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Finding Our Place in the Cosmos: From Galileo to Sagan and Beyond

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Carl Sagan: Researcher, Educator, Communicator, Advocate and Activist

The term "scientist" brings to mind a researcher in a lab coat scratching out equations on a chalkboard. In reality scientists play many other roles. Items from Carl Sagan's papers illustrate the many facets of his career. More broadly, these items speak to the range of roles scientists play in society.

Science Communicator

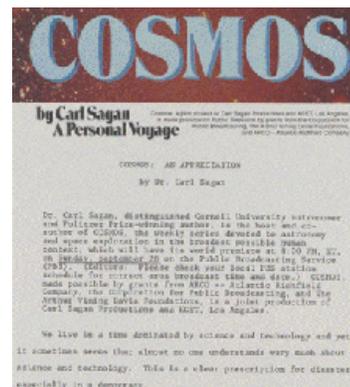
Most Americans know Carl Sagan best as a public figure and science communicator. For Sagan an interest in science communication came early. Even as a high school student he waxed philosophical on the connections between [the Astronomer and the Poet](#). As his career as a scientist began to take off, he was frequently interviewed by the press and became a public spokesperson for astronomy on programs like *The Tonight Show Starring Johnny Carson*.

Carl Sagan remains most well known for his television program, *Cosmos: A Personal Voyage*. In [Cosmos: An Appreciation](#), Sagan explained why he felt it was so important for scientists to be involved in communicating science to the public; "We live in a time dominated by science and technology and yet it sometimes seems that almost no one understand very much about science and technology." For him, "this is a clear prescription for disaster especially in a democracy." Sagan's belief that "we are all of us scientists" motivated a considerable amount of his work as a science communicator. His commitment to communication and education once prompted him to consider the value of [making all scientists tithe 10% of their time to public outreach projects](#), including the creation of computer games.

Sagan was also a prolific writer of popular science articles and books. He wrote a long standing series of essays for *Parade* magazine. Essays like, [The Gift of the Apollo](#), passionately made the case to the American public for the value of space exploration. In popular press books, like *Pale Blue Dot: A Vision of the Human Future in Space* and *Demon Haunted World: Science as a Candle in the Dark* and his novel *Contact*, he worked to communicate the importance and values of science to the world at large

Science Researcher

Throughout his career, Carl Sagan was engaged in basic scientific research of our solar system. He already had an impressive list of grants and publications on [his curriculum vitae by 1961](#), including articles in the journal *Science*, and the *Proceedings of the National Academy of Science*. While Carl Sagan had expressed an interest in science communication from an early age, working with



In this press release Carl Sagan explains the goals for the *Cosmos* television program. He explains "We live in a time dominated by science and technology and yet it sometimes seems that almost no one understand very much about science and technology." [Cosmos: An appreciation](#). 1980. Manuscript Division.

Scientists should tithe ten percent of their time to public education in science. This should be distinct from teaching/courses at colleges and universities. It could include adult education classes for non-degree candidates, mandatory open nights, articles in local newspapers, book, magazine articles, letters to the editor in scientific magazines, educational computer games or computer instructional programs, the like

In this document, Carl Sagan suggests scientists should give ten percent of their time to public science education to safeguard future funding and support for science. [Scientists tithe time to science education : note](#). 1983. Manuscript Division.

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[his mentors](#) he had already landed a series of major publications.

Throughout Sagan's career he was simultaneously engaged in ongoing research as a planetary scientist alongside his work as a science communicator. For example, while gearing up to start working on the *Cosmos: A Personal Voyage* television program, he was also [revising the scientific objectives of the Voyager mission](#). While working on drafts of his novel *Contact* in the mid 1980s he was putting together [exobiology grant proposals](#).

Science Educator

As a professor, Carl Sagan taught a range of courses at both Harvard University and Cornell. Sagan was engaged in teaching both future planetary scientists and the general students about science.

Traces of his work as an educator are evident in some of the materials for his courses. His [lecture notes](#), [problem sets](#), and [exam](#) for a 1965 planetary science course he taught at Harvard shows the difficult work he assigned to his students.

Aside from instruction for scientists, Sagan was also passionate about teaching non-science majors about the importance of skepticism and scientific habits of mind. You can see this in the [lecture notes](#), [prompts for students](#), [final exam](#) and other [course materials](#) for a class on critical thinking in science and non-science contexts at Cornell in 1986 and 1988.

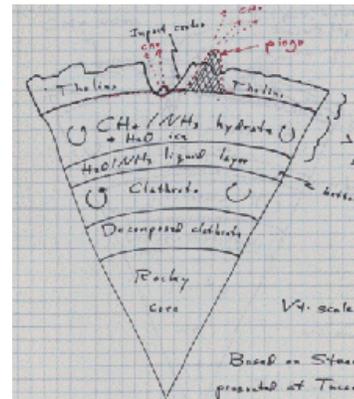
Encounters between astrophysicist and science communicator Neil Tyson and Carl Sagan further illustrate Sagan's commitment to education. In 1975, Neil Tyson, then in high school, applied to Cornell. The university admissions office forwarded his application to [Sagan who invited Tyson to tour the campus](#). While Tyson [decided not to study at Cornell](#), they continued to occasionally correspond. At one point, [Sagan passed on a copy of a popular astronomy book Tyson was working on to several of Sagan's contacts in publishing](#). Though they only met in person on a few occasions, as Tyson explained in a eulogy he gave for Sagan "at every stage of my scientific career that followed, I modeled my encounters with students after my first encounter with Carl."

Science Policy Advocate/Activist:

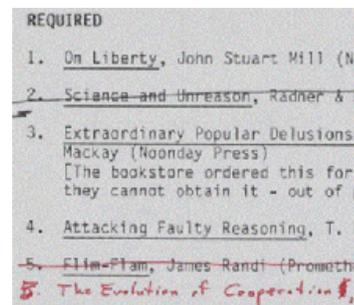
Sagan made direct appeals to the public on the importance of understanding and supporting science and the threats of nuclear proliferation. He also participated in public protests; in 1986 he was arrested at a protest of the detonation of a thermonuclear warhead at test site in Nevada. Along with his communication efforts and activism, he also made direct contact and appeals to policy makers. He testified to congress on multiple occasions and, on at least one occasion, briefed the President of the United States.

In 1977 Sagan had the opportunity to brief President Jimmy Carter and Vice President Walter Mondale. A [small note on Watergate Hotel stationary Sagan took with him to that meeting](#) offers a glimpse of what he expressed to the president. Alongside terms like "wonder" and "exploration" we find a number of topics related to the planets, the Voyager record, and CETI, an abbreviation for communication with extraterrestrial intelligence. He brought much of the message he would bring to audiences in the *Cosmos* series directly to the White House. In keeping with [many of his mentors](#), Sagan felt it was necessary for scientists to be active and engaged participants in civil society.

Carl Sagan's science was publicly minded and engaged. Alongside his work as a researcher he was engaged as an educator, public communicator and activist. In this respect, he remains an important role model for many scientists today.



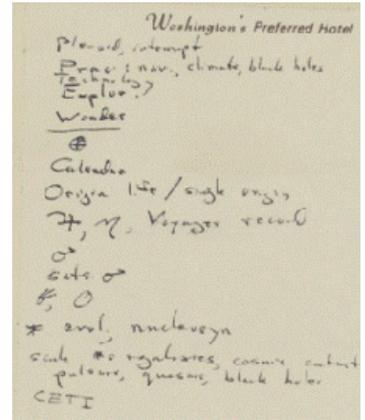
Slices through Titan: A cross section drawing of Titan, Saturn's largest moon, from a notebook Carl Sagan kept on Titan. The notes include discussion of the Titan's clouds, tides, and the possibilities of floating organics on Titan. [Titan Master : book I. Image 56](#). 1981. Manuscript Division.



Required reading for Carl Sagan's course, "Critical thinking in scientific and non-scientific contexts," at Cornell University. Topics included logic, rhetoric, and standards of evidence and argumentation. [Astronomy 490, Cornell University : course materials. Image 4](#). 1988. Manuscript Division.



Though Carl Sagan and Neil Tyson did not meet often, Tyson considered him a role model for how to engage with students. Image of Neil Tyson from Daily Texan article enclosed in a letter to Sagan. [Letter from Neil Tyson with enclosures. Image 2](#). 1986. Manuscript Division.



A handwritten note Carl Sagan used to brief President Jimmy Carter and Vice President Walter Mondale. The note is written on Watergate Hotel stationery. It includes the terms exploration, wonder, the origin of life, the Voyager Golden Record, the scale of galaxies, cosmic pulsars, quasars, and black holes, and

symbols for the planets Jupiter, Saturn and Mars. [Briefing notes for President Carter and Vice President Walter Mondale](#). 1977. Manuscript Division.

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