

## 1: Book Review: Canada's Fifty Years in Space|National Space Society

*marks Canada's 50th year in space. It was September 29th, that Canada became the third country in the world to develop its own satellite and see it launched. In the 50 years since Canada has become a major contributor in space.*

The movie was made through a collaboration with science fiction writer Arthur C. People are not yet routinely visiting space stations, making unremarkable visits to one of several moon bases, nor traveling to other planets. What can computers do? A chief drama of the movie can in many ways be viewed as a battle to the death between human and computer. HAL marks the pinnacle of computational achievement: HAL is not just a technological assistant to the crew, but rather “in the words of the mission commander Dave Bowman “the sixth crew member. The humans interact with HAL by speaking to him, and he replies in a measured male voice, somewhere between stern-yet-indulging parent and well-meaning nurse. HAL is Alexa and Siri “but much better. HAL has complete control of the ship and also, as it turns out, is the only crew member who knows the true goal of the mission. Dave and Frank want to pull the plug on a failing computer, while self-aware HAL wants to live. All want to complete the mission. Citizens, policymakers , experts and researchers are all still exploring the degree to which automation could “or should “take humans out of the loop. Some of the considerations involve relatively simple questions about the reliability of machines , but other issues are more subtle. The actions of a computational machine are dictated by decisions encoded by humans in algorithms that control the devices. Algorithms generally have some quantifiable goal, toward which each of its actions should make progress “like winning a game of checkers, chess or Go. Just as an AI system would analyze positions of game pieces on a board, it can also measure efficiency of a warehouse or energy use of a data center. But what happens when a moral or ethical dilemma arises en route to the goal? For the self-aware HAL, completing the mission “and staying alive “wins out when measured against the lives of the crew. What about a driverless car? Is the mission of a self-driving car , for instance, to get a passenger from one place to another as quickly as possible “or to avoid killing pedestrians? When someone steps in front of an autonomous vehicle, those goals conflict. They broach the idea of shutting him down. The computer is reading their lips through the pod window and learns of their plans. In the modern world, a version of that scene happens all day every day. Most of us are effectively continuously monitored, through our almost-always-on phones or corporate and government surveillance of real-world and online activities. The boundary between private and public has become and continues to be increasingly fuzzy. Through much of the movie, even the humans talk to each other blandly, without much tone or emotion “as they might talk to a machine, or as a machine might talk to them.

### 2: 50 years old, 'A Space Odyssey' still offers insight about the future

*Get this from a library! Canada's fifty years in space: the COSPAR anniversary. [Gordon G Shepherd; Agnes Kruchio] -- International space science began suddenly with the creation of COSPAR (Committee on Space Research) in October, , and its first plenary meeting was held in London, in November the same year.*

Next The Crescent Earth Some of the images in space are so familiar as to have become almost-instant visual cliches. Others most closely resemble abstract paintings, if anything at all. That they are actual celestial bodies seems nearly impossible to fathom. Looking at these pictures, it is easy to become lost in space. Here is a picture of the crescent earth taken from the moon by the astronauts of the Apollo 11 mission in July NASA There had been liquid-fueled rocket launches since -- and most, it seems, had been photographed. The larger image is of the launch of the first rocket from Cape Canaveral, Fla. Seven years later, Oct. John Glenn became a hero when his Mercury Atlas rocket blasted off Feb. But even before the trip, he was photographed, top right, inspecting artwork to be painted on the outside of his Mercury capsule, which he nicknamed "Friendship 7. Aldrin snapped his footprint in the lunar soil. Its re-ascent was caught by Mike Collins, waiting in the orbiting Columbia. CBS The photographs from Apollo 11 are among the most famous ever taken, especially this one of Buzz Aldrin by Neil Armstrong with a "70mm lunar surface camera" probably not too many of those manufactured. The pictures were viewed by billions of Earthlings. Here he is, in their December mission, saluting the flag. Public interest may have waned after the manned missions to the moon, but space exploration continued. Voyager I and II, unmanned spaced probes launched in All seven crew members died in the explosion. The era of the space shuttle re-usable spacecrafts that were supposed to land like airplanes on re-entry had begun five years earlier with the initial launch of the shuttle Columbia. It is located about , light years away, in the Large Magellanic Cloud, which is the neighboring dwarf galaxy to our own Milky Way. The panoramic camera took this picture of the Martian terrain shortly afterward. NASA scientists called the picture a postcard sent across million miles of space to Earth. This part of the desert is located in Algeria and is called the Issaouane Erg, or the sand sea, which covers an area of more than 14, square miles. With each new mission, the station has grown in size -- in upper right , lower left , lower right. NASA After two visits in , by crews aboard the space shuttle Atlantis and the space shuttle Endeavour, the International Space Station is on its way toward completion by The plan is for the station to continue to operate until He had traveled there via Shuttle Discovery. Continuously inhabited by one crew or another since Nov. The Hubble Space Telescope took this photograph of the Omega Nebula, also known as M17, aka the Swan Nebula, a hotbed of newly born stars residing 5, light-years away in the constellation Sagittarius. Nebula are clouds of dust, hydrogen gas and plasma that eventually become stars. The large one is by the crew of Apollo 17 in The rest were by satellites. From top to bottom:

### 3: Video: Canada's 50 Years in Space - SpaceQ

*Canada celebrates 50 years of space exploration. Credit: Canadian Space Agency.*

Dick, NASA Chief Historian Fifty years after its founding, the National Aeronautics and Space Administration arguably leads the world in exploration, standing on the shoulders of a long line of explorers throughout history. Its astronauts have circled the world, walked on the moon, piloted the first winged spacecraft, and constructed the International Space Station. Its robotic spacecraft have studied Earth, visited all the planets and soon the dwarf planet Pluto, imaged the universe at many wavelengths, and peered back to the beginnings of time. How did an agency with such varied accomplishments come into existence? Following World War II, the United States was in direct competition with the Soviet Union the superpower that in disbanded into several sovereign nations including the Russian Federation, Kazakhstan, the Ukraine, etc. Technology was one means of measuring success and projecting power, and nothing was more powerful than the intercontinental ballistic missiles ICBMs being developed in the wake of World War II to deliver warheads. Passing overhead with its faint radio signal as people watched and listened, the pound satellite was a powerful symbol. Though a small spacecraft weighing only 30 pounds, it discovered what are now known as the Van Allen radiation belts, named for the University of Iowa scientist Dr. James Van Allen, launching the new discipline of space science. After a protracted debate over military versus civilian control of space, the act inaugurated a new civilian agency designated the National Aeronautics and Space Administration NASA. The agency began operations on Oct. It quickly incorporated other organizations or parts of them, notably the space science group of the Naval Research Laboratory that formed the core of the new Goddard Space Flight Center in Greenbelt, Md. Within months of its creation, NASA began to conduct space missions, and over the last 50 years has undertaken spectacular programs in human spaceflight, robotic spaceflight, and aeronautics research. In addition to its headquarters in Washington, D. The first era can be broadly termed the Apollo moon race era. The suborbital flights of Alan Shepard and Gus Grissom in , the first orbital flight of John Glenn in , and the subsequent one-man flights of project Mercury proved that humans could survive in space. During this heady period, the astronauts became a new breed of national hero, admired for their courage and dedication to exploring the new frontier of space. The two-man Gemini flights of demonstrated that humans could fly in space, undertake complex rendezvous and docking operations, and even leave the spacecraft for extra-vehicular activity EVA. All of this activity during the early s was in the service of the Apollo program to land humans on the moon. For sheer excitement it was hard to beat, as Neil Armstrong and Buzz Aldrin set down on the lunar surface with seconds of fuel to spare. For one day the world seemed united, as hundreds of millions around the world watched with fascination. Five more flights landed on the moon, culminating with the flight of Apollo 17 in December In all, 12 men walked on the surface of the moon, and including their time in the lunar excursion module, spent just a few minutes less than hours on the lunar surface. The societal effect of the Apollo program was profound, no more so than in its view of Earth from the moon. A fitting conclusion to the Apollo moon race era, after the brief American experience in operating the Skylab orbiting space station in , brought competition full circle to cooperation. The space shuttle was approved as an initiative by President Nixon in The space shuttle demonstrated that a spacecraft could take off vertically and glide to an unpowered airplane-like landing, with crews of five to seven astronauts. While the space shuttle goals of low cost and routine access to space were not met, what was officially called the Space Transportation System STS amassed several significant accomplishments. Among them were more than a score of commercial satellites deployed prior to the Challenger accident in ; the placement in orbit of major scientific missions including Galileo, Magellan, and Chandra, and the launching and servicing missions of the Hubble Space Telescope; Spacelab and SPACEHAB missions with their material, microgravity and life sciences experiments; deployment of the Tracking and Data Relay System TDRS constellation; and numerous flights in support of the Mir and International Space Station. Along with these, the shuttle program has seen the depths of tragedy. Atlantis, Discovery and Endeavour. The mature accomplishments of this largest human made object ever to orbit the Earth remain to be seen, but one achievement not to be underestimated was

international cooperation. The first elements of the space station were launched in , and permanent habitation began when the Expedition 1 crew arrived on Nov. With this milestone, civilization had reached a point beyond which there would likely always be humans living and working in space. The facility orbits Earth nearly 16 times every day, at an inclination of 51 degrees. A total of 10 main pressurized modules are currently scheduled to be part of the ISS by its completion date in . Fully assembled, the ISS will be composed of about , pounds of hardware “ five times the size of Skylab ” brought to orbit in about 40 separate launches over the course of more than a decade. With the addition of the Columbus laboratory in February , the International Space Station is about 60 percent complete. The ISS also is used for research in the life sciences, physical sciences, and Earth observation. Quite aside from the scientific accomplishments and expertise gained from a large construction project in space, the international cooperation fostered during construction and operations was no small achievement. The space shuttle and International Space Station were low Earth orbit projects, and many longed for the days of more distant destinations. They pointed out that after traversing a quarter million miles to the moon and back eight times from , in all the years afterward humans traveled no further than miles from their home planet “ during the Hubble Space Telescope servicing mission of STS in . They longed to return to the moon and go onto Mars. They were given hope when President George H. Bush announced his Space Exploration Initiative in on the 20th anniversary of the first moon landing. But projected costs and political realities spelled doom for this venture within two years. History came full circle on Jan. Bush, in an address at NASA Headquarters, called for a return of humans to the moon and a long-term push for a human mission to Mars. The shuttle would be phased out by and all space station work would concentrate on human factors necessary for trips to the moon and Mars. A new era in human spaceflight had begun. For the first time since the Apollo era, a new human-rated rocket and crewed capsule are being designed. As part of a new global exploration strategy, the return to the moon will begin with a lunar outpost at the south pole by , where sunlight for power generation is more plentiful and where volatile gases may be available for nuclear power. The outpost, planned to serve as a departure point for future human Mars missions, may also provide hydrogen and oxygen, components of fuel for those missions. Naturally, NASA began by targeting the closest celestial body, the moon. While the Russia Luna series probed the moon, in the s NASA sent the Ranger, Lunar orbiter and Surveyor spacecraft to undertake a preliminary reconnaissance, preparing the way for humans. For two decades in the post-Apollo era NASA launched no further lunar missions, but in the s Clementine and Lunar Prospector resumed analysis of the lunar surface. More spacecraft were scheduled to study the moon as the vanguard for the new human spaceflight program. The moon, only a quarter of a million miles away, was the equivalent of our backyard compared to the much more distant planets. The Russians even succeeded in landing descent modules from the Venera spacecraft on Venus and returning data. In the true spirit of exploration, what was once thought to be a lush planet ripe for life was instead revealed to be an alien environment, with an atmosphere composed of 95 percent carbon dioxide and crushing pressures of 75 to Earth atmospheres, causing a greenhouse-induced temperature of degrees Fahrenheit. To top it off, the Venusian clouds were found to be composed of sulfuric acid. In the early s the other inner planet, the rocky planet Mercury, was studied by Mariner 10, revealing a cratered moon-like surface, a tenuous helium atmosphere, temperature swings between plus and minus degrees Fahrenheit, and a magnetic field. Looking outward from the sun, space scientists found one of their most alluring targets: Once thought to be criss-crossed by canals built by a race of Martians, Mariner 4 in revealed a cratered Martian surface reminiscent of the moon, causing some to lose interest in what seemed to be a dead and uninteresting world. But by , Mariner 9 showed a much more complex surface, including what appeared to be dry river beds. Water was a necessary ingredient for life, and this raised speculation about past life on Mars. Of particular interest were the biology experiments, which produced controversial results. At least one of the Principal Investigators still believes his experiment showed indications of life, but the consensus of the other scientists was that the Martian surface harbored active chemistry rather than biology. Two decades later, Pathfinder and its Sojourner rover provided spectacular images from the surface of the Red Planet, and the Mars Global Surveyor and Mars Odyssey returned scientific data and images from orbit, including evidence of recent water activity. The remarkably long-lived and productive Mars Exploration Rovers, Spirit and

Opportunity, continued the exploration, while the European Mars Express orbited overhead. As is the case with the moon, there is no doubt that these robotic spacecraft will lead the way for human exploration of Mars – it is only a matter of when. And as with the moon, there is no question that Martian exploration can have a profound impact in a number of ways. Mars is the nearest planet, and thus the most likely candidate for human habitation. A Mars colony, probably following on the heels of a lunar colony, will raise profound technical, scientific and ethical questions. The search for life on Mars will have even more significant implications. If life is found and it is of independent origin from Earth, Mars will have served as a test case for life in the universe. If life is found on two planets so close together, it means that life will likely arise on planets throughout the universe wherever the conditions are right. Beyond Mars is the realm of the gas giant planets. Pioneers 10 and 11 were indeed pioneers in the sense of the first reconnaissance of the planets Jupiter and Saturn in the mids. Jupiter, Saturn, Uranus and Neptune yielded beautiful photographs and many surprises with the missions of Voyager 1 and 2. Launched in the summer of , both Voyager spacecraft were designed to last five years, and both encountered Jupiter and Saturn between and After encountering Uranus in and Neptune in , Voyager 2 took a southward trajectory out of the solar system. The data the Voyagers returned revolutionized our knowledge of the outer planets and their intriguing panoply of satellites. Today, the Voyagers are heading toward the void of interstellar space, carrying two golden records containing greetings to whatever creatures may find it from various leaders and citizens of planet Earth. Amazingly, over the last two decades a variety of spacecraft have also voyaged to six comets and several asteroids. In January the spacecraft flew within miles of the nucleus of comet Wild 2, collected samples of comet dust, and stored them in a return capsule. After a roundtrip journey of some 2. Deep Impact, another NASA Discovery mission, brought yet another approach to comet exploration – impacting a comet and studying the subsequent debris for clues to the origin of the solar system. After a journey of days and million miles, on July 3, , the Deep Impact flyby spacecraft released its pound impactor on a course for Comet Tempel 1. Analysis of the ejection plume showed large amounts of organic material, confirming that during its history, Earth might have been infused with organics from similar comets. In addition, images from three cameras showed what appear to be impact craters, never before seen on a comet and of unknown origin. Other data indicates that the nucleus is extremely porous, a fluffy structure weaker than powdered snow. Solar Science The sun, our nearest star, a mere 8 light-minutes away, compared to 4. A nuclear furnace generating prodigious amounts of energy, the sun provides the conditions necessary for life on Earth. It is a matter of practical importance that we know how the sun works, as well as a matter of theoretical importance, since its proximity gives us the best information on how other sun-like stars work. After early observations from sounding rockets, the study of the sun from space began, naturally enough, from Earth orbit. Seven of them were successful, and studied the sun at ultraviolet and X-ray wavelengths. The Apollo Telescope Mount, though inelegantly named, was an innovative program for astronauts to observe the sun from Skylab, the orbiting space station that made use of hardware in the aftermath of the Apollo program. It was the most important scientific instrument aboard Skylab, which operated for eight months beginning in May

### 4: Peanuts marks 50 years in space with new NASA mission for Snoopy | collectSPACE

*The Canadian Space Agency has released this video to commemorate Canada's 50 years in space and shows a timeline of milestones starting with the launch of Canada's first satellite in , Alouette 1.*

That action had a lot to do with pride in my own country and a bias toward the red, white, and blue. Heck, we sent twelve Americans to walk on the Moon, how could that maple leaf compete with us? Davies and Balfour W. Currie led a team to the Arctic for thirteen months of observations and study of the auroras, weather, and geomagnetism. Meanwhile Donald Rose made ionospheric measurements during a solar eclipse and also became recognized as the cosmic ray expert in Canada. Because of their early expertise in radar technology, Canada was tasked to mass produce radar equipment small enough to be carried on aircraft for the war effort. Later, with difficulties in polar radio communications in the north Atlantic, the British Admiralty turned to Canada and their experts in auroral and ionospheric disturbances for help. Frank Davies and others at the NRC were able to predict the most reliable radio frequencies to use during these atmospheric events. The authors guide the reader through the early days of Canadian space research and in depth technical descriptions of auroral ionospheric science. They have also included many direct accounts by the people involved in the discoveries, which make the story even more enveloping. October , , only one day after the formation of NASA. This international group was designed to advance the work in space and upper atmospheric research and led to better understanding of the ionosphere, cosmic rays, and preliminary work to the discovery of the Van Allen radiation belts. Many successful launches and measurements were made from Churchill during the IGY, providing valuable Earth and atmospheric science for policy makers and environmental planners. Further, Canadian researchers detected lithium in the upper atmosphere, originating from nuclear bomb tests in the U. Canada also participated in the U. Phoenix vehicle landed on Mars on May 25, in the north polar region it carried the CSA meteorological station MET and a lidar laser radar which can probe the Martian atmosphere up to about twenty kilometers altitude. Future missions for Canada include instruments provided for the U. The authors keep the story interesting and highly readable even through the in depth tutorials of auroral and atmospheric physics. There is much to be gained reading this book, including an understanding of the cooperative efforts in space research between the U. I thought I had a pretty good handle on space history before reading this text, but found that I was missing out on major space accomplishments of an entire nation. It helps NSS and does not cost you a cent! Bookmark this link for ALL your Amazon shopping!

## 5: Canada: 50 Years in Space - SpaceQ

*Celebrating 50 Years of Canada in Space News Release Longueuil, Quebec, September 25, 2017* Fifty years ago, John H. Chapman and his team from the Defence Research Telecommunications Establishment (DRTE) in Ottawa were in the final stages of preparing a small science satellite named Alouette for its historic voyage into space.

This project occurred as the culmination of a decade in which Australia was seen as a significant player in the space arena. But now, Australia is perceived to be underperforming in the space sector. So what happened in the past half century to slow us down? My doctoral thesis is attempting to find the answer. Longer than a calendar year, the IGY ran from July 1, to December 31, 1957, and was a significant catalyst for space-related activities in many nations. The then Presidential press secretary James Hagerty is shown with five scientists. Located in outback South Australia, the range had been established in 1946 under the Anglo-Australian Joint Project as a guided weapons development and test facility. A space race between the two Cold War superpowers commenced, with Australia poised to participate in the openly scientific and covertly military adventure of space exploration. Australian and British researchers made substantial contributions to X-ray, infra-red and ultra-violet astronomy using Skylark rockets. Members of the Perth MoonWatch group keep an eye out for satellites during the 1950s. These facilities, managed and staffed by Australians, made significant contributions to the early exploration and utilisation of space, particularly the Apollo lunar program. Investigating nuclear missile warhead design, materials and re-entry phenomena, defence research programs continued until just before the termination of the Joint Project in 1966. Defence Science and Technology Group, Author provided At the end of its first decade of space activity, Australia had launched its own satellite, while a Melbourne University student-built amateur radio satellite awaited launch in the USA. Space program proposed, and rejected To build on these achievements, in the WRE proposed a modest national civil and defence space program, which could have harnessed WRE and civil space capabilities towards the development of an Australian space industry. The proposal was rejected by the Gorton government on the basis of cost. Political parties of both persuasions have shown shortlived, underfunded, bursts of support for developing an Australian space industry, only to withdraw that support just as these programs were achieving results. Ten reasons why Australia urgently needs a space agency While an economic case could perhaps be made for rejecting a Australian National Committee on Space Research proposal for a national science program " given that Australia was then in recession " the WRE and Australian Space Research Agency space program proposals were both put forward during periods of economic prosperity. Their proposed costs represented very small fractions of GDP, and could have been affordable. These early space program proposals had modest proposed costs, and reflected modest goals of developing a national capability in an important emerging technology. Pragmatism, or something else? As early as 1957, the government clearly recognised the value of space applications to the management and economic development of the vast continent of Australia, and to its national security. Australia relies on data from Earth observation satellites, but our access is high risk Until the economic rationalism of the 1970s, the development and management of national infrastructure was seen as the responsibility of government. Engagement in overseas military actions since has already taught the Australian Defence Force the importance of having control of its own satellite communication assets. In late 1990s, the government commenced a review of the Space Activities Act 1984, which has been seen as hindering the growth of the New Space sector in Australia. Will the outcome of these two reviews be the revival of Australian space activities, at a level to equal or surpass our space engagement of half a century ago.

## 6: Lost in space: Australia dwindled from space leader to also-ran in 50 years

*Alouette 1* Alouette-1 was launched on 29 September and marked Canada as the third nation to have its own indigenous satellite in space.

### 7: The Crescent Earth - 50 Years Of Space Images - Pictures - CBS News

*Fifty years ago, John H. Chapman and his team from the Defence Research Telecommunications Establishment (DRTE) in Ottawa were in the final stages of preparing a small science satellite named Alouette for its historic voyage into space. On Sept. 29, , Canada's Alouette-1 was launched by NASA.*

### 8: Timeline of artificial satellites and space probes - Wikipedia

*Free shipping on all U.S. orders over \$10! Overview. Detailing the last 50 years of the Canadian space science program, this extensive history explores everything from the aurora borealis studies of the late s to the current Radarsat-1 and Canada s involvement with the NASA Phoenix mission.*

### 9: Celebrating 50 Years of Canada in Space - [www.enganchecubano.com](http://www.enganchecubano.com)

*"Fifty years ago, the space race was the force driving the nations. Today, engaging citizens in engineering, science and education is the goal pushing nations to come.*

*Recognition and management of the critically ill patient Genesis: An Expository Commentary 1:1-11:32 Productivity Analysis Information on building Shades of meaning worksheets Two . in the field Forgiveness attained through their prayers. Penitence must be voluntary : coercion inadmissible. Cold War politics in postwar Germany The devops handbook Abraham Lincoln and the Illinois Central Railroad, main line of mid-America. Scandal and satisfaction (832-834) Gombrich, E. H. Imagery and art in the romantic period. Best Entry-Level Jobs, 2006 (Career Guides) Artist and Architect Collaborations; A Bibliography (A1732) Intellectual property protection in the Asia-Pacific region National building code of india 2005 part 3 Miracle Eyesight Method Jingle bell rick music sheet Love yourself heal your life workbook Hacking for dummies 4th edition Sensational seating Census divisions and subdivisions, Ontario Store film securely Opportunities in law enforcement and criminal justice careers Just enough Serbo-Croat for Yugoslavia Handbook of mathematical tables and formulas. Ethics and the Librarian (Allerton Park Institute/(Papers)) Chuck palahniuk pygmy Jesus firm foundation lead sheet Theories of emotion in psychology Patterns of policy adaptation God, Are We There Yet? Governors perspectives on the Clean Water Act Development economics michael p todaro Picture Me Under the Christmas Tree (Picture Me) The Patient Parasites Russell Bates Western visions: Colorados New Deal post office murals Symphonic Variations Writing a Screenplay Child welfare and social policy*