An increasingly popular narrative in the United States claims that science and religion are largely incompatible and in competition with each other. The Center for Applied Research in the Apostolate (CARA) explored the subject in a 2016 poll of the U.S. population, with a special focus on the beliefs of Catholics. Some 1,927 responded to the poll including an oversample of Catholics resulting in 1,010 interviews with self-identified Catholics. The survey asked about topics in which science and religion intersect, including the general compatibility of religion and science, the Big Bang, evolution, climate change, and moral issues like fetal stem cell research. This special report demonstrates that those of all religions seem to be grappling with the proper relationship between the two and that Catholics are no different in that regard.

COMPATIBILITY BETWEEN SCIENCE AND RELIGION

The Catechism of the Catholic Church, quoting from two past Church documents, posits that the proper relationship between faith and science is one of compatibility:

159 Faith and science: “Though faith is above reason, there can never be any real discrepancy between faith and reason. Since the same God who reveals mysteries and infuses faith has bestowed the light of reason on the human mind, God cannot deny himself, nor can truth ever contradict truth.” “Consequently, methodical research in all branches of knowledge, provided it is carried out in a truly scientific manner and does not override moral laws, can never conflict with the faith, because the things of the world and the things of faith derive from the same God. The humble and persevering investigator of the secrets of nature is being led, as it were, by the hand of God in spite of himself; for it is God, the conserver of all things, who made them what they are.” —CATECHISM OF THE CATHOLIC CHURCH

CARA's survey respondents are similar in religious identification to other respondents from surveys conducted by the Pew Research Center nationally: about three-quarters of CARA survey respondents identify as Catholic (27%) or another type of Christian (49%). Seven percent identify as belonging to a non-Christian faith tradition and one in six as having no religious affiliation (17%). These respondents were asked the question presented in Figure 1.

Findings from the survey indicate that many in each category of believers are grappling with the issue of compatibility. Half or slightly fewer of those professing a Christian faith believe that current scientific theory and evidence is compatible with the belief that God created the universe and Earth, compared to about a quarter of non-Christians and just over one in ten of those with no affiliation. Catholic respondents are least likely to say that the two are incompatible (16%), while those with no affiliation are the most likely (52%). However, more than a quarter of all categories of believers responded that they do not know, including a third of Catholics.

To better understand the Catholic respondents, CARA also asked how often they attend Mass, pray, or go to Confession; how firmly they believe in God; their beliefs about Biblical inerrancy; their Lenten practices; and their educational background. Displaying
great variability, those most likely to agree that the two are compatible are those who most often practice their faith: those who attend Mass weekly or more, who go to Confession at least yearly, and who participate in at least three of four Lenten practices (receiving ashes on Ash Wednesday, abstaining from meat on Fridays, abstaining from other things during Lent, and trying to improve yourself during the season). The contrast is especially strong among those self-identified Catholics who attend Mass never or rarely compared to those who attend at least weekly and between those who do not observe any of the Lenten practices compared to those who observe at least three: those more involved in their faith are about twice as likely as those minimally involved to find the two compatible. Pew studies replicate this pattern of those who practice their faith more frequently being more amenable to seeing faith and reason as compatible.

Question wording is important though, and these Catholic respondents were also asked if there are any unresolvable conflicts between science and religion more generally, not just conflicts concerning the creation of the universe and Earth. Almost six in ten Catholics agree “somewhat” or “strongly” that there are unresolvable conflicts between science and religion. Examining just those respondents more closely, the topics about which they are most likely to disagree with current scientific theory include the origins of the universe (such as the Big Bang theory) and the origins and evolution of life on Earth. This report considers these topics next.

THE ORIGIN OF THE UNIVERSE AND OF LIFE ON EARTH
The Catechism also directly addresses scientific theories about the origin of the cosmos and life on Earth:

283: “The question about the origins of the world and of man has been the object of many scientific studies which have splendidly enriched our knowledge of the age and dimensions of the cosmos, the development of life-forms and the appearance of man. These discoveries invite us to even greater admiration for the greatness of the Creator, prompting us to give him thanks for all his works and for the understanding and wisdom he gives to scholars and researchers. With Solomon they can say: “It is he who gave me unerring knowledge of what exists, to know the structure of the world and the activity of the elements . . . for wisdom, the fashioner of all things, taught me.”

284: The great interest accorded to these studies is strongly stimulated by a question of another order, which goes beyond the proper domain of the natural sciences. It is not only a question of knowing when and how the universe arose physically, or when man appeared, but rather of discovering the meaning of such an origin: is the universe governed by chance, blind fate, anonymous necessity, or
by a transcendent, intelligent and good Being called “God”? And if the world does come from God’s wisdom and goodness, why is there evil? Where does it come from? Who is responsible for it? Is there any liberation from it? —CATECHISM OF THE CATHOLIC CHURCH

One long-standing debate between religion and science concerns how the universe began: did it begin by God speaking it into existence in six days or was there a massive explosion that restructured time, space, and matter into our universe? The Big Bang (originally termed the “primeval atom”) is a concept originally developed by Belgian priest and astronomer Monsignor George Lemaitre when studying Einstein’s theory of general relativity. A plurality of Catholics say they do not know which of the statements in Table 1 with which they most agree, the greatest among any of the groups. Among Catholics, the next largest percentage agree with the Big Bang being a moment described in Genesis, followed by the origins of the universe being literally as described in Genesis.

Even harder to characterize are Catholic beliefs about evolution. A majority (56%) agree that: “Humans and other living things genetically evolved over time in response to changes in the environment through natural selection where the fittest survived and passed on their genes to their offspring. This led to the great diversity of lifeforms, including humans, here on Earth.” About a quarter agree, however, that it is acceptable to the Church for a Catholic to believe that humans evolved over time from other lifeforms. Examining this more closely, six-tenths of those who agree with the statement about natural selection believe it is not acceptable for Catholics to adhere to that belief. Adding to this ambiguity, about three in ten neither agree nor disagree with the statement.

This may be partially explained by the Church not having an official position on evolution, except for Pope Pius XII stating in a 1950 encyclical that it is still under discussion and, whether the theory is correct or not, that “the Catholic faith obliges us to hold that souls are immediately created by God.” (Pope Pius XII, Humani Generis, 36). Pope Francis expanded on this in 2014, saying in an address to the Vatican’s Pontifical Academy of Sciences that “Evolution in nature is not inconsistent with the notion of creation, because evolution requires the creation of beings that evolve.” Of course, this is not the same as declaring this an eternal truth in an encyclical.

The other part of the explanation, however, comes from how Catholics describe their beliefs about the Bible. One in five (21%) say it must be taken literally while three in five (60%) say instead it is the inspired word of God but with some caveats. These findings, shown in Figure 2, show the diversity of opinions about the Bible among U.S. Catholics.

In addition, it is worth noting that 56% of Catholics agree that Adam and Eve, the first humans, were real, historical persons. Fully 87% of Catholics who believe the Bible is to be taken literally agree they were real people, compared to 64% of Catholics who see the Bible as inspired with some parts symbolic, 38% who believe the Bible is inspired but contains errors, and 35% who believe the Bible is telling how the writers understood the ways and principles of God. This, again, is a place where the percentage saying they do not know plays a role, with two-tenths of responding Catholics choosing that option.

Another factor that affects views on the origins of the universe and life on Earth is whether a respondent has heard a priest or deacon mention science-related matters during Mass at their parish (16%...
have). Those who have heard such topics mentioned are more likely to believe that the Big Bang did occur, that it was a moment described in the Book of Genesis, that current scientific theory is compatible with the belief that God created the universe and Earth, that living things evolved over time through natural selection, that the hand of God is involved in the evolutionary process, and that it is acceptable for a Catholic to believe that humans evolved over time. Paradoxically, however, they are also more likely to believe that Adam and Eve were real, historical people.

FROM THE BEGINNING OF LIFE TO THE PRESENT

Climate Change
The remainder of this report will focus on current issues that people are wrestling with that include science and religion. One of the most contentious issues in the Catholic Church right now is climate change, which Pope Francis especially has brought into the spotlight. Two-thirds of Catholics agree that temperatures on Earth are rising in response to higher concentrations of heat-trapping greenhouse gases like carbon dioxide and methane in Earth’s atmosphere. About the same proportion also say that the heat-trapping gases in our atmosphere are largely a result of human activity as a result of industrial activity, transportation, as well as energy and food production. Those who say that temperatures are increasing due to greenhouse gases are much more likely to say that those gases are largely a result of human activity. The same question is addressed in Gallup’s March 2017 report about Americans’ views on the human causes of climate change. Gallup’s poll suggests that an increasing number of Americans think that the effects of climate change are becoming more immediately visible and that this may pose a serious threat in their lifetime.

Another issue that has been brought forth by people of faith is the role that God has played in the Earth getting warmer. Here Catholics are in the middle of two extremes (see Figure 3). Predictably only 3% of those who do not claim a religion say God has played a role in the Earth’s warming while 77% disagree. Among Catholics, 17% say that God has played a role in the Earth’s warming while 55% say God has not played a role. A third of non-Catholic Christians say that God has played a role while 41% say God has not. The more frequently Catholics attend Mass, the more likely they are to say that God is involved in the Earth’s warming.

Regardless of who is to blame for the Earth getting warmer, two-thirds of Catholics think that climate change is “a very” or “the most” important problem for the world today; only 11 percent say it is “a little” or “not at all” important. Contrary to the pattern noted above, those who attend Mass at least weekly are least likely to say it is “a very” or “the most” important problem.

It is clear that most people think climate change is an important problem, but who is responsible for the solution? Sixty-nine percent of Catholics believe that they have a moral responsibility personally to do what they can to combat climate change while only 16% believe that they do not. Catholics who agree that climate change is caused by humans are much more likely to say they have a moral responsibility to combat it. Those who attend Mass at least weekly are, again, least likely to agree that they have a moral responsibility to combat climate change. On the other hand, the more
likely respondents are to observe Lenten practices, the more likely they are to feel they have a personal responsibility.

When asked who in the Catholic Church led to and/or strengthened their belief that they have a moral responsibility to personally do what they can to combat climate change, a third of Catholics responded that statements from Pope Francis led to and/or strengthened this belief. Slightly less than two in ten said that their pastor, bishop, or some other person in ministry for the Church strengthened their belief that they should personally combat climate change. The more often responding Catholics are to observe Lenten practices, attend Mass, and go to Confession, the more likely they are to say they were influenced by all of these Catholic leaders. In addition, those who were involved in youth ministry or campus ministry are more likely to say they were influenced by all of these Catholic leaders.

While most people think that they should personally do something to combat climate change, even more think that society should do something to combat climate change. Three-fourths of Catholics think that society should do something to address climate change and Table 2 shows some of the reasons why. A third or more Catholics think that society should address climate change because the destruction ignores the intrinsic goodness of God’s creation, disobeys God’s command to care for creation, prevents some people from enjoying the goods of creation, or upsets the connectedness in which God has placed all parts of creation. The only statement with which Catholics were significantly more likely to disagree than to agree is that the destruction caused by climate change “is a sin.”

This raises the question about what the Catholic Church teaches on matters dealing with climate change and the environment. The most recent encyclical dealing with the environment is Laudato Si’, which was released by Pope Francis in June of 2015. This document defends the need to protect the environment.

TABLE 2. SOCIETY SHOULD ADDRESS HUMAN-CAUSED CLIMATE CHANGE BECAUSE OF ECOLOGICAL DAMAGE AND DESTRUCTION TO THE ENVIRONMENT AND ECOSYSTEMS

<table>
<thead>
<tr>
<th>Catholic respondents only</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>. . . ignores the intrinsic goodness and value of God’s creation.</td>
<td>37%</td>
<td>36%</td>
<td>26%</td>
</tr>
<tr>
<td>. . . disobeys God’s command that humans till, keep, cultivate and care for creation.</td>
<td>36%</td>
<td>38%</td>
<td>26%</td>
</tr>
<tr>
<td>. . . prevents some persons from enjoying the goods of creation that God intends for everyone.</td>
<td>36%</td>
<td>38%</td>
<td>25%</td>
</tr>
<tr>
<td>. . . upsets the connectedness in which God has placed all parts of creation.</td>
<td>33%</td>
<td>41%</td>
<td>26%</td>
</tr>
<tr>
<td>. . . unjustly harms the poor and vulnerable whom God especially loves.</td>
<td>29%</td>
<td>41%</td>
<td>30%</td>
</tr>
<tr>
<td>. . . injures the dignity of persons created in God’s image.</td>
<td>27%</td>
<td>45%</td>
<td>28%</td>
</tr>
<tr>
<td>. . . is a sin.</td>
<td>20%</td>
<td>44%</td>
<td>37%</td>
</tr>
</tbody>
</table>

When Catholics were asked if they recall hearing or reading about the document, 32% responded they had, only 4% to 7% more than those in the other categories of believers. A little more than a third of Catholics say they generally agree with Pope Francis about the environment and climate change. The more likely responding Catholics are to observe Lenten practices and the more often they go to Confession, the more likely they are to have heard of the encyclical and to generally agree with it. Those
with any type of Catholic schooling are also more likely to have heard about *Laudato Si* and to generally agree with it.

When asked if the Church’s pro-environmental stance is strongly supported by scientific evidence, 37% of Catholics agree that it is. The more likely responding Catholics are to observe Lenten practices, the more likely they are to agree that it is. Catholics who have heard about *Laudato Si* and those who say that they agree with it also are more likely to say the Church’s stance is strongly supported by scientific evidence.

**Scientists and the Catholic Church**

Scientists have long had a relationship with the Catholic Church, with great Catholic contributors to the sciences including Roger Bacon, William of Ockham, Jean Buridan, Leonardo da Vinci, Nicolaus Copernicus, Giovanni Battista Riccioli, Blaise Pascal, Giuseppe Piazzia, Jean-Baptiste Dumas, Gregor Mendel, Louis Pasteur, Mary Celin Fasemmyer, and, famously and/or infamously, Galileo. In fact, Bacon, Ockham, Buridan, Riccioli, and Piazzia were perhaps some of the more famous among many other priests and religious sisters who have contributed greatly to the sciences.

Not only are Catholics largely ignorant of that history, but few know of the formal relationship the Church currently maintains with scientists. The Pontifical Academy of the Sciences is a scientific academy of the Vatican, established in 1936 by Pope Pius XI to provide advice about matters of science to the Catholic Church. Academy members are many of the world’s most accomplished scientists who can be of any faith (or no faith). The survey asked if people were aware of this institution and only 14% of Catholics say they are. The percentage of Catholics who know about the institution is almost the same as those of other religions, of which 8% know about the academy.

Further, four in ten Catholics approve of scientists advising the Church on matters of science, even if those scientists are atheists. If Catholics have heard about the Pontifical Academy of the Sciences they are more likely to approve of scientists advising the Church on matters of science. One of the things that help people to learn about the Catholic Church’s collaboration with science is when priests and deacons address the topic during Mass in a homily. Only 16% of Catholics, however, can recall a priest or deacon mentioning science-related matters during Mass.

**Organic Science**

The Church also officially has taken positions on some controversial research topics.

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2293: Basic scientific research, as well as applied research, is a significant expression of man’s dominion over creation. Science and technology are precious resources when placed at the service of man and promote his integral development for the benefit of all. By themselves however they cannot disclose the meaning of existence and of human progress. Science and technology are ordered to man, from whom they take their origin and development; hence they find in the person and in his moral values both evidence of their purpose and awareness of their limits.

2294: It is an illusion to claim moral neutrality in scientific research and its applications. On the other hand, guiding principles cannot be inferred from simple technical efficiency, or from the usefulness accruing to some at the expense of others or, even worse, from prevailing ideologies. Science and technology by their very nature require unconditional respect for fundamental moral criteria. They must be at the service of the human person, of his inalienable rights, of his true and integral good, in conformity with the plan and the will of God. —CATHEISM OF THE CATHOLIC CHURCH

One very controversial issue in discussions about the interaction of faith and religion involves the authority of religion to oppose scientific procedures. The eugenics movement is a historical example of a scientific procedure that was directly opposed by the Catholic Church. In the early 20th century, science made it possible to control human reproduction based on race. The Catholic Church opposed the use of this procedure and today the incident is considered an example of how scientists can make grave mistakes. Pew researchers asked if churches should express their views on scientific issues and half of the general population thinks they should, while slightly less than half said that churches should keep out of scientific issues.

The CARA survey did not ask if the Catholic Church should keep out of scientific issues in general, but did ask about specific areas of science, addressed below.

An issue that is increasingly getting more coverage is genetic manipulation. Three in ten Catholics do not at all approve of genetics being used to promote more positive traits in babies and almost two-thirds approve only a little or not at all. Catholics seem to travel the middle of the road on the issue. Non-Catholic Christians are slightly more
likely to disapprove of genetics being used to promote more positive traits while those who claim no affiliation are slightly less likely.

Another question on this subject asked respondents if the Catholic Church should oppose scientific research in genetic selection to create “designer babies.” Almost half of Catholics agreed that the Church should while three in ten said that the Church should not oppose it. The more often Catholics attend Mass, the more likely they are to oppose such research. This is consistent with a recent Pew article, which found that the more Americans go to church, the more likely they are to say changing a baby’s genetic characteristics to reduce the risk of serious diseases is taking medical advances too far.7

An issue related to genetic manipulation is human cloning, a popular topic in movies for many years. Similar to genetic selection, almost half of Catholics say the Church should oppose scientific research in regard to human cloning. Catholics’ education has the most impact on their opinions of the subject. Catholics who went to a Catholic elementary/middle school, a Catholic college or university, attended parish-based religious education, were involved in campus ministry, or have a bachelor’s or graduate degree are more likely to say the Church should oppose cloning research.

While many Catholics are opposed to scientists genetically modifying humans, only 29% say the Church should oppose genetically modifying the food we eat. Forty-four percent say that the Church should not oppose these foods.

The survey also asked if the Church should oppose fetal stem cell research. Three in ten Catholics say the Church should oppose fetal stem cell research while slightly more than four in ten disagree. The more often responding Catholics observe Lenten practices, attend Mass, and go to Confession, the more likely they are to say the Church should oppose it.

New Frontiers in Science
Artificial intelligence is another subject that has been popular in recent movies. In reality, artificial intelligence has been part of everyday life in the United States for a couple decades, since the rise of smart technology. Despite this, slightly less than a quarter of Catholics say that the Church should oppose artificial intelligence while half of Catholics say the Church should not.

A subject that has not been as popular in the movies, but has become a frequent topic of controversy, is drone technology. Over half of Catholics think that the Church should not oppose drone research while 20 percent think the Church should. Those who participated in Confirmation, attended a Catholic elementary school, participated in a parish-based religious education program, and those who have more education are more likely to say that the Church should not oppose space exploration research.

Science and Morality
This report has covered a multitude of areas where science and religion intersect. This section analyzes people’s views about the relationship between morality, science, and religion. Catholics are back in the middle again. Slightly more than a third of Catholics agree that science can help people make moral judgments compared to 47% of those with no affiliation and 24 percent of other Christians.

When asked whether science needs religion to understand complete truth, non-Catholic Christians and people with no affiliation flip their position, while Catholics remain in the middle. Slightly less than half of non-Catholic Christians agree and only 17% of people who do not claim a religion agree. Slightly more than a third of Catholics agree that science needs religion to understand complete truth. The more Catholics attend Mass, go to Confession, and participate in Lenten activities, the more likely they are to agree that science needs religion to understand complete truth.

Respondents were asked if science should be held responsible for the pain and suffering caused by things like nuclear, chemical, and biological weapons or unethical experimentation on human beings. More than half of Catholics and other Christians agree that science should be held responsible and around 10% of both groups disagree. People with no affiliation are less likely to say science should be held responsible. The more Catholics attend Mass, go to Confession, and participate in Lenten activities, the more likely they are to agree that science should be held responsible.

When the Catholic Church’s pro-life stance is questioned, Catholics are the most likely of any group to agree that this stance is strongly supported by scientific evidence. Three in ten Catholics agree that the Church’s pro-life stance is supported by scientific evidence. Catholics who participate more in Catholic activities such as Mass, confession, and Lenten practices are more likely to agree. Also, Catholics who went to a Catholic elementary school, high school, or college as well as those who were involved with a youth group or campus ministry are more likely to agree.

The End Times and Beyond
How the Earth will end continues to be an especially contentious issue. A third of Catholics think that the Earth’s demise is something we can understand and predict while two-thirds believe it is in God’s hands and therefore unpredictable. Again, Catholics are between the opposing sides as 80 percent of those with no affiliation
think that the Earth’s demise is predictable and 21 percent of non-Catholic Christians think the Earth’s demise is predictable. As their participation in Catholic activities such as Mass, Lenten practices, and Confession increases, Catholics are more likely to believe that the Earth’s demise is in God’s hands. The more education Catholics have, on the other hand, the more likely they are to believe the Earth’s demise is predictable.

In the event of Earth’s demise, humanity will perish along with it or will need to find another home. Around three in ten Catholics think that humanity’s destiny is somewhere other than on Earth and a quarter think that humanity will end on Earth. Catholics who believe that the Bible is to be taken literally or who recall a priest or deacon mentioning science-related matters during Mass are more likely to believe humanity will end on Earth. Similarly, 78 percent of Catholics believe that human exploration of space will be at least somewhat important in the future. Catholics who say that humanity will continue somewhere else are more likely to say that space exploration will be very important in the future.

The exploration of space raises the question of what we will find in space and how compatible it is with the Catholic faith. Almost four in ten Catholics disagree that if science finds evidence of life elsewhere in the universe, it would be incompatible with the teachings of their faith. Only 18% of Catholics agree that finding life elsewhere in the universe is incompatible with their faith and slightly less than half don’t know if it is incompatible with their faith. As education increases, they are more likely to disagree that life elsewhere in the universe is incompatible with their faith.

CONCLUSION
Catholics, mirroring the other religious and non-religious groups chronicled in this report, have a variety of opinions about how compatible science is with their faith. Perhaps most striking, though, is the good number who still have not decided how compatible the two are. There are myriad reasons for this confusion and diversity of opinions, of course, but two especially deserve highlighting.

First, the Church has not catechized Catholics well concerning how science and faith intersect. A plurality of Catholics, for example, have no opinion about how the Big Bang and their faith do or do not conflict. Even more tellingly, six-tenths of those who see the two as compatible believe the Catholic Church does not teach that the two are compatible.

Second, the diversity of opinions among Catholics reflects the diversity of Catholics’ opinions about the proper relationship Christians should have to the Bible, with one in five Catholics believing that the Bible is to be taken literally, word-for-word. Not being well-aware of the Church’s positions on the Bible may be playing a role in their conflicting feelings, especially on matters related to the origins of the universe and life on Earth. In addition, though it is not covered in the current survey, Catholics’ knowledge about current scientific theories may also be affecting the findings reported here.

The reality that lack of knowledge affects Catholics’ opinions about science is consistent with another major finding, that Catholics who practice their faith most frequently are among the most likely to find science and their faith compatible. This is especially so among those who more regularly attend Mass, observe Lenten practices, and go to Confession. The only time this pattern shows a fissure is on climate change, where those who go to Mass more regularly are not more likely to adhere to Pope Francis’s teachings on climate change, to find climate change an important topic, or to feel the need to change their personal behaviors to mitigate its ill effects. This fissure deserves further research.

In sum, Catholics generally seem to be a little more accommodating of scientific theories and advances than their non-Catholic Christian counterparts. Many Catholics, though, still struggle with conflicts between science and their faith, whether they are conflicts over contemporary issues or conflicts with processes that took place thousands or even billions of years ago.

NOTES
5. These were predetermined responses in the survey, not open-ended questions.
7. “5 facts about the interplay between religion and science,” on October 22, 2015, by Carey Funk and David Masci, appears on the website of the Pew Research Center (www.pewresearch.org).