Faith and Reason, Tradition and Inclusion

AN APPROACH FOR CATHOLIC UNIVERSITIES IN THE 21ST CENTURY
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EXECUTIVE SUMMARY

When I came to Notre Dame as dean of the College of Science in 2008, I knew the University occupied a unique position in the academy, with its rich Catholic tradition and its aspirations to become a premier research institution. The past seven years have amplified that understanding and confirmed my appreciation for the quality of undergraduate education found here. As I undertake the responsibility of leading Notre Dame’s initiative in California, I want to share some thoughts on the Catholic nature of the University in general and the College of Science in particular.

While different Catholic institutions may express their Catholic identity in unique, diverse and authentic ways, they all participate in the long tradition of the Church’s wisdom and experience and strive to uphold foundational teachings about human dignity, solidarity, justice, the common good, respect for individual conscience, and a holistic approach to life. They are all engaged in the search for truth and seek to foster the well-being of individuals, especially the voiceless and neglected.

Additionally, Notre Dame’s College of Science implements this Catholic vision in ways appropriate to the University in its role as a premier institution that aspires to be a top-tier research university while providing unparalleled undergraduate education. Our Catholic identity is visible and clear, yet inclusive and welcoming. We are transparent about our community’s values and we recruit superior faculty and students who share our vision and mission, whether they share our faith or not. Our curriculum provides an excellent education that encompasses the full person, instilling values and virtues as well as knowledge. We serve both the universal Church and the local church, making world-class expertise and facilities available to the global community and to local neighborhoods around the world. Our work unites a search for truth, a responsibility for the common good, and a commitment to generous service.
As a Catholic university, Notre Dame participates fully in its Catholic mission, embracing its heritage as a community that affirms the integration of faith and reason; person and culture; religion and scholarship; and intellectual rigor and moral responsibility in our research, teaching, and service to the Church and to all humanity. We gladly inherit the aims of Catholic scholars across the centuries who were dedicated to educating the heart as well as the mind in a unified pursuit of the truth.

Recognizing our solidarity with all human beings, we engage the world as it is and work within the cultural, social, ethical, and religious complexities of the 21st century where every person is our neighbor. We welcome dialogue, honest inquiry, and open discussion in an environment of shared respect.

Some may argue in today’s contentious society that a faith commitment is inimical to the true spirit of a university. Others may fear we will lose our own identity, while some are wary that we may isolate ourselves from others in the academy. We disagree with such propositions; the Catholic character that informs our work is wholly congruent with universal human values that transcend all religions, cultures, and national boundaries.

Too often, through the pressures of the media and popular culture, our Catholic heritage is refracted unfairly by the issue of the day, rather than by the rich Catholic tradition that has shaped laws, culture, and our species across millennia. The Catholic university is a fertile environment for scholars, teachers, and researchers of all endeavors. Certain disciplines such as theology, peace studies, and global health obviously align with the mission of a Catholic university. However, a full understanding of humanity and our species’ spiritual dimension calls for us to reflect further upon the moral impacts of our research as well as our lives as scholars, researchers, teachers, and mentors of young minds. Any academic discipline is rarely value-free, hardly value-neutral, and often has moral ramifications as pure basic research finds application beyond the laboratory.

The Catholic university, with its broad reach and deep commitment to dialogue, has a substantial role to play in modern society. It is a place where academic freedom can be upheld and implemented in its broadest sense. It is a place where multidimensional conversations can happen, and the pursuit of knowledge, serving others, and leading a good life converge through civil discourse. It is not an arena of triumphalism or proselytizing but rather an inviting, welcoming, and generous place. The primary purpose of the university—teaching and training, research and the transmission of knowledge—reflects the ultimate human desire for truth, even if that search takes us beyond conventional borders. Our tradition teaches us to engage the world in this quest for truth. The Catholic tradition has brought wisdom to the whole world by crossing boundaries and engaging all societies.

A university is Catholic not necessarily because it drapes all activity in pious expression or appends religious teaching and practice to the secular academic model. Instead, such a university is a place where Catholic identity and commitment to mission animates all activity, carried out by Catholics and those who share the university’s aims and concerns. Because it is a fundamentally human endeavor, others are invited to participate in this mission who do not identify as Catholic or express a particular set of Catholic religious practices—indeed, who may not be religious believers. It requires the individual to recognize the institution’s right to organize its culture in ways that reflect its faith, values, and priorities. The university, in turn, forms a human community grounded in the dignity and worth of each individual and fosters a profound appreciation of each person’s unique contribution to the common enterprise. Both the institution and the individual recognize the critical role played by the community in enriching the lives of its members and the vitality of the university.
1. THE CULTURE OF THE CAMPUS
CLEAR AND INCLUSIVE

“Interreligious dialogue will be especially important in establishing a sure
basis for peace... contact with the followers of other religions is often a
source of great joy and encouragement. It leads us to discover how God is
at work in the minds and hearts of people and indeed in their rites and
customs.”

—Pope John Paul II

1.1 Public expressions of Catholicism

Catholic universities are free to express their faith and tradition
publicly, through architecture and exterior embellishments; interior
art, language, and other symbols; and liturgies, prayer services,
and campus ministries. Everyone on campus—true to their own
conscience yet mindful of the institutional ethos—is free to
participate or not, and each person’s choice is respected. The unity of
a Catholic university community requires mutual respect for diversity,
not uniformity or conformity. Public expressions do not sufficiently
fulfill Catholic identity, but they are important for maintaining the
community’s self-understanding and transmitting its tradition. Other
vital expressions include outreach to the community and service to
the world as expressions of faith and solidarity with other human
beings.

1.2 Service to the Church

Catholic universities serve their religious order, their diocese, and the
larger Church in a broad range of activities, from providing priests
who assist local parishes to hosting events and enriching the presence
of lay leadership. Like other Catholic institutions that serve society,
such as Catholic Charities, Catholic Relief Services, and Catholic
hospitals, Catholic universities elevate the mission and witness of the
whole Church wherever they fulfill their goals in teaching, research,
and service. The expertise of Catholic leaders in a wide variety of
subjects on campus provides a rich chorus for addressing issues of
the day with clarity, conscience, and generosity. The perspectives
of our faculty and administration are sought locally and beyond in
governmental, academic, and corporate arenas, as they carry out a rich
tradition of service, counsel, and guidance.

1.3 Sharing of Public Space

The Catholic university’s public space is a symbol, model, and
microcosm of our faith and aspiration for sharing the earth with all
human beings. Diversity enhances our perspectives as persons. It
brings a direct experience of the wider world with its abundance of
races, languages, nations, religions, and cultures. It helps us see people
as human beings and not as “other,” whether race, religion, or gender.
It creates a rich community, socially and intellectually. It reveals both
the substantial qualities that we have in common and the delightful
distinctions that stimulate us to learn, know, and respect one another.
Catholic universities—a product of a universal Church—should strive
to bring together as many different perspectives and backgrounds as
possible.

We believe that unfolding demographic changes in the United States
offer significant opportunities for Catholic universities. Education in
an environment that mirrors U.S. society will prepare our students
to make a positive impact in that society. Universities are engaged in
research that directly addresses many of the world’s problems—global
health, energy, environmental sustainability, etc.

This commitment is apparent when campus space accommodates
expressions of other faiths and diverse cultural, ethnic, and
international observances and celebrations. This can include
designated space for religious practices, art exhibits, theater
performances, festivals, holidays, and other calendar observances.
Such a commitment is a tangible expression of welcome and respect.
for others and their traditions.

1.4 Respectful Dialogue

We should consider the breadth of perspectives critical to our success as teaching and research institutions, where our respect for human rights means respect for other people's work. The Catholic university stands as a symbol of truth, understood not as an exclusive possession but as the proper aim of all scholarly, educational, and research efforts. Interfaith dialogue should be embraced at a Catholic university as a means of fulfilling our mission.

Dialogue takes place in an environment where the participants can rely on each other's integrity, honesty, truthful living, and respect, where the listening is open and empathetic, the discourse is civil, and the freedom of thought and perspective is guaranteed. We understand we are not in isolation in the world. We strive to create an environment where persons in dialogue are not the objects of each other's tactics of persuasion but where they are partners simultaneously teacher and student—working together for greater understanding.

1.5 Grounds for Globalization

Globalization that is massive, technological, and market-driven can do great damage. Yet globalization can also be a force for increased integration, unity, empowerment, and fruitful exchange, as well as an opportunity to relieve poverty, illness, and suffering. Catholic universities can provide an ethical and moral framework to ensure that globalization promotes the well-being of all, rather than elevating the few and exacerbating the suffering of many. Globalization, guided by respect for human liberty and informed by principles of Catholic social teaching, can nurture a harmonious unity of the human family.

The Catholic university is a vital arena for deliberating and deploying fundamental principles that are broadly human and carefully articulated in Catholic social teaching. Concepts such as subsidiarity, common good, and the just distribution of Earth's resources have acquired a new relevance and urgency as the causes and effects of globalization are debated.

Globalization can also be a force for increased integration, unity, empowerment, and fruitful exchange, as well as an opportunity to relieve poverty, illness, and suffering. Global development calls for a hierarchy of values to answer questions regarding progress and goods on a universal scale. This in turn requires a clear understanding of human dignity and rights that is not possible in a purely market-driven system. Catholic teaching suggests a global solidarity to ensure that all peoples can benefit from the economic changes taking place and share access to the new resources being developed. We must take responsibility for the welfare of others. It is more than compassion or sentiments; it is a call for a full reciprocity in human relationships.

Another leg of Catholic social teaching is the concept of subsidiarity, which means replacing the excessive use of power at higher levels with grassroots organizations such as family, community, and ethnic groups. This person-oriented foundation recognizes that economic, scientific, social, and other important decisions must take into account the well-being of all peoples while aiming for the common good.

Today, three billion people live on less than $2 a day, nearly half of them on less than $1.25 a day. This measure of “extreme global poverty” includes 600 million children. Nearly 885 million people do not have access to clean water, and 2.5 billion do not have adequate sanitation. About 25,000 children die every day, mostly from preventable diseases, including more than 4,000 from diarrhea
because they lack sanitation. In Africa alone, more than 8,000 people
die every day of treatable diseases such as HIV/AIDS, tuberculosis,
malaria, and Ebola because they have no access to health care.
Although globalization is about the market and economics, there are
even greater questions. Such discrepancies between rich and poor,
with conditions gravely exacerbated by climate change, have further
led to social upheaval and warfare.

We must ask: What should Catholic universities be doing in terms of
globalization? What resources should they bring to bear on other issues?

1.6 Addressing All the Questions

The Catholic university must be a place of intellectual integrity,
honesty, pluralism, and mutual respect, where open-mindedness
characterizes the research and teaching. Like every university, it insists
on academic excellence; promotes learning, discovery, and integration
of disciplines; fosters academic freedom and openness; and inculcates
habits of thought, creativity, and professionalism. Yet, additionally,
it understands its mission to educate and care for the whole person,
attending to the intellectual, spiritual, physical, and psychological
well-being of a full human life.

Our Catholic identity encourages spiritual growth in students, faculty,
staff, and alumni. Catholic universities engage a breadth of questions
not always considered in academia—asking not only what and how
but also why and even whether we should. Faculty and staff receptive
to these issues foster such spiritual formation.

A Catholic university should instill and inspire in its students,
faculty, and staff the understanding that beauty and goodness reside
throughout the created world. We encourage the enduring questions,
such as the meaning of life, the existence of God, the purpose of the
universe and human development. Our faculty and staff are open-
minded, truth-seeking, globally aware, and culturally sensitive. The
university is a place that promotes academic rigor in search of truth
while sensitively cherishing the full and intangible range of human life
and activity.
2. **THE SHARED MISSION**  
**CATHOLIC TERMS, COMMON GOALS**

“Catholic character is really important. Being here has helped me see the big picture more. Undergraduate students have a strong tradition in service. It's definitely part of the Catholic teaching. This University has taken that seriously and promotes that. The other issue is ethics. We’re always talking about ethics and the ethical way to do things.”

—Mary Ann McDowell, associate professor of biological sciences

2.1 Human Solidarity

The Catholic university draws on a wealth of resources to address the critical issues of our time: social justice, healing, peacemaking, common good, universal destination of goods, preferential option for the poor, subsidiarity, and service. Just as we understand academic excellence to be a hallmark of the Catholic university, we expect our students to take the core values of human dignity into their communities. We hope our graduates will understand both their professional calling and their participation in civic, social, and religious life.

2.2 Care for the Earth

Catholic tradition includes a deep respect for nature. Because the divine goodness could not be represented by one creature alone, Aquinas tells us, “[God] produced many and diverse creatures, so that what was wanting to one in representation of the divine goodness might be supplied by another... hence the whole universe together participates in the divine goodness more perfectly, and represents it better than any single creature whatever” (Summa Theologiae, Prima Pars, question 48 ad 2). The wonderful variety of the natural world, therefore, invites our respect. Accordingly, it is appropriate that we treat other creatures and the natural world not as mere means to human fulfillment but as God's creatures, possessing an independent value worthy of our appropriate respect and care. Other species, ecosystems, and even distinctive landscapes not only give us the beauty of our world but also provide an exquisitely interrelated web of existence that makes possible the flourishing of life on Earth as we know it.

Some would argue that our attitude toward ecology and the destruction of the Earth by humans have not received the emphasis it deserves. Because of the focus on poverty relief, advocates have perhaps been silent on issues related to the environment. Inadvertently, this may have led to the neglect of certain issues, such as extinction of species, invasive species, climate change, and other disruptions that will have a disproportionate impact on the poor. Respect for nature and respect for human life are inextricably related.
3. IMPLEMENTATION

“I don’t have to be Catholic to feel part of the mission. I know this has a potential to impact people. One of the advantages here is that Notre Dame has the capacity to really immerse ourselves in that. People who are attracted to Notre Dame are not only passionate about their science, but they’re passionate about their interest in people.”

—David Severson, director of the Eck Institute for Global Health and professor of biological sciences

3.1 Hiring practices

Our hiring and promotion practices aim to foster a community of intellectual excellence, academic rigor, and top-quality research, performed and supported by faculty, students, and staff who respect the inherent dignity of others. Together we share a common purpose. We recognize both the autonomy of scientific disciplines and the University’s mission. We aim to bring a breadth of perspective and expertise to the classroom, the laboratory, and the community. To that end, we recruit intellectual leaders and persons of diverse cultures and broad experiences, informed by a global perspective, who will enrich our environment and expand our dialogue in pursuit of truth and human dignity. In the process, we undertake due diligence to discern their commitment to our mission and are open and transparent about the kind of community they would be joining. Members of this community need an instinct for service, not just to their profession and field, but also more generally to the well-being of people in their city, their region, their country, and the world.

Catholic universities are driven by mission, so we emphasize and highlight our purposes during the hiring process. We articulate what it means to be mission-driven and what it means to be inclusive and to create a culture of dialogue and free space. New faculty orientation is more than just an introduction to the academic enterprise and institutional structures. It orients new faculty to the overarching mission of the University and our desire to be a force for good in the world.

Many people, both Catholics and others, join our university community because they value an environment where faith is respected, discussed, and practiced openly. For them, the consideration of a breadth of questions that include human good as well as technical possibility is a liberating and satisfying experience. They learn through the hiring process that their work can be part of a larger mission, and they embrace that opportunity with enthusiasm.

3.2 Student Life

The student should be at the center of any Catholic research university. Here, all—including undergraduates—are understood to be seekers of truth and creators of knowledge, not merely absorbers. We are all wrestling with real problems and searching for real solutions to benefit all. Students who come here should enter a community where respect is highly valued and exemplified.

Students find their participation welcomed, their perspectives sought, and their contributions affirmed. We believe that every encounter with students is a learning experience for them and for us. Education is not simply faculty transferring information to students and later testing to see how much remains. Everybody in the organization is a mentor and should be encouraged to see every interaction with each student as a way to learn and grow. Relationships built upon mutual respect encourage students to extend such respect to humanity more broadly and to the physical universe, which is the natural object of their study.

STUDENTS FIND THEIR PARTICIPATION WELCOMED, THEIR PERSPECTIVES SOUGHT, AND THEIR CONTRIBUTIONS AFFIRMED.

The administration, faculty, and staff, as well as peers in classroom and collaborative efforts, treat students with care and compassion because they value them first as people. When students face difficulties in their personal circumstances, they receive encouragement and support aimed at helping them succeed. At a Catholic institution, empathetic listening enables us to convey to students that we care and understand their ideas and concerns.

Such care and compassion are best expressed not only as ideals but also in action. Our service to the community and the outside world speaks more clearly than any words. Immersion in such an environment—a microcosm of the world as it could be—equips our students to make positive impacts on the world.

3.3 Community life

The Catholic university should enable everyone to thrive academically and personally and to experience an increasingly unified educational experience that breaks down the barriers among departments while offering integration, wholeness, and support. The community is bound not by sameness of background, experience, or perspective but by a unified mission, vision, and
purpose; by shared ownership and responsibility for the success of common projects; and by collaboration that values the distinct contribution of each participant.

The term "interdisciplinary" is applied within education to describe studies that use methods and insights of several fields of study. Topics such as the epidemiology of AIDS or global warming or nanoscience require an understanding of diverse disciplines and areas of expertise to solve neglected problems or problems too complex for a single discipline to tackle. Interdisciplinary efforts involve researchers, students, and teachers integrating several academic disciplines in the pursuit of a common research problem.

The programs and research that we do on poverty is often interdisciplinary, a term that became popular in academia in the 1990s but has long been applicable in the Catholic tradition which understood the unity and complementarity of diverse fields of learning long before departmental specialization and isolation. As John Henry Cardinal Newman said, the aim of the Catholic university "is to reunite things which were in the beginning joined together by God, and have been put asunder by man."

The study of Catholicism itself provides an interdisciplinary approach to the academic enterprise, from the beginnings of Christianity to the presence of Catholicism as the largest Christian community in the world today. The story of the Church; its history, artistic, and literary culture; philosophical and theological thought; and role in contemporary society is a model of interdisciplinary studies.

In addition to embracing the full breadth of questions, we place a priority on cultivating critical thinking and problem-solving skills to meet the most pressing challenges of our times. This approach recognizes that rapid changes in the world call for agile adaptation based on reflection and critique, not acquired information alone.
A CASE
THE COLLEGE OF SCIENCE AT THE UNIVERSITY OF NOTRE DAME

“I wish the intellect to range with the utmost freedom, and religion to enjoy an equal freedom; but what I am stipulating for is, that they should be found in one and the same place, and exemplified in the same persons.”
—John Henry Cardinal Newman, on the subject of Catholic universities

Perhaps because of a widely perceived conflict between science and faith in the media, I often encounter people socially and even in the academy who are surprised that I am the dean of the College of Science at Notre Dame. My own experience, having been a dean at both Notre Dame and Brown University, a nonreligious Ivy League institution, convinces me that the combination of faith and science is a strength. Embracing the identity of a College of Science within a Catholic research and teaching university and organizing that college according to this mission has enhanced the life and work of our community. It has fostered unity among the faculty, staff, and students. It has revealed complementary dimensions that might have gone unnoticed without the common goals. It has accelerated the effectiveness of our efforts to make a difference in the lives of people in the world, especially the poor and underserved.

EMBRACING THE IDENTITY OF A COLLEGE OF SCIENCE WITHIN A CATHOLIC RESEARCH AND TEACHING UNIVERSITY AND ORGANIZING THAT COLLEGE ACCORDING TO THIS MISSION HAS ENHANCED THE LIFE AND WORK OF OUR COMMUNITY.

One example is in global health. Complementary groups within the college conduct basic research in biological material and processes, provide medical service to suffering people, and educate students to translate the results of research discovery into effective applications for healing and human well-being in the developing world. Much of this work, especially in basic research, is housed in the Eck Institute for Global Health and the Center for Rare and Neglected Diseases. The Notre Dame Haiti Program, led for years by Rev. Tom Streit, C.S.C., has been a world leader in the fight against lymphatic filariasis. The recently instituted Master of Science in Global Health program melds classroom and experiential learning and values science for its power to improve the health of those disproportionately affected by preventable diseases.

The program’s primary goal is to prepare students for a lifelong appreciation of the burdens societies suffer because of disease, especially in low- and middle-income countries. More importantly, students prepare to help alleviate this burden through research, training, or service. The program’s focus on science, health, and the poor makes it unique, the only such program in the United States within the context of a Catholic university. Our first academic objective is to strengthen our scientific knowledge of those diseases that most adversely impact poor people around the world. And second, students receive hands-on research, training, or service experience in impoverished settings where basic health care needs are not met.

In addition to the pure basic research, programs such as the doctorate in Global Linkages of Biology, the Environment, and Society (GLOBES) bring together biologists, environmental scientists, social scientists, and public policy experts to seek innovative and interdisciplinary solutions to a wide range of problems in environmental and human health.

We have embedded specific courses in our curriculum on ethics, leadership, diversity, entrepreneurship, and communications in order to prepare our students not only as effective researchers but also as citizens equipped to make a lasting impact. Our recruited faculty—from diverse backgrounds, cultures, nations, and religions—find rich personal and professional fulfillment in this vibrant multidimensional community.

In our commitment to maintain and deepen this vital self-understanding, we refer to the Catholic Identity Matrix, originally developed for Catholic health care institutions to assess how effectively they are implementing Catholic principles. The matrix focuses on six areas: solidarity with those who live in poverty, holistic care, respect for human life, a participatory community of work and mutual respect, and stewardship. These principles guide our attitudes as well as our actions.
TRUTH, COMMON GOOD, SERVICE

“This community realizes that it is truly linked with mankind and its history by the deepest of bonds. For the human person deserves to be preserved; human society deserves to be renewed.”

—Gaudium et Spes (Joy and Hope; the Pastoral Constitution on the Church in the Modern World)

Our approach in the College of Science aligns with the foundational Catholic teachings of truth, common good, and service. While the search for truth is at the heart of our research as scientists, we also focus on large questions where discovery might elevate the good of individuals and society, especially those whose needs are not otherwise addressed for economic or other reasons.

Infectious Disease

Many researchers in the College of Science, especially in centers such as the Eck Institute for Global Health and the Center for Rare and Neglected Diseases, conduct basic pure research. Much of that research focuses on diseases that impact people in developing countries. Notre Dame has become home to the Vector Biology Laboratory, which has housed the World Health Organization International Reference Center for the Aedes mosquito since 1969. This research on the disease-bearing mosquitoes was first aimed at yellow fever and has had significant application to dengue, malaria, and other tropical diseases such as lymphatic filariasis (LF) in impoverished areas of the world. The Notre Dame Haiti Program, led by Father Streit, has been a world leader in the fight against LF, also known as elephantiasis. Basic research has increased the knowledge about LF, and the program is part of a collaborative initiative to eliminate the disease on the island by 2020. This commitment to common good has attracted students, alumni, and faculty to service on the island. For example, Brennan Bollman, Notre Dame’s 2009 valedictorian, deferred her acceptance to Harvard Medical School for a year so that she could participate in this work.

Stem Cell

For more than a decade, the promise of treating a wide variety of conditions, from spinal cord injury to Parkinson’s disease to Alzheimer’s disease, with stem cells has spurred intensive research in the field. At first, much of the attention was on human embryonic stem cells, which had the greatest capacity to differentiate into specific tissue—a line of investigation not pursued at Notre Dame because Catholic teaching forbids the destruction of some human life for the benefit of others. Still sympathetic to those who suffer from these diseases, Notre Dame has invested heavily in research alternatives to human embryonic stem cells. Our Center for Zebrafish Research, for example, investigates the ability of zebrafish to regenerate cells in the damaged retina, which could potentially help treat macular degeneration and other neurological diseases. This research is accelerating through significant additional investment, including expansion in the Initiative on Adult Stem Cell Research and Ethics.

Rare Diseases

Rare diseases are often ignored by the commercial pharmaceutical industry for economic reasons. Because they are rare, the smaller number of affected people likely means an unprofitable market for any treatment. As an institution driven by its Catholic mission and commitment to the common good, Notre Dame has taken a lead in serving this population without regard to market or profit considerations.

We established the Center for Rare and Neglected Diseases in 2008, and it has continued to grow rapidly. In 2014, it became the Boler-Parseghian Center for Rare and Neglected Diseases thanks to generous gifts to accelerate the research. Even before the center was established, many Notre Dame researchers were focusing their attention on rare and neglected diseases. For example, Niemann-Pick Type C (NPC) disease is a genetic cholesterol storage disorder that is almost always fatal before the victim reaches adulthood. Three of legendary Notre Dame football coach Ara Parseghian’s grandchildren died from this illness, which strikes only a few hundred people in the United States. Their parents, Cindy and Mike Parseghian, started the Ara Parseghian Medical Research Foundation (APMRF), which has raised millions of dollars to fund scientific research on NPC.

Almost nothing was known about the disease in the early 1990s, but in recent years scientists have discovered its genetic origins and identified potential treatments. This search also sheds light on other cholesterol-related diseases, including Alzheimer’s. Because personal contact inspires scientists and gives hope to the families, Notre Dame and the APMRF deepened their ties in 2010 and organized an annual conference at the University to bring together researchers and families from around the world who have been impacted by NPC. A Notre Dame alumnus has started a company, Lysomics LLC, to guide treatment to market. And my cross-country bicycle rides have raised money and awareness for the fight against NPC for years (including $500,000 in 2013) to fund clinical trials on a treatment discovered by Notre Dame researchers and their collaborators.
Medicinal Chemistry

Research on medicinal chemistry aims to discover new truth about the natural world and the ways humans can synthesize material for the sake of healing. This field touches a broad range of our other initiatives intended to elevate global health and well-being, especially rare and neglected diseases, infectious disease, and cancer. It often includes understanding the often overlooked power of compounds found in the natural world, increasing our ability to use nature's gifts for good, as well as fashioning synthetic compounds for treatment or delivery of therapeutics. Medicinal chemistry attracts other researchers who also find novel ways to serve those who suffer.
The life sciences, with their focus on research that can lead to healing disease, are an obvious confluence of truth, service and promoting the common good according to our Catholic mission. And yet other science fields such as mathematics and physics provide opportunities for discovery and understanding that can be enriched by their context in a Catholic university and contribute to the University’s aims. Humanity’s material and economic life is necessary but not sufficient. Full education includes reflection on origins, nature, and goals; the search for truth, beauty, and meaning; and the practice of virtues that support a flourishing community.

Mathematics

The study of mathematics, the most abstract, objective, and purely rational academic discipline, is a search for truth. This search can demand deep reflection and contemplation from the individual as well as grounds for collaborative investigations with people from other fields. Discoveries in mathematics, separate from any specific culture or ideology, can also serve the common good as a knowledge base for finding solutions to problems from poverty to environmental sustainability. Notre Dame’s new Applied and Computational Mathematics and Statistics Department, for example, uses data analysis to help breast cancer patients avoid unnecessary chemotherapy treatments.

The study of calculus can be limited to a mastery of difficult and complex techniques aimed at arriving at a “right answer” to a particular problem, a necessary chore in the process of accomplishing tasks in engineering and other fields. But at a Catholic university, where the search for truth includes openness to the transcendent and nonmaterial, one can approach calculus as far more than a tool. It is one of the greatest achievements of the human intellect, with its own intrinsic beauty and virtue. For three centuries, it has profoundly influenced the development of philosophy as well as science, and its role is vital to any comprehensive understanding of history. Calculus is the mathematics of continuous functions and of limits, the concept of one object getting close to another. Studying calculus stretches the mind with concepts of the infinitely large and the infinitesimally small.

Studying calculus also disciplines the student with sustained attention to sophisticated analysis. It equips the learner with the language of the sciences and their applications that are vital in modern times. The importance of calculus extends beyond mathematical specialty. It is part of the liberal study of any fully educated person. It is about application, volumes and surfaces, modeling the stock market, and solving engineering problems. Yet, it is far more than that. It develops the concepts of limits, infinity, and continuity in a formal and analytical way. That alone is human achievement, complexity, discipline, perseverance, diligence, and other virtues; that alone is training the mind for something far bigger than the analytical answer.

Quite frankly, it can even help us think about the concepts of God, the supernatural, or invisible dimensions. Such a study recognizes common good and serves society not only with the scientific and engineering discoveries that it might support but also with the new insights that it can provide about the universe that we all share.

Particle Physics

Notre Dame physicists were deeply involved in the search for the Higgs boson and continue to participate in significant physics research, both on campus and at the large international collaboration CERN in Switzerland. This is a search for truth in a pure form. Serendipitous applications could result later, like the transistor from quantum understanding. The process itself elevates the appreciation of common good and service to the whole world. Hundreds of people from around the world, including five professors, graduate students, research scientists, and several generations of undergraduates from Notre Dame have worked on the Compact Muon Solenoid experiment at CERN’s Large Hadron Collider from the beginning. The Notre Dame group’s data analysis found the telltale marker for the Higgs boson; this discovery was announced in 2012. In addition to the exciting discovery, the project serves society by creating a model of global collaboration and understanding.

Astrophysics

Astrophysics considers the whole universe, from the infinitesimal to the infinite and reveals its deep connections and dynamic processes. It captures the human imagination with its discovery of truth about what we have most in common: the universe that is our home. It answers big questions and stimulates more. It addresses our deepest desires for understanding and sparks our wonder, curiosity, and imagination in countless ways. A Catholic university respects the researcher’s reach beyond the measurement and analysis of material data to the wonder of the heavens that has always moved humans to reflection and action. As Pope Leo XIII wrote when he established the Vatican Observatory in 1891, “the Church and her Pastors are not opposed to true and solid science, whether human or divine,
but that they embrace it, encourage it, and promote it with the fullest possible dedication.” At Notre Dame in particular, research ranges from the life cycle of element-producing stars to the possibility of life-supporting exoplanets, with the hope of new discoveries that will give us increased understanding of our place in the Universe.

Entrepreneurship and Innovation

In education we seek fundamental understanding of the universe, life, human beings, and societies. More recently, the academy (and Notre Dame) has rightly increased its attention to the application of research discovery—the commercialization of products and processes for human benefit. Yet at Notre Dame, our innovation and entrepreneurship reflect our commitment to wise stewardship of the Earth, the dignity of human work, and the responsibility to care for the well-being of people everywhere. Our mission to serve the common good emphasizes the use of knowledge and skills to solve big problems.

At a time when much entrepreneurship aims at quick profit from trendy apps that increase the convenience and comfort of already-privileged people, we urge our students to serve the broader society, with a focus on the poor. At an ESTEEM graduation ceremony, for example, the program’s director, David Murphy, told students they should seek solutions for the “unexotic underclass,” including single mothers facing poverty, veterans waiting months for medical care in an inefficient system, unemployed older workers with no hope of a new job, and ex-convicts trying to re-enter a technologically transformed society. “They are a market of millions of people,” he said, “[who] offer vast opportunities to solve lower-case ‘big problems’ in fields with little or no competition compared to the social-app sector. … You know through what we have taught you here that these are not depressing news bytes or statistics—these are an entrepreneur’s opportunities. Seize them! Aspire to something more noble.”
LEADERSHIP

The academy in general recognizes the importance of servant-leadership, a modern approach that replaces the top-down, military-industrial model with a more person-centered, positive, consensus-building environment. This is a crucial element for success in a complex organization filled with independent, strong, highly intelligent people. It is perfect for the academy. It is also a natural fit with the Catholic tradition. Among other things, the Catholic principle of subsidiarity empowers each of us to make decisions and act according to their responsibility, with the assurance that others are available to support and promote their success.

More and more, organizations are recognizing the importance of virtues for managers, valuing the magnanimity and generosity necessary for establishing good relationships, the prudence and creativity required for good decision making, and the honesty and transparency that enable clear communication. This virtue tradition, which reaches back to Aristotle, was embraced by the Catholic Church centuries ago and enhanced with the New Testament virtues of faith, hope, and love. The virtues empower each individual to achieve personal excellence while strengthening the whole community’s ability to achieve its mission.

COLLEGIALITY IS THE NORM IN DISCUSSIONS AND DECISION-MAKING; SERVANT-LEADERSHIP ACCELERATES COOPERATION AND COLLABORATION IN OUR COMMUNITY THAT CONTRIBUTES TO OUR PERSONAL, PROFESSIONAL, AND INSTITUTIONAL FLOURISHING.

In addition, leadership at Notre Dame is understood as service to the community practiced by students, faculty, and staff alike. This servant-leadership is inspired by the desire to serve, not to be served. The responsibility of leadership is embraced because we want to see others grow; to help them be successful, wiser, and more autonomous; and to help them accept service to others. Collegiality is the norm in discussions and decision-making; servant-leadership accelerates cooperation and collaboration in our community that contributes to our personal, professional, and institutional flourishing.

CONCLUSION

My experience in seven years as the dean of the College of Science at Notre Dame has deepened my understanding and appreciation for the gift of the Catholic heritage and identity in this robust modern community of faith and scholarship, values and virtues, discovery and service. These qualities are the source of our success.

Much of our progress in these seven years has involved interdisciplinary integration, breaking down old divisions to establish new models and to achieve benefits for the University community and the larger society. The growing list of interdisciplinary endeavors include ESTEEM, a collaboration with the College of Engineering and the Mendoza College of Business; Patent Law, a collaboration with the Law School; Neuroscience, a collaboration with College of Arts and Letters; and numerous joint hires, including Celia Deane-Drummond, a full professor in theology who is a concurrent appointment among the Department of Theology in the College of Arts and Letters and the College of Science.

I believe the University of Notre Dame and the College of Science are powerful 21st century expressions of Newman’s ideal: a place where the intellect ranges with the utmost freedom, where religion enjoys an equal freedom, and where human dignity and sanctity are unified within our community and among our people.

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