



Harnessing the Genie

Science and Technology Forecasting
for the Air Force 1944 - 1986

von Karman, Woods Hole, Doolittle
Hap Arnold, Stever, Schriever, Forecast Project

Progressive Management

Harnessing The Genie Science Technolog

**Ellen Messer-Davidow, David R.
Shumway, David Sylvan**



Harnessing The Genie Science Technolog:

Harnessing the Genie Office of Air Force History, United States Air Force, 2015-02-23 This monograph on the forecasting of long range Air Force science began as an attempt to describe the five major scientific studies undertaken by the U S Army Air Forces USAAF U S Air Force USAF since the end of World War II These reports included Toward New Horizons 1945 the Woods Hole Summer Studies 1957 1958 Project Forecast 1964 New Horizons II 1975 and Project Forecast II 1986 They seemed at first to represent nothing more than isolated efforts to predict the technological future But shortly after initiating research on the subject it became clear that several themes linked the five reports Rather than a collection of unrelated analyses common threads were seen to run through them The realization of this pattern was surprising Taken at face value the reports appeared to be entirely different They were not produced in any one place they were not directed by people with similar backgrounds or educations Both in number and type of participants they differed widely Methodologies were not at all uniform Their conclusions varied significantly In fact they did not even have the same purposes Toward New Horizons was initiated to summarize the most advanced air power technologies of World War II and project them into the future The Woods Hole Summer Studies organized hundreds of academic scientists to predict the short and long term military uses of space Project Forecast had the mandate of revitalizing Air Force thinking by linking national policy issues to scientific vistas and new weapon systems New Horizons II endeavored to point the way toward technological improvements in a period of expected scarcity Finally Project Forecast II sought to infuse the Air Force laboratories with new avenues of basic science research Thus for a variety of internal and external reasons at roughly ten year intervals since the Second World War the Air Force launched major science and technology forecasts

Harnessing the Genie: Science and Technology Forecasting for the Air Force 1944-1986, 1988 This monograph on the forecasting of long range Air Force science began as an attempt to describe the five major scientific studies undertaken by the U S Army Air Force USAAF U S Air Force USAF since the end of World War II Toward New Horizons was initiated to summarize the most advanced air power technologies of World War II and project them into the future Woods Hole Summer Studies organized hundreds of academic scientists to predict the short and long term military uses of space Project Forecast had the mandate of revitalizing Air Force thinking by linking national policy issues of scientific vistas and new weapon systems New Horizons II endeavored to point the way toward technological improvements in a period of expected scarcity Project Forecast II sought to infuse the Air Force laboratories with new avenues of basic science research

Harnessing the Genie Michael H. Gorn, 1988 Beskriver hvorledes USAF benytter videnskaben og den teknologiske udvikling til at optimere sin Air Power og p l ngere sigt

Harnessing the genie : science and technology forecasting for the Air Force 1944-1986 , Harnessing the Genie: Science and Technology Forecasting for the Air Force, 1944 - 1986 Michael Gorn, Research Associate Michael H Gorn, Office of History, 2012-06-18 Air power has always been linked closely to science and technology The very reality of flight depended upon a technical innovation Unlike

other services where machines merely support the mission technology is for the Air Force at the very heart of its existence as an institution As a consequence the USAF and its predecessor organizations have always recognized the singular importance of science to their survival This book describes and analyzes the methodologies and conclusions of the five main science and technology forecasts undertaken by the Air Force since before its birth as an independent service *Harnessing the Genie*
Michael H. Gorn, 2002-07 *Harnessing the Genie* Department of Defense, U. S. Air Force, U. S. Government, 2017-09-07 Air power has always been closely linked to science and technology The very reality of flight depended upon a technical innovation Unlike the other services where machines merely support the mission technology is for the Air Force at the very heart of its existence as an institution As a consequence the USAF and its predecessor organizations have always recognized the singular importance of science to their survival This lesson was driven home with new urgency on December 7 1941 No longer were American borders secure against aerial bombardment The Japanese proved at Pearl Harbor that U S territory was not immune from attack waves of bombers might strike without warning and with devastating effects Commanding General of the Army Air Forces Henry H Arnold countered the threat at least in part with brainpower from the universities Three years later with victory close at hand Arnold began to consider the safety of the country once the war was over The danger of sudden and devastating raids had greatly increased since Pearl Harbor He turned as he had during the war to academia and enlisted the help of Dr Theodore von Karman asking him to assemble a group of top scientists to review aeronautical research and make recommendations about the future of air power in light of probable scientific opportunities in the decades to come The result is felt in the Air Force yet today for *Toward New Horizons* written by von Karman s USAF Scientific Advisory Group has endured as the model for Air Force science and technology forecasts Renamed the USAF Scientific Advisory Board the institution von Karman created has also endured *Harnessing the Genie* tells us that while both the report and the board continue to be regarded with the utmost respect their roles have been imperceptibly transformed over time *Toward New Horizons* was followed in 1957 and 1958 by the Woods Hole Summer Studies in 1964 by Project Forecast in 1975 by *New Horizons II* and in 1986 by Project Forecast II But with each report the likeness to von Karman s model has become more remote The extent of reliance on independent advice has steadily lessened and greater emphasis placed on internal USAF sources for forecasting the future As a consequence the Scientific Advisory Board is no longer involved in long range broadly based forecasting envisioned by von Karman but devotes itself to giving advice on technical subjects Moreover no institution has arisen to claim control over the process of forecasting and directing the pace and direction of technological change Instead the direction of technological forecasting of long range research and development has wandered from the National Academy of Sciences to the Air Force Systems Command to the Air Staff and back again to Systems Command The reports themselves have changed accordingly *Toward New Horizons* rooted in the basic sciences stressed the abstract principles of nature and how they related to air power advancements As their participants have

gradually become more closely associated with the Air Force the subsequent studies have become more technological than scientific reflecting a declining representation of independent scientists on the succeeding panels Thus Harnessing the Genie describes and analyzes the methodologies and conclusions of the five main science and technology forecasts undertaken by the Air Force since before its birth as an independent service Hopefully this work will provide useful background as the Air Force grapples with the technological demands of national security in the 21st century

Harnessing the Genie Science and Technology Forecasting for the Air Force 1944 1986 Introduction Chapter I A Mandate for Civilian Science 1944 1950 Chapter II The Decline of Civilian Science 1950 1958 Chapter III Conforming Science to Military Necessity 1956 1966 Chapter IV Scientists in Uniform 1966 1986 Conclusion Knowledges Ellen Messer-Davidow, David R. Shumway, David Sylvan, 1993 Anyone interested in the relationship between disciplines and today this means everyone should read this collection which is itself a model of interdisciplinarity Stanley Fish Duke University Technology and the Air Force: A Retrospective Assessment , The Air Force Law Review , 1990 **Winning the Next War** Stephen Peter Rosen, 2018-07-05 How and when do military innovations take place Do they proceed differently during times of peace and times of war In **Winning the Next War** Stephen Peter Rosen argues that armies and navies are not forever doomed to fight the last war Rather they are able to respond to shifts in the international strategic situation He also discusses the changing relationship between the civilian innovator and the military bureaucrat In peacetime Rosen finds innovation has been the product of analysis and the politics of military promotion in a process that has slowly but successfully built military capabilities critical to American military success In wartime by contrast innovation has been constrained by the fog of war and the urgency of combat needs Rosen draws his principal evidence from U S military policy between 1905 and 1960 though he also discusses the British army s experience with the battle tank during World War I **Gas Turbine Powerhouse** Dietrich Eckardt, 2025-04-21 This book tells the story of the power generation gas turbine from the perspective of one of the leading companies in the field over a period of nearly 100 years written by an engineer Especially in times of imminent global economic crises it appears to be worthwhile to reflect on real economic values and technological leadership based on engineering ingenuity and enduring management Though the original edition of the book was primarily designed as a technical history of the BBC ABB Alstom power generation gas turbines its scope is sufficiently broad to cover general development trends including parallel competitor activities correspondingly the title of this reviewed 3rd edition was adapted in a more general sense A special benefit is the historical breakdown to the gas turbine component level so that the book actually outlines the development of axial compressors from early beginnings based on Prandtl s wing theory the progress in combustion technology towards extraordinary low emission values and that of axial turbines with special emphasis on early turbine cooling innovations already in the 1930s a stroke of genius of the BBC Baden engineering team The sheer length of certain engineering developments over several decades allows interesting historic observations and deductions on inherent

business mechanisms the effects of technology preparations and organisational consequences A look into the mirror of the past provides revelations on the impact of far reaching business decisions In 2017 the book received the prestigious Engineer Historian Award of the ASME American Society of Mechanical Engineers Realizing the Dream of Flight National Aeronautics and Space Administration,2005-12-31 These essays in celebration of the Wright brothers first flight 100 years ago grew out of presentations by a group of prominent scholars in 2003 at a conference sponsored by the NASA History Division and held at the Great Lakes Science Center in Cleveland Ohio The volume focuses on the careers of some of the many men and women who helped to realize the dream of flight both through the atmosphere and beyond These accounts are original and compelling because they examine the history of flight through the lens of biography Realizing the Dream of Flight Virginia Parker Dawson,Mark D. Bowles,2005 **Arming Mother Nature** Jacob Darwin Hamblin,2013-04-04 Are today s environmental crises linked to the plans for World War Three The United States and its allies prepared for a global struggle against the Soviet Union by using science to extend total war ideas to the natural environment This book links environmental warfare to the environmental crises of the 1970s and beyond *History of Acquisition in the Department of Defense, Volume 1* Elliott V. Converse,2012-06-12 This volume is a history of the acquisition of major weapon systems by the United States armed forces from 1945 to 1960 the decade and a half that spanned the Truman and Eisenhower administrations following World War II These instruments of warfare aircraft armored vehicles artillery guided missiles naval vessels and supporting electronic systems when combined with nuclear warheads gave the postwar American military unprecedented deterrent and striking power 1 They were also enormously expensive The volume is organized chronologically with individual chapters addressing the roles of OSD the Army Navy and Air Force in two distinct periods The first roughly coinciding with President Truman s tenure covers the years from the end of World War II through the end of the Korean War in 1953 The second spans the two terms of the Eisenhower presidency from 1953 through early 1961 The year 1953 marked a natural breakpoint between the two periods The Korean War had ended President Eisenhower and his defense team began implementing the New Look a policy and strategy based on nuclear weapons which they believed would provide security and make it possible to reduce military spending The New Look s stress on nuclear weapons along with the deployment of the first operational guided missiles and the rapid advances subsequently made in nuclear and missile technology profoundly influenced acquisition in the services throughout the 1950s and the remainder of the century As used in this study the term acquisition encompasses the activities by which the United States obtains weapons and other equipment In surveying the history of acquisition between 1945 and 1960 this study discusses or refers in passing to many of the hundreds of weapon system programs initiated by the services in that period but it is not a weapons encyclopedia Instead it investigates a few major programs in depth in the belief that such detailed examination best reveals the evolution of acquisition policies organizations and processes and the various forces influencing weapons programs Rearming for the Cold War, 1945-1960

Elliott Vanveltner Converse,2012 Book Description The first publication in a multivolume series on the history of the acquisition of major weapon systems by the Department of Defense author Elliott Converse presents a meticulously researched overview of changes in acquisition policies organizations and processes within the United States military establishment during the decade and a half following World War II Many of the changes that shaped the nature and course of weapons research and development production and contracting through the end of the century were instituted between 1945 and 1960 many of the problems that have repeatedly challenged defense policymakers and acquisition professionals also first surfaced during these years This study is the first to combine the histories of the Office of the Secretary of Defense OSD and the military services into one account The volume is organized chronologically with individual chapters addressing the roles of OSD the Army Navy and Air Force in two distinct periods

American Aircraft Development of the Second World War William Norton,2019-07-06 This book presents a little known aspect of America s aircraft development of World War II in emphasizing unique and non production aircraft or modifications for the purpose of research and experimentation in support of aircraft development advancing technology or meeting narrow combat needs It describes some important areas of American aviation weapons maturation under the pressure of war with emphasis on advanced technology and experimental aircraft configurations The great value of the work is illumination of little known or minimally documented projects that significantly advanced the science of aeronautics propulsion aircraft systems and ordnance but did not go into production Each chapter introduces another topic by examining the state of the art at the beginning of the war advantages pursued and results achieved during the conflict This last is the vehicle to examine the secret modifications or experiments that are little known Consequently this is an important single source for a fascinating and diverse collection of wartime efforts never before brought together under a single cover The war stories are those of military staffs engineering teams and test pilots struggling against short schedules and tight resource constraints to push the bounds of technology These epic and sometimes life threatening endeavors were as vital as actual combat operations

Prophecy Fulfilled Michael H. Gorn,1994 *US Presidents and the Militarization of Space, 1946-1967* Sean N. Kalic,2012-05-02 In the clash of ideologies represented by the Cold War even the heavens were not immune to militarization Satellites and space programs became critical elements among the national security objectives of both the United States and the Soviet Union According to *US Presidents and the Militarization of Space 1946 1967* three American presidents in succession shared a fundamental objective of preserving space as a weapons free frontier for the benefit of all humanity Between 1953 and 1967 Presidents Eisenhower Kennedy and Johnson all saw nonaggressive military satellite development as well as the civilian space program as means to favorably shape the international community s opinion of the scientific technological and military capabilities of the United States Sean N Kalic s reinterpretation of the development of US space policy based on documents declassified in the past decade demonstrates that a single vision for the appropriate uses of space characterized American strategies across

parties and administrations during this period. Significantly, Kalic's findings contradict the popular opinion that the United States sought to weaponize space and calls into question the traditional interpretation of the space race as a simple action reaction paradigm. Indeed, beyond serving as a symbol and ambassador of US technological capability, its satellite program provided the United States with advanced nonaggressive military intelligence gathering platforms that proved critical in assessing the strategic nuclear balance between the United States and the Soviet Union. It also aided the three administrations in countering the Soviet Union's increasing international prestige after its series of space firsts beginning with the launch of Sputnik in 1957.

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