piazza San Pietro, Città del Vaticano

15° TERTIO MILLENNIO FILM FEST

Giunto alla XV edizione, il Tertio Millennio Film Fest, organizzato dalla Fondazione Ente dello Spettacolo, presieduta da Dario E. Viganò, con il Patrocinio del Pontificio Consiglio della Cultura e del Pontificio Consiglio per le Comunicazioni Sociali, ha proposto ancora una volta il cinema quale momento di riflessione sui problemi e gli avvenimenti del mondo contemporaneo e motore per delle domande che nessuno può più eludere.

Il tema centrale per l'edizione 2011, è stato "Amore, morte, miracoli. Per una fenomenologia della società contemporanea"; perché il miracolo, la morte e l'amore sono cifre fondamentali del cinema: "Il Tertio Millennio Film Fest è per tradizione momento di riflessione sulla condizione dell'uomo nel mondo moderno, usando l'orizzonte cinematografico quale mezzo per ragionare e sviscerare i problemi e i disagi contemporanei, ma anche occasione per riflettere sull'ineffabile", ha dichiarato Dario E. Viganò, Presidente FEdS e Direttore Artistico del Festival, che ha sottolineato: "Il tema centrale di quest'anno sottolinea come l'uomo sia da sempre in bilico tra la vita, il razionalismo e misticismo. In questo mondo, in cui sembra esserci poco spazio per il miracolo, il cinema si trova ad assumere su di sé il compito di restituirne la potenza, lo stupore, il bagliore sacrale, senza ridurlo a un effetto scenico, una superfetazione visiva, un trucco tra i tanti".

I film sono stati proiettati presso il Cinema Sala Trevi, sala della Cineteca Nazionale del Centro Sperimentale di Cinematografia di Roma dal 6 all'11 dicembre. Tra le anteprime più attese, *Atmen* e *Attack the Block*. Il primo, diretto da Karl Markovics è il candidato per l'Austria agli Oscar 2012 come miglior film straniero. Una storia di disagio, quella di Roman, che uscito dal carcere sulla parola si trova a dover affrontare i fantasmi del proprio passato.



Il secondo, *Attack the Block* di Joe Cornish, è un film di fantascienza dai risvolti sociali in cui i veri alieni sono i teppisti di periferia. Tra le anteprime, ha trovato spazio anche *Sette opere di misericordia* di Gianluca e Massimiliano De Serio. Il film, che ha vinto numerosi premi all'estero ed è stato distribuito in Italia a gennaio 2012, è incentrato sulle vicende della giovane Lumini a che, per cambiare la sua vita, mette in atto un piano audace che la porta a scontrarsi con Antonio, anziano e malato, che cambierà la sua vita. Sempre in anteprima, anche un Evento Speciale, la proiezione di *S.O.S/State of Security*, documentario di Michèle Ohayon, che racconta attraverso testimonianze e interviste le falle dell'intelligence statunitense in occasione dell'attentato dell'11 settembre. In chiusura, l'atteso *Hors Satan* di Bruno Dumont, film di raccordo con la rassegna "Il miracolo, probabilmente". La storia di un giovane, la cui vita è scandita

dalla caccia e dalla preghiera, e il suo rapporto con la ragazza che abita in una fattoria limitrofa e si prende cura di lui. Un'ambientazione particolarissima per un film presentato a Cannes 64 nella sezione "Un Certain Regard".

Il secondo giorno del Festival ha riservato al pubblico ulteriori eventi speciali a partire da *I giorni contati* di Elio Petri, opera restaurata dal Museo Nazionale del Cinema di Torino in collaborazione con La Cineteca di Bologna presso il Laboratorio L'Immagine Ritrovata. Introdotto al pubblico da Alberto Barbera, il film (1962) focalizza con precisione ed efficacia l'estraneità del protagonista dalla società.

A seguire, un incontro con il Direttore dell'Institut Lumière di Lione e delegato generale del Festival di Cannes che ha ricevuto dalla Fondazione Ente dello Spettacolo il Premio Speciale Cinema per essersi distinto nell'opera di divulgazione del lavoro di conservazione e valorizzazione del patrimonio cinematografico. Al termine della cerimonia di premiazione, Thierry Frémaux ha presentato un'antologia di film restaurati dei fratelli Lumière.

L'8 dicembre è stata la volta del Focus talent: R zvan R dulescu & Melissa de Raaf, coppia di sceneggiatori e registi protagonista del risveglio del cinema rumeno. Con *First of All, Felicia*, il loro esordio dietro la macchina da presa, e *Shelter* di Dragomir Sholev, l'ultima collaborazione, racconteranno al pubblico il loro sodalizio artistico.

Anche quest'anno, il festival ha riservato al pubblico degli Incontri con autori e attori italiani. Il 9 dicembre il regista Francesco Patierno ha raccontato la genesi del film *Cose dell'altro mondo* e ha risposto alle domande degli spettatori. Il 10 dicembre, gli attori Cristiana Capotondi e Antonio Catania, con un moderatore d'eccezione: Mimmo Calopresti, hanno incontrato il pubblico ripercorrendo in "Cinema è sogno" le loro carriere e trasportando gli spettatori nel magico splen-

dore del mondo del cinema.

Quest'anno il Festival è stato arricchito anche dalla rassegna "Il miracolo, probabilmente (L'occhio laico della messa in scena)": la sezione si è aperta con *Ordet – La parola*, capolavoro del 1955 di Carl Theodor Dreyer, per arrivare ai giorni nostri con *Lourdes*, vincitore di Premio FIPRESCI, Premio SIGNIS e Premio "La Navicella" alla 66. Mostra Internazionale d'Arte Cinematografica di Venezia, *Stellet Licht* di Carlos Reygadas, Premio della Giuria al 60. Festival di Cannes, e *Il ragazzo con la bicicletta* dei fratelli Dardenne, Grand Prix al 64. Festival di Cannes e Premio Bresson a Venezia 68. Opere che, come *Il tempo dei miracoli* di Goran Paskaljevic e *Hors Satan*, raccontano come il miracolo oggi si insinui tra le pieghe del reale, più che sovvertirlo. Sempre nell'ambito del Festival, venerdì 9 dicembre, nel corso di una serata di gala, è avvenuta l'annuale assegnazione degli *RdC Awards:* a Guido Chiesa il premio "Diego Fabbri" al miglior saggio di cinema per il suo *Manuale di regia cinematografica*, edito da UTET; a Giuseppe Battiston il Premio Navicella – Fiction; a *Sette opere di misericordia* dei gemelli torinesi Gianluca e Massimiliano De Serio il Premio Navicella – Cinema Italiano; a Franco Piersanti il Premio Colonna Sonora. Come di consueto, nell'ambito della conferenza di presentazione del Festival è stato inoltre assegnato il premio Rivelazione dell'anno che nel 2011 è andato a Filippo Scicchitano, protagonista del film *Scialla!* di Francesco Bruni.

Il Festival è stato anticipato dal Convegno Internazionale "Film and Faith" tenutosi l'1 e il 2 dicembre presso la Pontificia Università Lateranense e organizzato dalla Fondazione Ente dello Spettacolo in collaborazione con il Pontificio Consiglio della Cultura, il Pontificio Consiglio delle Comunicazioni Sociali, l'Ufficio Nazionale per le Comunicazioni Sociali della Conferenza Episcopale Italiana e la Pontificia Università Lateranense. Ideale tappa di avvicinamento a Tertio Millennio Film Fest, il convegno, diviso in cinque sessioni, è stato occasione per analizzare le implicazioni della Fede e le sue narrazioni nel mondo contemporaneo, per approfondire l'essenza del sacro nelle immagini cinematografiche con interventi, tra gli altri, dei registi Milcho Manchevski (*Prima della pioggia*) e Pavel Lounguine (*L'isola – Ostrov*) e delle massime cariche ecclesiastiche, di giornalisti ed esperti italiani e stranieri. Grazie alla collaborazione con il Centro Sperimentale di Cinematografia – Cineteca Nazionale, a conclusione della prima giornata dei lavori, è stata inoltre proiettata la versione restaurata de *Il bacio di Giuda* (1988) alla presenza del regista Paolo Benvenuti.

Mandiamo in archivio questa edizione e già si lavora per la prossima: auguri per la XVI rassegna del Tertio Millennio Filmfest 2012.

A cura dell'*Ente dello Spettacolo*

AN AZERBAIJANI CONCERT COMES TO TOWN

It was twenty years ago that Azerbaijan, a tiny oil rich country in the Caucasian region got its independence from the Soviet Union. Since then, it has been making rapid strides into the diplomatic world. And has been working hard to showcase its multicultural heritage. The collaboration between the Pontifical Council for Culture and Azerbaijan has been growing in leaps and bounds specially because of the untiring efforts of Mr. Elchin Amirbayov, Ambassador of Azerbaijan to the Holy See. The warm collaboration has in the past seen the organization of an Art Exhibition of Art Exhibits, a concert of *Mugham* music, a highly fruitful Official Visit of Cardinal Gianfranco Ravasi, President of the Pontifical Council for Culture to Baku.

Another major landmark in this vivid collaboration was the recent Concert held in Rome at Villa Miani, on November 29, 2010, to mark the 20th anniversary of the New Republic of Azerbaijan. The Concert by Azerbaijani artistes regaled a huge audience comprising of Cardinals, Bishops, priests, religious and others, with Azerbaijani traditional music splattered with Classical western melodies. The musical event which was followed by a lavish buffet was organized in by the Embassy of the Republic of Azerbaijan to the Holy See in collaboration with the Pontifical Council for Culture and under the patronage of the Heydar Aliyev Foundation. The First Lady of Azerbaijan and President of the Heydar Aliyev Foundation, Dr. Mehriban Aliyeva and the President of the Pontifical Council for Culture, Cardinal Gianfranco Ravasi jointly preside at the function. Dr. Aliyeva in her address thanked Cardinal Ravasi for all the collaboration in the cultural field with her country and promised to sponsor restoration work of some Christian catacombs and sarcophagi in Rome. Cardinal Ravasi in his intervention appreciated the close collaboration between Azerbaijan and the Dicastery headed by him. While thanking the First Lady for the offer of sponsorship, he expressed confidence that this gesture of the Aliyev Foundation would be a stellar example of collaboration between the Holy See and a Country that is inhabited by predominantly Muslims and in which the catholic presence is negligible.

Earlier, before the start of the concert, Dr. Alieya had a meeting with His Eminence, who was accompanied by his collaborators at the Pontifical Council for Culture: Bishop Barthélemy Adoukonou, Secretary, Bishop Carlos Alberto Azevedo, Delegate, and Fr. Theodore Mascarenhas, Head of the Departments for Cultures in Asia, Africa and Oceania.

Fr. Theodore Mascarenhas SFX
Head of the Departments for Cultures in Asia, Africa and Oceania

CIENCIA Y FE EN LA CIUDAD SANTA

Organizado por el Instituto Ciencia y Fe del Ateneo Pontificio "Regina Apostolorum" y por el Instituto Notre Dame of Jerusalem, con el patrocinio del Consejo Pontificio de la Cultura y del Ministerio de Asuntos Exteriores de Italia, ha tenido lugar un seminario sobre el tema *El Dios del universo y las leyes de la naturaleza. Fe y ciencia en las religiones monoteístas*, del 4 al 9 de diciembre 2011. En el seminario, celebrado en el emblemático albergue Notre Dame de Jerusalén, situado enfrente de la ciudad vieja, han participado Rafael Pascual, Rav Riccardo di Segni, Prof. Mustafá Abu Sway, Pietro Ramellini, Guido Traversa, William Carroll, Costantino Sigismondi, Pedro Barrajón, Avinoam Danim y Melchor Sánchez de Toca, en dos intensas jornadas.

Ciencia y fe interactúan, a veces de manera conflictiva, otras positivamente. Los ponentes examinaron diversos casos, tanto desde un punto de vista general como particular, en campos como la astronomía o la biología evolutiva. La misma curiosidad que empujó a Moisés a acercarse a la zarza ardiente, recordó el Rabino di Segni, sigue impulsando a los hombres de ciencia a investigar la naturaleza. El espíritu crítico del científico no impide el encuentro con Dios.

Judaísmo, cristianismo, Islam concuerdan en el hecho de que la naturaleza expresa la voluntad de Dios "de modo obedientísimo", según la conocida afirmación de Galileo. Cuando surge un desacuerdo entre las Escrituras y las ciencias naturales, o bien nos hallamos ante un modelo científico que todavía tiene que madurar, o bien la interpretación de la Biblia es imperfecta. La fragmentación cada vez mayor, la especialización de saberes ha creado un hiato entre la sabiduría, la capacidad de dar gusto a las cosas, y el hombre. Hacer ciencia sin comprender el sentido y el fin de lo creado lleva a la paradoja de una universidad donde en departamentos contiguos trabajan personas y se realizan proyectos recíprocamente ignorados e incomprensibles. Lo contrario del concepto de "universitas".

Si teólogos y científicos no dialogan, permanecerán las suspicacias que han marcado la historia del pensamiento occidental. Teólogos-científicos o científicos humanistas pueden hacer el diálogo más simple. Las universidades católicas tendrían que tener el valor de renovar sus programas educativos, valorando en las ciencias la peculiaridad de ser cristianos. A las universidades civiles corresponde una tarea simétrica, cuya ausencia es particularmente sentida en el mundo cultural y científico. La contribución del pensamiento a una sociedad empeñada en la globalización y la crisis económica, a pesar de ciertos indudables éxitos parciales, pero incapaz de ir al meollo de los problemas, es más urgente que nunca. Teólogos, filósofos y científicos deben encontrar nuevos caminos de diálogo, buscando la anhelada visión orgánica y unitaria del saber, capaz de dar al hombre de hoy una repuesta global a los grandes interrogantes del universo y de su existencia en él.

Constantino Sigismondi

NUOVA FONDAZIONE IN VATICANO DEDICATA AL DIALOGO TRA LA SCIENZA, LA TEOLOGIA E LA FILOSOFIA

In data 10 gennaio 2012, il Segretario di Stato, Card. Tarcisio Bertone, ha reso pubblico che il Santo Padre ha costituito la "Fondazione Scienza e Fede – STOQ", con sede nello Stato della Città del Vaticano, dotata di personalità giuridica pubblica canonica e civile.

La Fondazione – creata su richiesta del Cardinale Gianfranco Ravasi, Presidente del Pontificio Consiglio della Cultura, facendo propri i desideri di alcune università pontificie romane – darà continuità e stabilità al Progetto STOQ (*Science, Theology and the Ontological Quest*), che, nato sulla scia della Commissione di Studio del Caso Galilei, istituita dal Beato Giovanni Paolo II, dal 2003 ha promosso il dialogo tra la teologia, la filosofia e le scienze naturali attraverso iniziative di studio, di ricerca e di divulgazione culturale, anche grazie al supporto di diverse istituzioni, tra cui la John Templeton Foundation.

La Fondazione "Scienza e Fede – STOQ", la prima del suo genere in Vaticano, continuerà la costante e qualificata collaborazione istauratasi negli ultimi anni tra il Pontificio Consiglio della Cultura e alcune Università Pontificie Romane: Pontificia Università Lateranense (PUL), Pontificia Università Gregoriana (PUG), Pontificio Ateneo Regina Apostolorum (APRA), Pontificia Università Salesiana (UPS), Pontificia Università della Santa Croce (PUSC) e Pontificia Università Urbaniana (PUU). Essa rimarrà legata al Pontificio Consiglio della Cultura attraverso il suo Presidente, ma godrà di ampia autonomia per realizzare progetti di vasta portata, anche attraverso questi centri di studio.

La nuova Fondazione darà continuità ai progetti già attivati e ne garantirà la necessaria stabilità. Tra questi, vi sono programmi di studio e corsi accademici (Specializzazioni, Master e Dottorato); attività di ricerca (Seminari, Workshop, Convegni) e di divulgazione, attraverso la pubblicazione di articoli, l'organizzazione di conferenze/corsi di aggiornamento e l'allestimento di mostre sui temi più rilevanti che riguardano i rapporti tra le scienze naturali e la filosofia e la teologia. La Fondazione diventerà così un solido centro di riferimento presso la Santa Sede per una 'nuova evangelizzazione' degli ambienti scientifici.

La Fondazione avrà la sua sede provvisoria presso gli uffici del Pontificio Consiglio della Cultura, dove è attualmente in fase di allestimento la Biblioteca "Prof. Peter E. Hodgson" – fisico nucleare inglese (1928-2008), già Consultore del Pontificio Consiglio della Cultura e illustre promotore del dialogo tra scienza e fede – che ha voluto donare in eredità al Progetto STOQ la sua imponente biblioteca di scienza e religione, ora patrimonio della "Fondazione Scienza e Fede – STOQ".

Ulteriori informazioni: http://www.stoqproject.it ; stoq@stoq.va

36ª sessione della Conferenza Generale dell'UNESCO

Si è svolta a Parigi, dal 25 ottobre al 10 novembre 2011, la 36ª sessione della Conferenza Generale dell'UNESCO, con la partecipazione delle delegazioni di 193 Stati Membri, oltre ai rappresentanti dei Paesi Associati, degli osservatori, delle organizzazioni intergovernative e non-governative.
Eventi rilevanti di quest'ultima sessione sono stati l'ammissione all'UNESCO della Palestina e del Sud Sudan. Sono state annunciate le celebrazioni, previste per il 2012, per il 40° anniversario della Convenzione sulla Protezione del Patrimonio Culturale e Naturale. Inoltre, la Conferenza delle Nazioni Unite Rio+20 sullo Sviluppo Sostenibile, che si terrà nel giugno 2012, offrirà all'UNESCO una nuova opportunità di creare una connessione tra cultura e sviluppo.
Particolare attenzione è stata dedicata al programma *Education for All*, che si pone lì obiettivo di assicurare l'istruzione primaria a tutti i bambini del mondo entro il 2015, così come allo sviluppo sostenibile e alla cultura della pace e della non violenza.
All'interno della Conferenza Generale è stato poi celebrato il decimo anniversario della Dichiarazione Universale sulla Diversità Culturale.
Sono state infine dichiarate due nuove giornate internazionali: la Giornata Mondiale della Radio, il 13 febbraio, e la Giornata Internazionale del Jazz, il 30 aprile.

Della delegazione della Santa Sede, guidata da S.E.R. Mons. Francesco FOLLO, Osservatore permanente della Santa Sede presso l'UNESCO, ha fatto parte P. Laurent MAZAS, Officiale del Pontificio Consiglio della Cultura, di cui intervento pubblichiamo di seguito.

P. Laurent Mazas

Monsieur le Président,
Mesdames et Messieurs,

Le grand programme IV de l'UNESCO se présente comme un plaidoyer pour la prise en compte de la culture et du dialogue interculturel dans les politiques de développement afin de promouvoir une culture de la paix et de la non-violence. Pour atteindre ce vaste objectif, l'Organisation propose différents axes d'action dont la promotion du dialogue interculturel pour un renforcement de la cohésion sociale.

Le nouveau siècle à peine commencé a déjà été traversé par de nombreuses crises économiques et financières, sociales et morales, culturelles et religieuses qui toutes sont une *crise de l'humanisme*. Une large part des hommes et des femmes sur la terre ne perçoivent plus à l'horizon de leur existence qu'une nuit toujours plus sombre et angoissante, nuit de faim et de misère, nuit de haine et de violence où tout semble permis au nom des libertés individuelles. « Où en est aujourd'hui la cause de la paix ? », s'interrogeait le Pape Benoît XVI à Assise, le 27 octobre dernier, devant les représentants des religions du monde réunis à son invitation avec à leurs côtés des humanistes agnostiques. Et il avertissait : « *La liberté est un grand bien. Mais le monde de la liberté s'est révélé en grande partie sans orientation, jusqu'à être comprise par beaucoup comme liberté pour la violence. La dissension prend de nouveaux visages effrayants et la lutte pour la paix doit, tous, nous stimuler de façon nouvelle.* »

L'extraordinaire projet de l'UNESCO, Organisation née au lendemain de la guerre avec la conviction que « les guerres prenant naissance dans l'esprit des hommes, c'est dans l'esprit des hommes que doivent être élevées les défenses de la paix », l'oblige aujourd'hui à s'interroger à nouveau sur sa capacité à offrir les conditions d'un nouvel humanisme, comme l'a reconnu à mainte reprise sa Directrice Générale, Madame Irina Bokova.

Le Saint-Siège veut dire à cette vénérable Institution – et elle l'a fait à l'occasion du lancement du *Parvis des Gentils* le 24 mars dernier – que ce nouvel humanisme ne peut advenir sans une rencontre en vérité d'hommes et de femmes de toutes les religions et convictions, croyants et incroyants, et la prise de conscience pascalienne que « *L'homme passe infiniment l'homme* ». Si, selon Dante, l'homme est fait pour « transhumaner », c'est qu'au plus profond de son être il cherche ses raisons de vivre au-delà de lui-même. Avec le Pape Benoît XVI dans son discours déjà cité, je veux le redire ici : « *L'orientation de l'homme vers Dieu, vécue avec droiture, est une force de paix.* »

La culture est le lieu propre de l'interrogation sur la transcendance comme les millénaires de l'histoire humaine nous l'enseignent. Organisation mondiale vouée à la protection et au développement des cultures, l'UNESCO se doit d'ouvrir des espaces de dialogue et de rencontre pour que les hommes, ensemble, en marche vers la vérité, s'engagent résolument pour la dignité de l'homme, de chaque homme et de tout l'homme, et servent en frères la cause de la paix contre toutes sortes de violences destructrices du droit.

A HUNGARIAN SUCCESS STORY: THE FIFTH WORLD SCIENCE FORUM

Recognising the global nature of challenges facing humankind, the *World Science Forum* was created by the Hungarian Academy of Sciences, UNESCO and the International Council for Science (ICSU) in the quest for meaningful dialogue among the various stakeholders of knowledge, scientific communities, policy makers and societies. The Forum seeks to provide the scientific community and public policy makers with a global platform to exchange, discuss and harmonize their ideas in respect to the growing interdependence of science with society.

Held in Budapest between 17 and 19 November 2011 for the fifth time, the *World Science Forum* has become a meeting of globally recognised scientists drawing serious international attention. The main theme was "The Changing Landscape of Science – Challenges and Opportunities". With the contribution of world-leading scientists, science policymakers presented the geographical, thematic, and social aspects of this subject focusing on some of the most burning issues of science and global society.

The official launch ceremony at the Hungarian Academy of Sciences headquarters, on **16 November 2011**, was attended by approximately 650 participants from 108 countries. The Pontifical Council for Culture was represented by Msgr. Gergely KOVÁCS, Head of Office and Rev. Tomasz TRAFNY, Head of Science and Faith Department.

Opening Session at Hungarian Academy of Sciences

On **17 November 2011** morning, the greeting words of József Pálinkás, President of the Hungarian Academy of Sciences, were followed by the opening speech of Viktor Orbán, Prime Minister of Hungary, who said representatives of both science and politics are to look for new ways of reaching their appointed goals. In his video message, UN General Secretary Ban Ki Moon called attention to the importance of protecting the environment, thereafter Director General of UNESCO Irina Bokova stressed the importance of co-operation. According to the President of ICSU Yuan Tseh Lee we have to redefine the priorities of development. Director General of the American Association for the Advancement of Science, Alan I. Leshner, said that we face unprecedented challenges. We have to do a better job in co-ordinating scientific co-operation on the national, international, and global levels, emphasised Brazil's Prime Minister Aloizio Mercadante. In his video message, astronaut Sergei Volkov set an example by referring to the close collaboration he and his partners have to accomplish even under pressure by taking into consideration each others' interest.

The opening session was followed by the UNESCO's prize ceremony, where Irina Bokova, Director-General of UNESCO and Madiha Ahmed Al Shaibani Minister of Education in Oman gave the Sultan Qaboos Prize for Environment to the Nigerian Forestry Research Institute. The prize recognizes outstanding initiatives concerning the management and preservation of the environment.

The participants of the Forum continued the discussion in plenary sessions. The First Session dealt with the main theme of the Forum: "The Changing Landscape of Science: Challenges and Opportunities". Speakers, chaired by József Pálinkás, talked about the challenges and opportunities generated by a changing world of science.

The Second Plenary Session – "Emerging Powerhouses in Science and Technology" – provided a thorough geographical survey of the changing landscape of today's science. Chaired by President of the Brazilian Academy of Sciences Jacob Palis, the session offered a truly multifarious picture of what goes on in the scientific life of much of the planet's surface.

In the afternoon the third Plenary Session was dedicated to "New fields of science emerge". In fact, on the world map of science, new fields of science are emerging, offering possibilities of new fields and new procedures in research. Werner Arber Nobel Laureate and President of the Pontifical Academy of Sciences opened the session by highlighting the importance of advanced technology in science, and mentioning examples of the enormous progress science has made in the last ten to twenty years.

The first day closed with two parallel thematic sessions: "Heading for Global Research Universities" thinking about the role of universities in an age when science and economy are becoming global, and "Prevention is better than cure", dedicated to emerging and re-emerging infections.

On the second day, **18 November 2011**, a special plenary session, the fourth, was dedicated to factors driving changes in the "landscape of science". The session was chaired by EASAC's President and former Foreign Secretary of the Royal Society Sir Brian Heap.

Before the lunch break, three parallel thematic sessions were held: "Networks made life, life makes networks" focused on the role and impact that biological, mathematical, computational and communicational networks have on society; "Co-operation even beyond the regional level" examining how different institutions can adapt themselves to the increasingly global realities of the modern world and science, and a Youth-Ways Session on "Scientific collaboration in the changing landscape of science: new generation of science and researchers".

In the afternoon, the fifth Plenary Session, the last, chaired by Dong-Pil Min, Honorary Chairman Seoul S&T Forum, analyzed and attempted to harmonize the ethical, environmental, economic, social and cultural impacts of scientific discoveries.

Two thematic parallel sessions closed the day: "What will international science be like in 20 years?" trying to depict the future, basing the predictions on the strategic plan of the ICSU for 2012-2017, and many foreseeable economic, social, political and environmental events, and "Sustainable Food Production" dedicated – in the face of the Earth's overpopulation – to strike a balance between mankind's growing need for sufficient food and the preservation of the Earth's biodiversity.

On **19 November 2011**, the closing session of *World Science*

Plenary Session at Hungarian Academy of Sciences

Forum was held in the Parliament Building, as usual. Cooperation was a key motif in the address of the Hungarian deputy prime minister, Tibor Navracsics. "Who knows better the challenges facing us than people in science?" asked Paul Rübig, the European Parliament's Science and Technology Options Assessment chairman. Patrick Amuriat Oboi of the Ugandan government analyzed why science should be proactive in an era in which scientists work together with industry, investors, and civilians. Ulla Burchardt, chair of the Bundestag's Committee on Education, Research and Technology Assessment expressed some worries, however, because of the great social imbalance facing many countries. The role of a collective will remains too often in the background, complained Remi Barré of the French research facility CNAM.

In the closing plenary lectures, Hungary's President Pál Schmitt also emphasized the importance of co-operation, the harmonization of actions on the level of individuals, institutions, nations. The ethical responsibility of science to cause no harm is tied up with its great achievements, said Katalin Bogyay, president of the 36th General Conference of UNESCO.

The highlight of the *World Science Forum* closing event was – for the first time in the Forum's history – the endorsement of the "Declaration on a New Era of Global Science". In order to distribute the achievements of this enterprise and to make it a true world event, the Hungarian Academy of Sciences – with the consent of UNESCO, ICSU, and AAAS – has proposed to change the format of the *World Science Forum* so that it is organized on every second occasion in a partner country. With the welcome offer of the Brazilian Academy of Sciences it has been decided that the 2013 World Science Forum will be organized in Rio de Janeiro.

Msgr. Gergely Kovács
Head of Office, Pontifical Council for Culture

DECLARATION OF THE BUDAPEST WORLD SCIENCE FORUM 2011 ON A NEW ERA OF GLOBAL SCIENCE

Preamble

With the encouragement and support of our partner organisations, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Council for Science (ICSU) and all invited organisations and fellow scientists, we, the participants of the Budapest World Science Forum held from 17 to 19 November in Budapest, recognizing the relevance of the outcomes of 1999 World Conference on Science (WCS) and taking into account the reports of the biannual World Science Forum (WSF), as well as the debates and the outcomes of this World Science Forum on the "Changing Landscape of Science: Challenges and Opportunities", adopt the present declaration.

1. The treasure of scientific knowledge and its underlying research approaches are a common heritage of humankind. More than ever before, the world will be shaped by science.

WORLD SCIENCE FORUM
BUDAPEST

2. The first decade of the third millennium has witnessed steady and fundamental changes in the global landscape of science. The scale and scope of these transformations are so robust that a new milestone in the history of science has been reached, and a new era of global science has commenced. This new era presents challenges and opportunities bringing political, social and policy implications on a previously unseen scale.

3. The growing complexity of grand challenges including population growth, climate change, food supply, energy shortages, natural and technological catastrophes, epidemics, and sustainability require that the world's scientific establishments assume new roles.

4. New scientific fields have appeared and continue to carve out their niches in the general field of science.

5. The unforeseen spread of information and communication technologies, the inexpensive and instant access to information resources and databanks, and the fall of communication barriers between countries and communities have accelerated the accumulation and dissemination of knowledge.

6. The former triadic dominance of North America, Europe and Japan in global knowledge production has been seriously challenged, and a new multipolar world of science has emerged accompanied by the rise of new scientific powerhouses, which are now not only prominent actors in world economy but have become key players in cutting edge research and development activities.

7. In this new context of global science, science diplomacy is now an acknowledged tool to promote partnership among nations by fostering scientific co-operation.

8. Educational systems have received strong support from their respective governments to the extent that emerging countries currently produce more university graduates and PhDs than the developed world thus rearranging the entire global "knowledge map". In spite of these new developments the US, EU and Japan are still leaders in scientific performance and continue to invest heavily in research and innovation. The competition is more intense and more open than ever before in the world arena of science.

9. The expansion of scientific networks has also changed the circle of actors participating in research activities. A field once dominated by states and their research networks of national academies, learned societies, and universities is now complemented by a complex network of global companies, international organisations, and individual researchers who are attracted to the best available research infrastructure.

10. The accelerating "knowledge economies" have generated new migration patterns for scientists and increasing mobility. Both the winners and losers of brain drain are facing the need for more intensive co-operation between universities, public research organisations, and industry in both graduate and post-graduate education and the elite training of scientists.

11. The advancements in science have also shed light on new and previously unforeseen concerns. Climate change, the large-scale and irreversible impact of human civilization on the world's fauna and flora, an overconsumption of natural resources, and their respective consequences require stronger involvement from both scientists and society. Developments in many research fields (e.g. genetics, biotechnology, neuroscience, nuclear

Closing Session in the Parliament Building

Closing Session in the Parliament Building

physics, etc.) have considerable moral and ethical implications that require an urgent and global dialogue between scientists and the broader public.

Recommendations

In light of this declaration, we make the following recommendations:

1. Responsible and ethical conduct of research and innovation

In this era of global science, the scientific establishment needs to implement continuous self-reflection to appropriately evaluate its responsibilities, duties and rules of conduct in research and innovation. A universal code of conduct addressing the rights, freedoms and responsibilities of scientific researchers, and the universal rules of scientific research should be shared by the world's scientific community. Furthermore, these rules and policies should be respected by the states and adopted by their national legislations.

Scientists should strengthen their individual and institutional responsibilities to avoid possible harm to society due to ignorance or misjudgement of the consequences of new discoveries and applications of scientific knowledge.

It is the responsibility of those who promote science and scientists to maintain the primacy of moral and social concerns over short-term economic interest in the selection and implementation of industrialised research projects.

2. Improved dialogue with society on scientific issues

In times of rapid and fundamental changes in the social environment, the sciences should be supported in their co-operative efforts to describe and evaluate with the best

available methods the consequences of policy actions and explorations of both natural and social sciences. Participation of societies should be promoted in order to make science more democratic and to build further trust in science. To this end societies must be prepared to knowledgably discuss the moral and ethical consequences of science and technology by strengthening policies to enhance awareness and public understanding of science and improving and broadening the scope of education.

3. International collaboration in science should be promoted

Better international co-ordination is needed for science research projects focusing on global challenges. International co-operation is essential for decreasing the knowledge divide and regional disparities.

The free co-operation and movement of scientists should be promoted by the elimination of harmful bureaucracy and false regulation and by providing the funds to further international co-operation.

To avoid repetition, redundancy, and excessive expense in scientific research, the international scientific community should be involved in the development of an improved method to monitor past and present research activities and their results.

4. Collaborative policies to overcome knowledge-divides in the World

The rapid development and increasing cost of science combined with the expansion of patent policies and regulations have further widened the knowledge and economic divide between the developed and developing world. In a world where the best science and the best researchers are attracted only by excellent research infrastructures, developing countries should be supported in their efforts to build their research capacities. However, co-funded actions for building capacities can only be successful if support is provided in a socially responsible way and if it creates a win-win situation for both the promoter and the recipient. Brain-drain and brain-gain policies should be co-ordinated for the joint benefit of all affected countries.

5. Capacity building for science needs to be strengthened

Scientific discoveries are foundations for innovation and social and economic development. Investment in science provides a capacity for future development at a national level and an opportunity to face global challenges internationally.

It is primarily the responsibility of governments to increase support for science and develop effective policies for technology and innovation.

Comprehensive actions should be taken to strengthen the role of women in science and innovation and to expand the participation of women in science and science policy making.

The socio-economic impacts of science and scientific capacity are well-documented. National parliaments and governments are urged to declare their commitment to seek scientific advice during the decision making process. An institutionalisation of such an advisory process is necessary; informed decisions result in great savings.

There is an urgent need to elaborate new, effective science policies at national, regional and global levels to better co-ordinate and monitor scientific research worldwide, to harmonise university education systems, and to facilitate global and regional scientific co-operation based on equity and participation.

ENTRE CIEL ET TERRE
EXPOSITION AU SIÈGE DE L'UNESCO

Le « Centre catholique international de coopération avec l'UNESCO » (CCIC), le « Comité international pour la promotion des arts et de la culture » et le « Parvis des Gentils » a organisé une l'exposition « Entre ciel et terre », dans le cadre d'une journée dédiée au dialogue interculturel avec la Chine. Le 12 janvier, le Forum étudiants a réuni 300 étudiants chinois des Grandes écoles pour les aider à découvrir la culture française, et il était suivi du colloque Y a-t-il un ciel sur terre ?

Li Zili est un peintre français né en Chine en 1962, dont les œuvres dépeignent des paysages contemporains, des habitudes et des de l'Orient et l'Occident à travers des scènes de la vie en Provence et dans la région de Shangri-La en Chine (province du Yunnan). Li Zili, peintre post-impressionniste moderne, diplômé de l'École des beaux arts de Paris, nous invite « à réfléchir sur la relation de l'homme à la nature » aux détours d'une plage, d'un bord de mer, d'une prairie ou d'une terrasse de café. En France ou en Chine, la même sérénité teintée de spiritualité se dégage des toiles de Li Zili. Nous publions le discours à l'ouverture de l'exposition de P. Laurent MAZAS, du Conseil Pontifical de la Culture, Directeur du « Parvis des Gentils ».

Je suis, comme beaucoup parmi vous, pris de vertige après la magnifique intervention du Professeur Giès sur un thème traité avec une telle compétence et un tel brio. Je ne suis pas capable de le suivre sur le même chemin, aussi me permettrez-vous – je l'espère – de vous partager certaines « impressions » à partir de l'œuvre de Li Zili, lui-même peintre « impressionniste » ou « postimpressionniste », comme il se définit lui-même. Je voudrais commencer par saluer cette œuvre. Contrairement à la grande majorité d'entre vous, je ne connais que très peu l'immense patrimoine culturel de la Chine, et je ne me sens pas autorisé à porter un jugement esthétique et théorique sur l'originalité de sa peinture. Et telle n'est pas la raison pour laquelle nous sommes ici. Mais à la regarder, il suffit de peu de temps pour se laisser prendre par le langage de son art et se laisser transporter « entre Ciel et Terre », dans ce monde particulier parce que fécondé par des héritages culturels fort différents.

Vous me demandez quels sont les points de convergences et de divergences quant à nos racines culturelles et spirituelles particulières entre français et chinois. Les philosophes discutent des liens entre nature et culture, ce qui ne dépend pas de nous et ce qui en dépend, qui

Baie turquoise (Provence), 2011

Harmonia (Provence), 2011

naît du génie de l'homme et qui enrichit la vie de toute personne en tendant à la rendre meilleure. Je dirais que la nature, la terre, nous est commune, que l'homme qui cultive le blé en France est le frère en humanité de celui qui arpente les rizières de Chine. Et pourtant les cieux sont autres, le Ciel, lieu symbolique de l'Esprit, revêt d'autres tonalités dans les campagnes de l'Hexagone et celles de l'Empire du Milieu. La lumière y est différentes parce que l'esprit de l'homme s'y est pris différemment pour interpréter la terre, la vie, le sens de l'existence, de la souffrance, l'Au-delà, bref, toutes les grandes interrogations sur notre condition humaine. En jouant de la dialectique spatiale entre Ciel et Terre, il apparaît clairement que l'homme est appelé à trouver le lieu de son existence : est-il, comme l'indique le mot

générique, Adam, essentiellement fait de terre, modelé dans la glaise et donc fatalement empêtré dans la boue, voire la fange et la vermine, les bas-fonds de l'existence humaine avec tout ce qu'elle peut comporter de vil et de laid ? ou est-il appelé à prendre les chemins, emprunter la voie qui l'arrache à la terre et le conduit au ciel, à la lumière, à la pureté et la légèreté de l'esprit, à l'illumination. La Voie, le Chemin, l'itinéraire, le pèlerinage sont autant de termes religieux, disons de l'esprit, qui appartiennent en commun, même conçu de manière totalement différente, à l'héritage de nos cultures plurimillénaires.

Si je reviens à la peinture de Li Zili, je ne peux m'empêcher de réfléchir à la question du rapport et de la place de l'homme moderne dans la société. La société mondialisée ne peut se permettre d'imposer un ciel uniforme, uni chrome, sous peine d'appauvrir terriblement les horizons de l'existence humaine. Le gris n'est pas une dominante de l'œuvre de Li Zili, et c'est heureux. C'est pourtant la couleur dominante d'une terre sans ciel, d'une société sans culture où l'économie et la technique ne sont plus les instruments d'un vivre meilleur, et où l'information est de plus en plus l'instrument du dictat de l'argent et de pouvoirs souterrains. Le gris est la couleur dominante d'une culture qui n'est plus à la recherche de la sagesse, qui ne met plus le ciel au-dessus de la terre – ou le ciel sur la terre… –, qui ne voit plus l'unicité de l'homme et son absolue dignité, l'homme qui court sur les chemins du monde et s'élève sur les cimes de montagnes jusqu'à vouloir toucher la lune. L'homme qui sans cesse se tourne vers le soleil pour y capter ses rayons et y recevoir, avec la lumière, une chaleur, une chaleur qui le sauve de la froideur de nos cités toutes faites de béton gris.

Français et Chinois ont à trouver chacun leur place dans le monde d'aujoud'hui et de demain, et Li Zili nous rappelle que pour cela, il faut que l'Homme, le Ciel et la Terre y trouvent aussi chacun leur place. L'homme ne peut survivre sans la terre, sans un chemin sur lequel poser ses pas, sans un sol pour y garder l'empreinte de ses mouvements. Et l'homme ne peut être privé de ciel, de culture, de valeur spirituelle, et… permettez-moi de le dire… de religion – s'il veut mener sur cette terre une vie digne d'être vécue : s'il n'y avait la lumière du ciel, qu'elle soit du soleil le jour ou seulement un rayon de lune la nuit, comment avancerait-il sur la Voie, comment s'élèverait-il de la fange et éviterait-il les sables mouvants que le mal s'efforce d'étendre sous ses pas ? C'est en suivant les inspiration de l'esprit qu'il peut s'extraire du sol et s'élever vers un ciel de liberté.

La paix si chère à l'UNESCO dépend de la capacité de l'homme à s'extraire de la terre, de son individualité, pour s'ouvrir au ciel de la culture, c'est-à-dire à l'universel. Nous avons, avec Li Zili, l'exemple d'un artiste qui dépeint des paysages, les mœurs et les coutumes d'Orient et d'Occident, et qui place l'homme dans des situations géographiques et culturelles diverses. Mais une interrogation est comme transversale, et peut se lire ainsi : qu'est-ce donc que cette quête constante de l'homme, depuis la nuit des temps, cet Adam qui recherche le ciel, la beauté, la quiétude, le repos dans le bien ?

L'artiste capte l'émotion, et s'il constate la singularité des cultures et des spiritualités, il veut partager ses impressions qu'il pressent comme profondément humaines – et donc en quelque sorte comme universelles. Les Églises et les Temples bouddhistes sont pleines de l'émotion et du silence d'hommes et de femmes qui ont en commun la recherche d'une vérité qui les transforme : de la terre dont ils sont pétris, ils aspirent à la lumière qui transfigure. Tout cela se traduit en un art de vivre apaisant… encore faudrait-il que nos contemporains en fassent une règle de vie. La recherche de la félicité, du bonheur, naît de la capacité à voir, à reconnaître : la vision du ciel bleu, la vision de la terre ocre, l'attention à la nature… la capacité à se re-situer « entre le Ciel et la Terre ».

Il Pontificio Consiglio della Cultura promuove due Concorsi di rilievo internazionale: il Premio delle Pontificie Accademie e il Premio di Musica Sacra "Francesco Siciliani"

Il primo Concorso, il cui Premio ammonta a Euro 20.000.000, è curato della Pontificia Insigne Accademia di Belle Arti e Lettere dei Virtuosi al Pantheon. In questa edizione il Concorso è riservato a **giovani Artisti o Istituzioni** di ogni nazionalità attivi nei campi dell'**architettura**, **pittura**, **scultura**, la cui opera o attività contribuisca in modo rilevante allo sviluppo delle scienze religiose, dell'umanesimo cristiano e delle sue espressioni artistiche.

Il secondo Concorso (I° Premio di Euro 5.000) nasce dalla collaborazione tra la Fondazione Perugia Musica Classica – Sagra Musicale Umbra e il Pontificio Consiglio della Cultura.
Il Concorso intende promuovere una **composizione musicale per coro, con o senza organo, sul testo del *Simbolo Apostolico*.**
L'iniziativa tende ad arricchire il patrimonio musicale a carattere religioso attraverso l'incontro tra i testi sacri e la nuova grammatica della musica contemporanea, così da sviluppare una musica sacra in grado di mediare tra antico e moderno.
Proprio in quest'ottica, nella prima edizione del Concorso, anche in vista dell'Anno della Fede, i musicisti partecipanti si confronteranno nella composizione di uno dei testi cardine della tradizione cristiana.
Il Premio è intitolato a Francesco Siciliani, per cinquant'anni promotore e animatore della Sagra Musicale Umbra, una delle più antiche rassegne musicali d'Europa.

Per informazioni e per ricevere il Bando dei due Concorsi si può inviare richiesta a: arte@cultura.va.

SCIENTIFIQUE ET CROYANT

Pistes de réflexion pour les chercheurs et enseignants catholiques, Paris, Éd. De l'Emanuel, 2011, 210pp. ISBN-978-2-35389-157-3

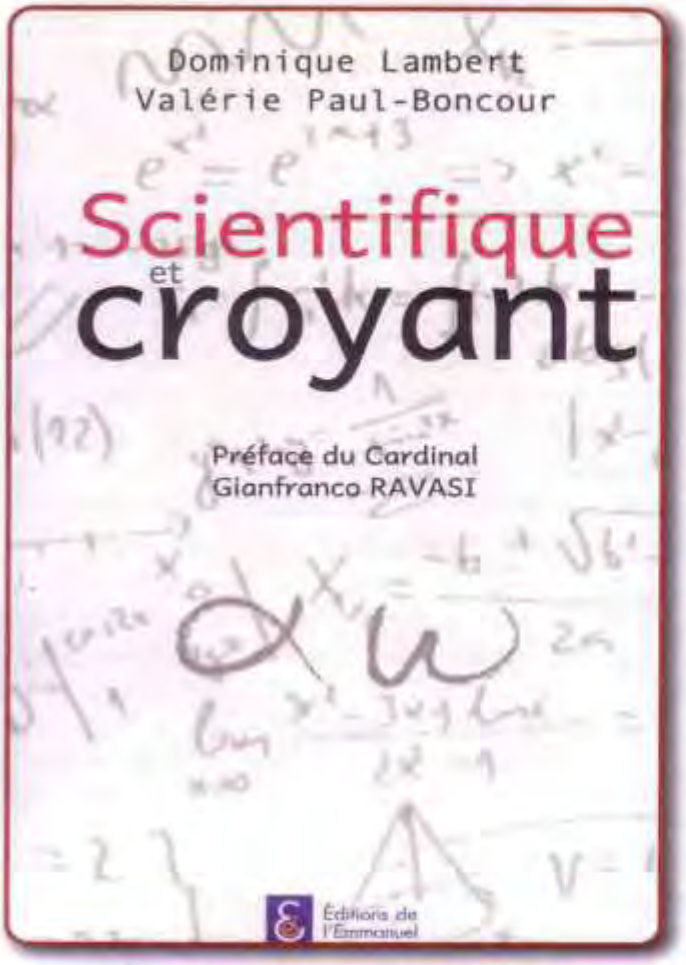
El Prof. Lambert, doctor en Física y en Filosofía, es profesor de física teórica en la Universidad Católica de Namur y consultor del Consejo Pontificio de la Cultura, además de brillante conferenciante y escritor, autor de numerosas publicaciones sobre historia y filosofía de la ciencia. La Srta. Paul-Boncour es ingeniera y doctor en física, investigadora en el CNRS, consagrada de la Comunidad del Emanuel. En ellos se da una rara combinación de saberes y de vida necesaria para abordar una obra como esta. En efecto, ambos poseen una doble ciudadanía intelectual: por una parte, una carrera científica, que se ejerce mediante la docencia o la investigación en centros especializados; por otra, sólidos conocimientos de filosofía y teología, a lo que se añade una vida cristiana generosa, activa y fecunda.

El resultado de su colaboración ha sido un libro escrito a cuatro manos, una obra original que ha venido a cubrir un vacío persistente.

A diferencia de otras obras que tratan de distintos aspectos de la ciencia desde una perspectiva creyente, no nos hallamos aquí ante un tratado sobre la posible articulación entre la ciencia y la fe, si bien el lector encontrará algunas consideraciones breves de gran utilidad. No es tampoco un tratado de apologética para hacer frente al ateísmo, clásico o nuevo, que se inspira en la ciencia para negar la existencia de Dios. Su propósito es, si se quiere, más simple y, al mismo tiempo, tremendamente ambicioso. Se trata de ofrecer pautas de orientación, reflexiones, consejos para vivir concretamente la vocación cristiana en un ambiente científico. Es un libro, por tanto, dirigido a aquellos católicos (en realidad, desborda los márgenes estrictamente confesionales y podría valer para cualquier cristiano) que enseñan materias científicas en la universidad, o que trabajan en centros de investigación científica, para ayudarles a lograr una existencia unificada, en donde la docencia, la oración, el trabajo de investigación, las relaciones con los compañeros, se integren armónicamente en la persona, superando peligrosas escisiones interiores. Los autores, con esta obra no pretenden resolver los numerosos y fascinantes problemas de tipo teológico, metafísico o ético que las ciencias ponen al hombre de hoy. No pasan revista a los nuevos modelos interpretativos en cosmología o biología, buscando su compatibilidad con la fe. Se limitan a sugerir cómo vivir la propia fe en un tipo de comunidad académica muy característica, que es el mundo científico. Evidentemente, muchas de las consideraciones del libro podrían valer para el resto del mundo universitario, así como para el trabajo intelectual en general. Sin embargo, es en el mundo de las ciencias naturales donde el debate con la fe ha sido más áspero, donde vivir concretamente la fe parece más difícil y, por tanto, donde se sentía más la necesidad de una guía.

Sin duda, una de las cualidades más notables del libro es su lenguaje. La formación científica de los autores se percibe detrás de cada línea en el lenguaje escueto y conciso propio de las publicaciones científicas, horro de toda retórica vana. La experiencia personal de vida cristiana y el conocimiento de primera mano de los ambientes científicos añaden quilates a unos contenidos de por sí muy valiosos. Es, pues, una obra claramente propedéutica, orientada a la vida personal del lector, que será también de gran provecho para el profano en la materia.

El libro se estructura en torno a cuatro ejes: estudio, vida en común, oración y testimonio. El primero de estos ejes, el estudio, plantea radicalmente la exigencia para el cien-



tífico cristiano de darse una formación filosófica y teológica capaz de responder a los interrogantes que plantea su trabajo como científico. En esta parte, quizá la más teórica, los autores abordan, de manera sucinta pero esencial, los problemas de la articulación entre el conocimiento científico y el de la fe, mostrando con algunos ejemplos concretos cómo puede llevarse a cabo una distinción de niveles de conocimiento, respetuosa de los contenidos y la metodología, que tienda sin embargo hacia una visión unificada del saber. La dimensión comunitaria del trabajo es una característica de los estudios científicos, a diferencia de las humanidades, en las que suelen predominar empresas solitarias. Es raro hallar un artículo en una revista científica firmado por un solo investigador, mientras que en el mundo de las letras es la norma. El trabajo en equipo, la competición, a veces feroz, en el mundo de la investigación, la convivencia durante largos períodos de tiempo en laboratorios o centros de investigación, la participación en congresos, son aspectos importantes de la vida del científico, que han de integrarse en una vida cristiana, cuya característica es precisamente la vida común. En cuanto a la oración del científico, ésta posee acentos propios: la adoración, la alabanza, la intercesión y la súplica son dimensiones que el científico tiene que vivir en su misma actividad, no como algo separado de ella. Por último, el testimonio remite a la vocación evangelizadora de todo cristiano, también del científico, desarrollada normalmente en un ambiente difícil. Los autores enumeran el testimonio de la vida, el testimonio de la palabra, a tiempo y a destiempo y, por último, el testimonio mediante la humanización de las relaciones y el compromiso ético.

Para el Consejo Pontificio de la Cultura esta obra representa la culminación de un largo camino, en cuya génesis y desarrollo ha tenido parte notable. La iniciativa de ésta se debe a una idea, largamente acariciada por el Prof. Lambert, de publicar un documento de características similares. En su momento, este proyecto recibió el beneplácito y el aliento del Cardenal Poupard, Presidente del Consejo Pontificio de la Cultura, apoyo continuado por el actual presidente, el Card. Gianfranco Ravasi, quien firma el prólogo de esta edición. Se presenta así, en cierto sentido, con el aval del Consejo Pontificio de la Cultura, como un instrumento, no el único, pero sí necesario, para promover la evangelización de los ambientes científicos, empezando por reforzar la vida de fe de los cristianos que viven en ellos. Para el próximo año de la fe, difícilmente se podría haber encontrado un subsidio mejor.

Melchor Sánchez De Toca Alameda
Subsecretario del Consejo Pontificio de la Cultura

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The Pontifical Council for Culture received several reactions on the International Conference *Adult Stem Cells: Science and the Future of Man and Culture* held in the Vatican City between November 9th through 11th, 2011. Below we publish only a very few of them.

Dear Sirs,
I was most surprised when I noticed that among the panellists at the Conference organised by Your Council, there were some scientists who in their past and present scientific activity have defended the legitimacy of using embryonic stem cells for research purposes. Could it not give the impression that the Vatican is in some way legitimatising the use of embryonic stem cells, and therefore, the suppression of human embryos, for the sake of the research? Does it not stand in contradiction with the Magisterium of the Church which has always defended the dignity of all human being, from its conception to the natural death?
(P. S.)

Dear Sir,
thank you very much for your letter and the questions you have raised. In regard to your concerns I would like to answer briefly.
1. The intention of the organisers was clearly expressed through the title of the conference: *Adult Stem Cells: Science and the Future of Man and Culture.* As you can see already from this perspective, there is no reference or any kind of even allusion to the promotion or legitimatization of Embryonic Stem Cells Research. Moreover, the organisers recognise and fully embrace the teaching of the Catholic Church concerning human dignity, inviolability of human life unmistakably expressed in many Papal statements and specially articulated in the Instruction *Dignitas Personae* of the Congregation for the Doctrine of the Faith.
2. However, if you look carefully at the vital mission of the Pontifical Council for Culture, you will see that a fundamental task of this Dicastery is to promote dialogue between the Church and contemporary cultures, highly influenced by science and its different expressions. The decision to invite to the conference also some representatives from the embryonic stem cells field has its roots within this essential responsibility of the Pontifical Council for Culture without nonetheless any wilful or hidden intention to promote or to embrace embryonic stem cell researchers' logic, motivations or practice in scientific activity. There is a firm will only to understand more deeply those elements through open discussion based on scientific arguments rather than emotional or ideological ones. We really believe that inviting people to build bridges and promote dialogue must be also testified by our own example of acting without prejudices and discriminations. Moreover, we actually believe that we should not feel afraid to discuss those issues with researchers who do not share our ethical values or moral choices. We should rather be able to show that the truth defends herself.
3. Of course, all these motivations do not mean that the Church or any of its institution try to legitimize, embrace or support embryonic stem cell theoretical basis, nor do they endorse scientific protocols that raise not only ethical concerns but also scientific ones both in terms of safety and effectiveness.

* * *

Thank you so much for allowing Dr. Hamel and me to attend the superb conference. It was absolutely outstanding and I hope you are getting positive feedback. Both Ron and I said it was the best Vatican conference we ever attended. I know you must be exhausted but it was so valuable. Bill Golden also loved the conference.
I am back in Rome next week for Archbishop Zimowski's conference. Perhaps I will see you there. Blessings on you and your work.

Sr. Carol KEEHAN, D.C., President/CEO
The Catholic Health Association of the United States

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Prima di tutto grazie infinite di avermi dato la possibilità di partecipare a questo interessantissimo convegno [...] Mi sono sentita davvero una privilegiata!
È stato un meeting veramente completo che ha analizzato l'aspetto di evoluzione della ricerca e dell'applicazione medico/clinica a livello internazionale ma anche

i vari aspetti, anch'essi molto importanti, "umano" e dell'etica che sono sempre trascurati nei convegni internazionali nel campo delle cellule staminali e invece, a mio parere, molto utili come "guida" per persone che lavorano in questo campo.
Ho iniziato a divulgare le informazioni e nel website del portale "Segreteria Medica" (di proprietà di un mio caro amico, il Dr. Lorenzo Salvadori Amadei) oggi è uscito un trafiletto sul vostro meeting e sulle parole del Santo Padre: *Il Vaticano sostiene l'utilizzo delle cellule staminali adulte* http://www.segreteriamedica.it/
Ho inoltre comunicato al Dr. Salvadori Amadei, che organizza convegni internazionali nel campo medico e fa anche Comunicazione in senso più ampio, che come ha detto Reverendo Trafny nella sua ultima lettura dell'11 novembre: "siete interessati a trovare collaboratori a diversi livelli, nella strada della divulgazione e cercare di unire le forze per costruire qualche cosa di veramente utile, unico e potente. Conoscenza, dialogo e dedizione per portare benefici all'umanità".
Inoltre, ho preparato due articoli nella Rivista *Bios Diagnostica*, edita dal Laboratorio Polispecialistico di Roma Bios, e le invierò copia appena saranno stampati i relativi numeri.

Maria Giuditta VALORANI, PhD
Centre for Diabetes, The Blizard Institute
Queen Mary University of London

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Our participation in the Vatican Adult Stem Cell Conference was a memorable experience and we wanted to thank you and Robin Smith for making it possible. Dr. Crawford and I were most appreciative of the Vatican's initiative to bring together scientists and other biotech CEOs at the conference, but were humbled by seeing the results of a number of stem cell therapies on a few patient's lives, right before our eyes. (...) Thank you for all of your hard work.

Pamela LAYTON, CEO
Parcell Laboratories LLC

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Por este conducto quisiera agradecer su gentil invitación al Congreso *Adult Stem Cells: Science and the Future of Man and Culture. The Frist International Vatican Adult Stem Cell Conference,* llevado a cabo los días 9 al 11 de noviembre del 2011 en la Sala Nueva del Sínodo en Ciudad del Vaticano.
Desde el punto de vista profesional y personal fue una gran oportunidad conocer la experiencia de los diferentes institutos dedicados a la investigación con las células estaminales, pero sobre todo constatar la coherencia de su misión en los diferentes ámbitos: el alto nivel del trabajo científico presentado y el interesante abordaje cultural, ético y humano que nos permitiera conocer las implicaciones de su uso.
Me siento profundamente orgullosa y motivada por este primer Congreso Internacional. Deseo vivamente que este diálogo entre ciencia y fe, sea el primero entre muchos, y que a través de este tipo de eventos de divulgación, la especialización se convierta en cultura. Si bien el aspecto científico fue de alta calidad, no menos importantes fueron los eventos culturales, espirituales y sociales. Caracterizados todos ellos de belleza, sensibilidad, delicadeza y calidad.
Agradezco nuevamente a Usted y a todo el equipo organizativo, sus finas atenciones. Mis mejores deseos para que *STOQ* continúe la promoción de estas actividades donde el fin que se busca, es el bien de la persona.

Dra. Zamira Verónika MONTIEL BOEHRINGER

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I want to thank you for your gracious invitation to attend the adult stem cell conference. (...) The conference was excellent, both in organization and content. I am most grateful to have been able to participate. Best wishes in your continued work in this most important area.

Ron HAMEL, PhD, Sr. Director, Ethics
The Catholic Health Association of the United States

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