

# Atomic Advertising as Atomic History (and Present and Future)

Martin Pfeiffer  
University of New  
Mexico



*Promise of a golden future*  
Yellow uranium ore from the Colorado Plateau  
is helping to bring atomic wonders to you

Long ago, Indian tribes made their war paint from the colorful sandstones of the Colorado Plateau.

**THEY USED URANIUM.** Their brilliant yellow came from carnotite, the important uranium-bearing mineral. Early in this century, it has supplied radium for the famous scientists, Marie and Pierre Curie, and later, vanadium for special alloys and steels.

Today, this Plateau—stretching over parts of Colorado, Utah, New Mexico, and Arizona—is our chief domestic source of uranium. Here, new communities thrive: jeeps and airplanes replace the burro; Geiger counters supplant the divining rod and miner's hunch.

From hundreds of mines that are often just small tunnels in the hills, carnotite is hauled to processing mills. After the uranium is extracted, the residue, concentrated in the form of "yellow-cake," is shipped to atomic energy plants.

**A NEW ERA BECKONS.** What does atomic energy promise for you? Already radioactive isotopes are working wonders in medicine, industry, and agriculture. In atomic energy, scientists also see a vision of unknown power: its energy may heat and light your home, and propel your motor, ships, and aircraft. The Indian's war paint's the march again—toward a golden future.

**UCC TAKES AN IMPORTANT PART.** The people of the Carbide locate, mine, and refine uranium ore. The UCC operates the first two of the large atomic materials plants at Oak Ridge, Tenn., and Paducah, Ky., and the Oak Ridge National Laboratory, where radioisotopes are made.

**FREE:** For an illustrated story of the fascinating uranium country of the Colorado Plateau, write for the book "More Miners." Ask for booklet B.

**UNION CARBIDE AND CARBON CORPORATION**  
300 EAST 42ND STREET NEW YORK 17, N.Y.

UCC's Trademarked Products of Alloy, Carbide, Chemicals, Gases, and Plastics include:  
ELECTRONIC ALLOYS and ALUMINUM • ALUMINUM BRONZE • VITON • FUSIBLE ALLOYS and BLENDS • SYNTHETIC RUBBER  
ACRYLIC CHEMICALS • POLYETHYLENE • POLYPROPYLENE and THERMOPLASTICS • POLYETHYLENE GLYCOL  
BACRYLITE, KRYDUR, the VINYLITE FAMILY • DYNAL TANTALUM TUBES • LITEC ALUMINUM • SYNTHETIC DIAMOND EMULSIONS

# Outline

## I. Introduction

- Who am I?
- What are We Doing Today?
- What are my Arguments?

## II. Jargon and Theory

- Production and Participation in Ads
- Indexicality
- Imaginariness

## III. Data and Analysis

- Gross Characterization
- Changes Over Time
- Imaginariness of Modernity & New Mexico
- Sandia Justifies the Bomb

## IV. Conclusions

## V. Questions and Answers

## VI. Works Cited



**MATERIALS IN SPACE ENVIRONMENTS**

The nature of the interactions between atomically clean surfaces is at best only poorly understood. Conditions which will magnify the effects of surface forces are present under space environments. These conditions are of major importance when one considers long term exposure of materials to ultra high vacuum, elevated temperatures, high radiation fluxes, etc. These are the environmental conditions one can expect during the orbital life of a space vehicle.

Prediction of the behavior of materials in such systems hinges on a more fundamental understanding of the nature of the forces involved. One such program involves the study of the adhesion between atomically clean metal surfaces under ultra high vacuum. Other projects in ion or gas plating provide basic data in auxiliary fields dealing with interfaces.

Sandia Corporation is a Bell System subsidiary and a prime contractor of the Atomic Energy Commission engaged in research, design and development of the non-nuclear phases of nuclear weapons. At Sandia you would work in Albuquerque or in Livermore in the San Francisco Bay area.

Sandia scientists and engineers do related work in many diversified fields including: Physical sciences research; Mathematical and statistical studies; Electronic and mechanical design and development of systems and components; Environmental testing; Reliability and quality control.

Sandia Corporation recruits on many major campuses and is primarily interested in recent and current outstanding graduates in many of the engineering and scientific disciplines at all degree levels. Consideration of applicants is based solely on qualifications and without regard to race, creed, color or national origin. U.S. citizenship is, however, required. For current opportunities, contact the Sandia recruiter at your college or write Professional Employment Organization 3153, Ref. 558-3, Sandia Corporation, Post Office Box 5800, Albuquerque, New Mexico 87115.

**SANDIA CORPORATION**

ALBUQUERQUE, NEW MEXICO / LIVERMORE, CALIFORNIA



# It's a Wonderful Day for Anthropology!



## Special Thanks To:

- Melanie Laborwit.
- Center for Regional Studies.
- UNM Anthro Department.
- Patrons on Patreon.



# Who am I?



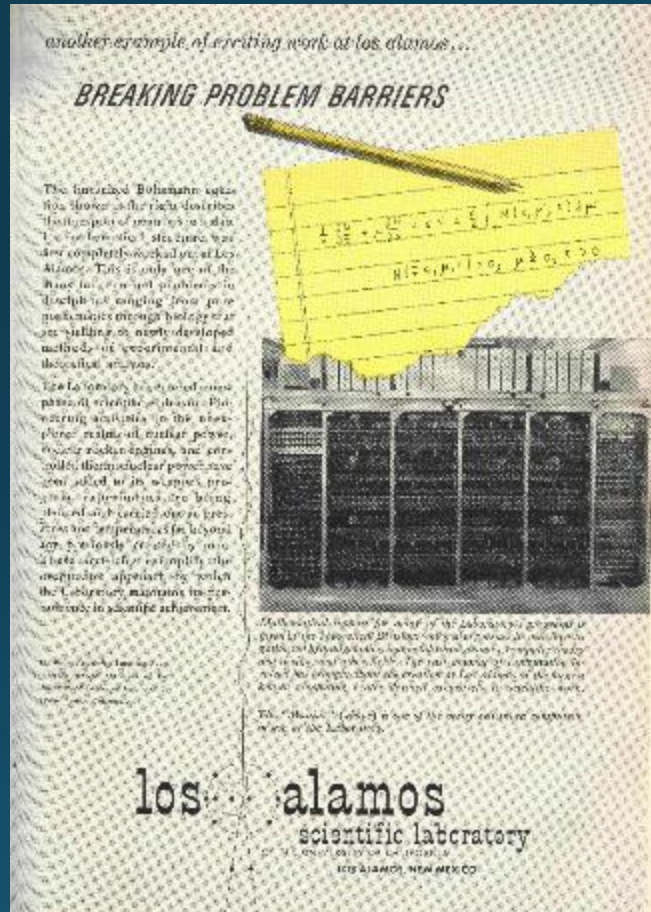
## Me:

- PhD Student in Anthropology at UNM.
- Twitter: @NuclearAnthro
- Webpage: [www.DeusExAtomica.Org](http://www.DeusExAtomica.Org)
- Patreon: [www.patreon.com/nuclearanthro](http://www.patreon.com/nuclearanthro)
- Email: LickTheBomb@gmail.com

## My Big Question:

How—and with what results—do we make meaning about, around, and through nuclear weapons?

# What are We doing Today?



## Two objectives:

- 1) To contextualize, characterize, and share a fascinating archival data set: New Mexican nuclear weapon laboratory recruitment advertisements.
- 2) To convincingly show that these ads tell us worthwhile things about how we make meaning about, around, and through nuclear tech.

# What Are My Arguments?



1) Thematically and graphically these ads demonstrate both stability & change over time.

This tells us things about the past, present, and future of Albuquerque, nukes, and weapons labs.

2) These ads draw on, construct, and mobilize imaginaries of New Mexico & the “American Southwest” to make meaning about nuclear weapons and recruit workers.

How we think & talk about nuclear technology shapes what we do with it (and vice versa).



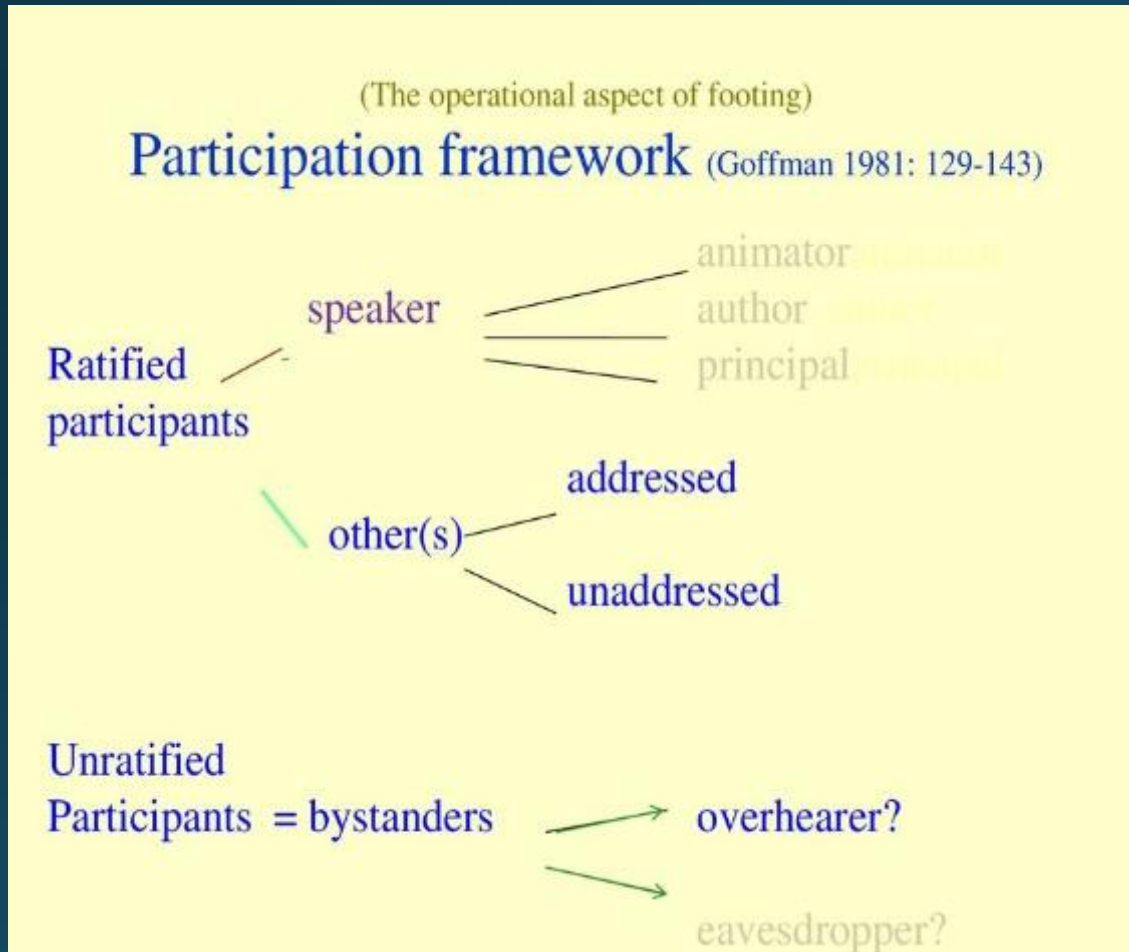
## II. Jargon and Theory



## II. Jargon and Theory

- 1) Participation & Production Frameworks in Advertising
- 2) Indexicality
- 3) Imaginaries

# Jargon: Production and Participation Frameworks & Advertising (Goffman 1981, 1986)



Principal:

Los Alamos or Sandia.

Authors:

Ward Hicks Advertising and the Labs.

Animator:

*Physics Today* or *Scientific American*.

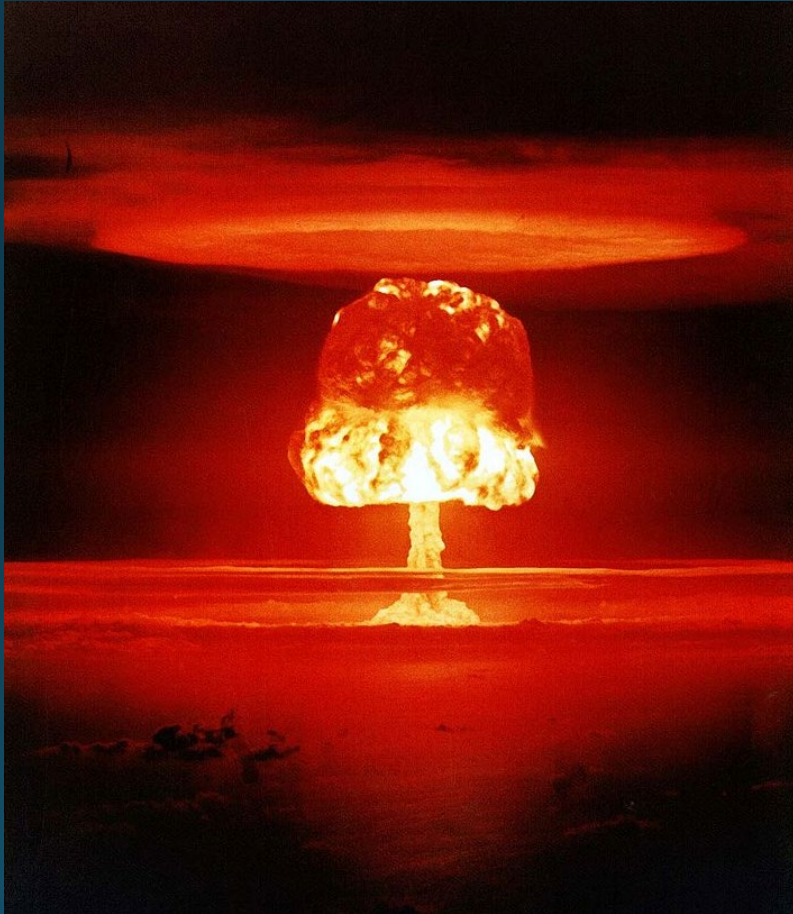
Audiences:

It depends.

How do we know?



# Jargon: Indexicality



- Indexicality** (Peirce 1998):  
-A sign exhibiting a pointing to relationship based on “spatiotemporal contiguity” (Parmentier 1996: 6).
- Do “I” or “she” always mean the same person?
  - How do you know who is referenced?
  - How do you know when a commercial is directed at you?

# Jargon: Sociotechnical Imaginaries



”collectively held and performed visions of desirable futures...animated by shared understandings of forms of social life & social order attainable through, & supportive of, advances in science & technology” (Jasanoff 2004; 2015: 19).

#DeusExAtomica #TechnoUtopianism

# II. Data and Analysis

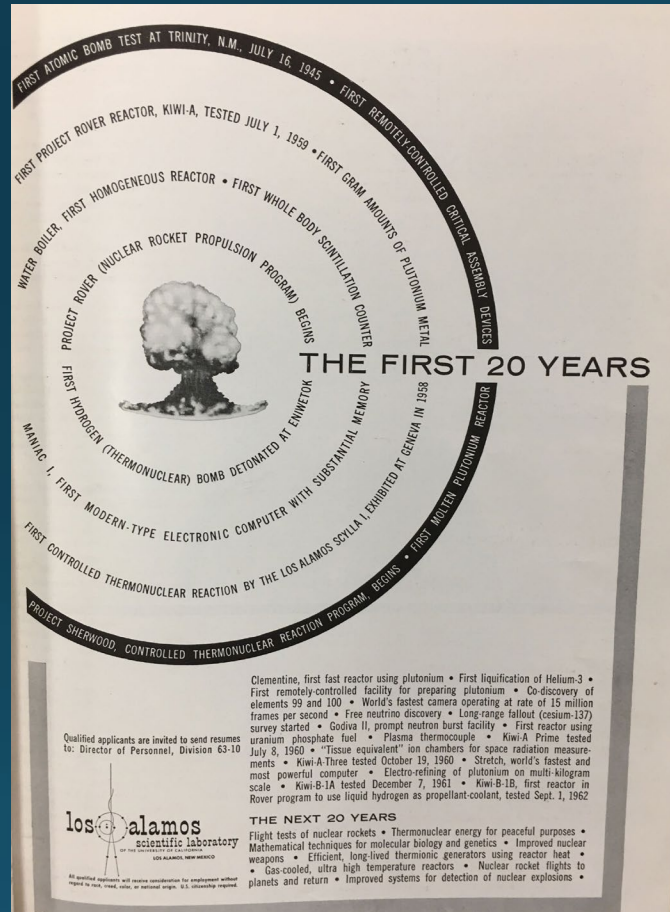


## II. Data and Analysis

- 1) Gross Characterization
  - LASL and Sandia
  - By the Numbers
  - Why Advertise Then?
- 2) Changes Over Time
  - Women in Lab Ads
  - Decreased emphasis on nuke work
- 3) Imaginaries of Modernity & New Mexico
- 4) Sandia Justifies the Bomb



# Los Alamos Scientific Laboratory (now Los Alamos National Laboratory)



## Formation and Operation:

- Site Y, 1943.
- Nuclear weapon design lab.
- 1952 UCRL (now Lawrence Livermore National Lab) opens.
- Managed by University of California system until 2005.

# Sandia Corporation (now Sandia National Laboratories)

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## frame of reference

The chart below is a simplified representation of 11 different staff member fields at Sandia Corporation. You might call it an occupational frame of reference, within which are located the many activities involved in our work—design and development of nuclear weapons for the Atomic Energy Commission. In each of the 11 fields, challenging positions are available for qualified engineers and scientists at all degree and experience levels.

	ENGINEERING	PHYSICS	MATHEMATICS
<i>Applied Research</i>			
<i>Weapon Systems Engineering</i>			
<i>Component Development</i>			
<i>Electronic Development</i>			
<i>Handling Equipment Design</i>			
<i>Standards Engineering</i>			
<i>Quality Assurance and Surveillance</i>			
<i>Environmental Testing</i>			
<i>Field Testing</i>			
<i>Manufacturing Relations Engineering</i>			
<i>Military Liaison and Field Engineering</i>			

There are many other things you'll want to know about Sandia Corporation. You'll be interested in our extremely liberal employee benefits. You'll want to know about the advantages of working and living in Albuquerque, famous for its healthful year-round climate and recreational attractions. You'll want information on schools, homes, and cultural facilities. And you'll want to know more about our work, and our background as a research and development laboratory. Our illustrated brochure answers these questions, and many others. For your copy, please write to Staff Employment Section 559A.

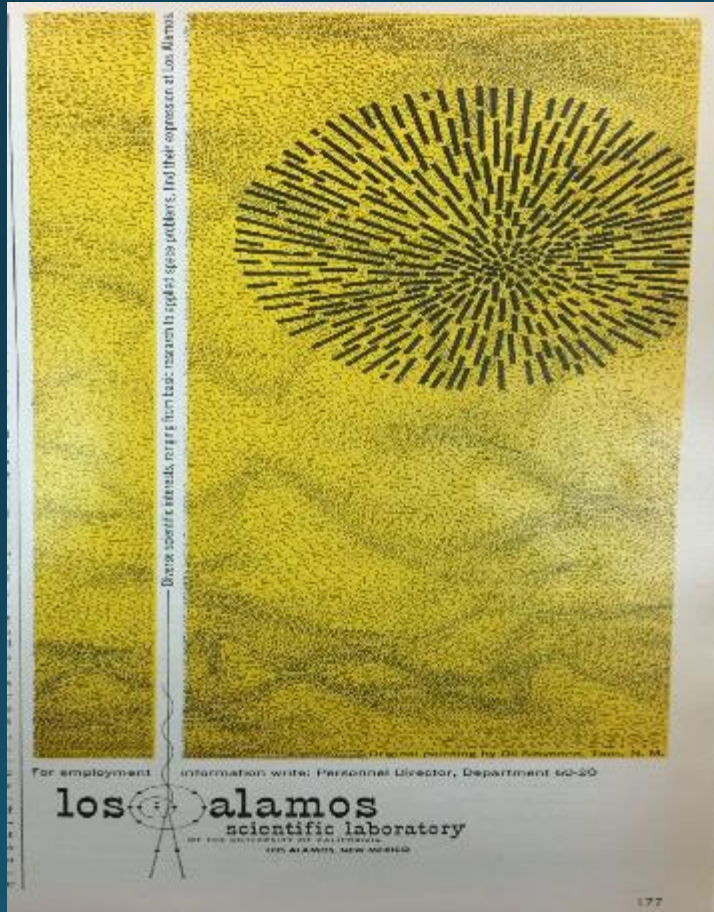
**SANDIA CORPORATION**  
ALBUQUERQUE, NEW MEXICO

AUGUST 1957

## Formation & Operation

- Established as offshoot of LASL in 1946.
- Became Sandia Corporation in 1949.
- GOCO: AT&T not UC system.
- 1956: Opened branch in CA.
- Ordnance engineering laboratory.
- The least studied nuclear weapon laboratory.

# Gross Characterization: By The Numbers



## The Archive

What: Advertisements.

Who: Los Alamos & Sandia Corp.

Where: *Scientific American & Physics Today.*

When: 1950-1964.

## Los Alamos Scientific Laboratory:

Approx. 100 ad types (1955-1964).

## Sandia Corporation:

Approx. 35 ad types (1956-1964).

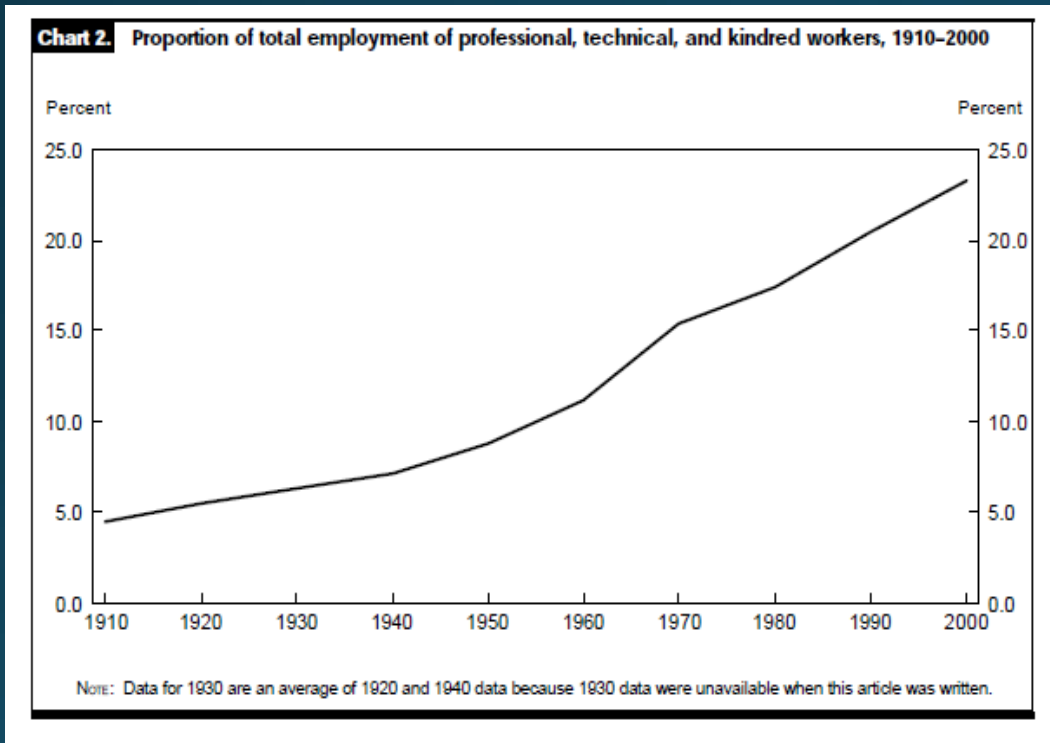


# Gross Characterization: Why Start Advertising in 1955/1956?

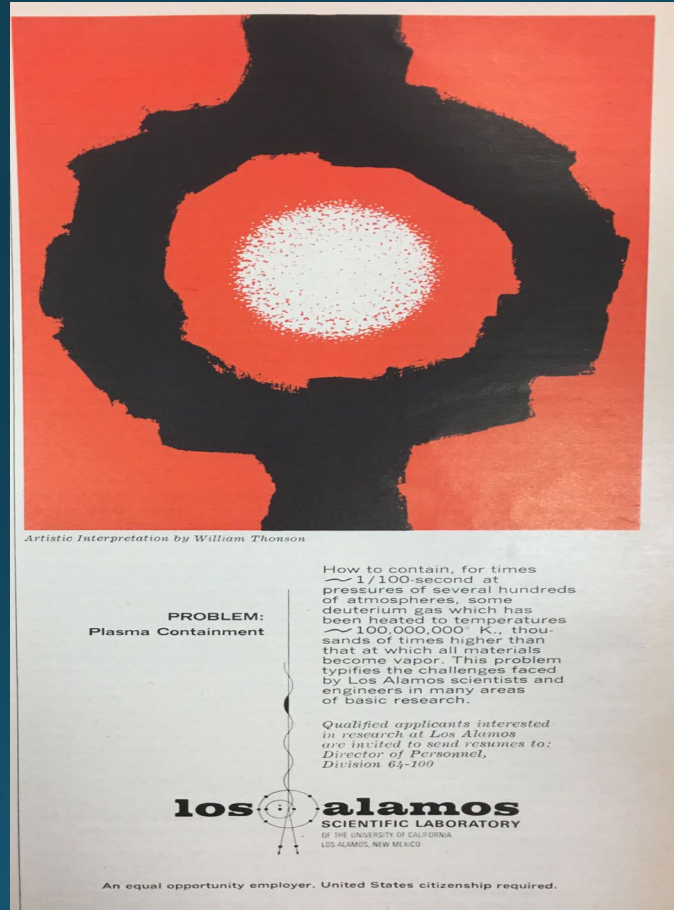
A) Sandia: Test moratorium and openness (Johnson 1997: 91).

B) RAND: Changes in US management of cost-plus defense contracting (Alchian, Arrow, & Capron 1958).

C) Common Sense: High demand and a shortage of technically trained workers (but see Wyatt & Hecker 2006: 38-39)?



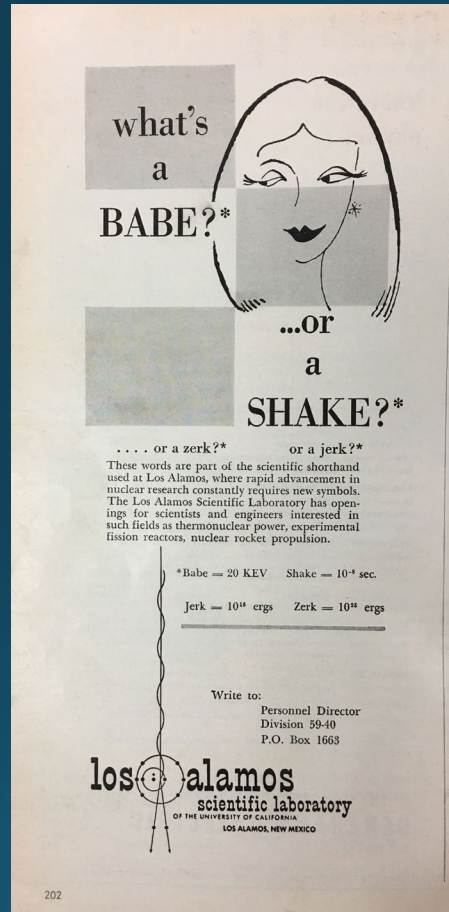
# Gross Characterization: Why Advertise, Continued!



## My Take:

- 1) All of the above.
- 2) Castle Bravo (maybe).
- 3) Test Moratorium:
  - Sandia opposed.
  - Highlight non-nuke work.
  - Justify nuke work.
- 4) Perform an imaginary.

# Changes over Time in Ads

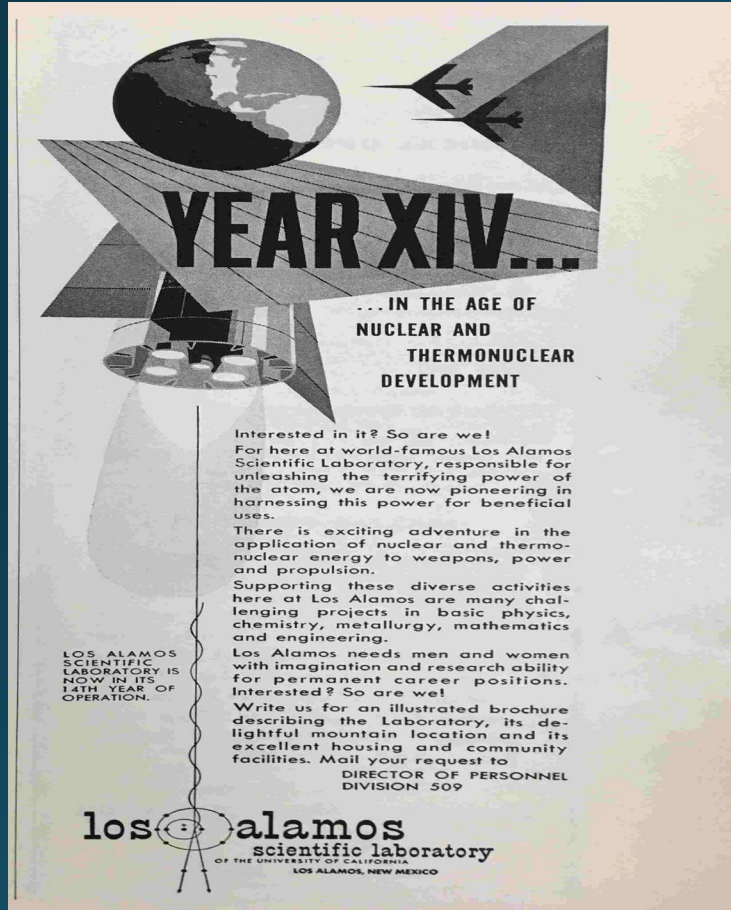


## Two Trends I will Briefly Touch On:

- 1) Increase in mention of women and gender neutral language in advertisements.
- 2) Increased emphasis on non-nuclear weapon, or nuclear weapon adjacent, work (especially for Sandia, Los Alamos started out this way).



# Women in Nuclear Weapon Lab Ads



## Los Alamos:

-“Los Alamos needs men and women with imagination and research ability for permanent career positions” (LASL 1956 “Year XIV”)

## Sandia:

-As late as 1959 ads still included copy like, “We need men...” (“Beyond the Rim”)

-From 1960 on, text shifted to formulations like “...vitaly interested in PhD’s who are seeking professional growth through full-time research” (“PhD’s”)

## Why?

# Non-Nuclear and Nuclear Adjacent Work



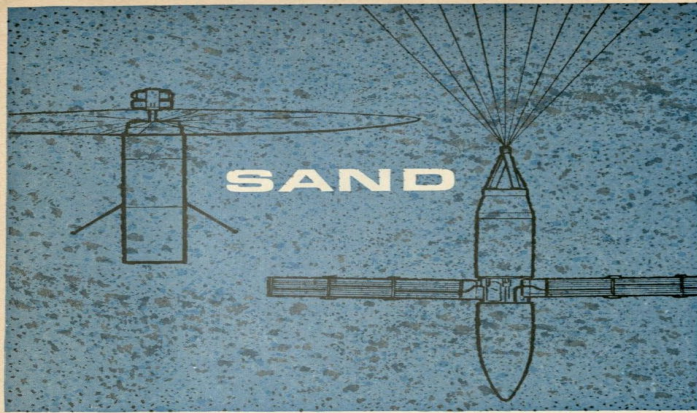
Los Alamos: "For here at world-famous Los Alamos Scientific Laboratory, responsible for unleashing the terrifying power of the atom, we are now pioneering in harnessing this power for beneficial uses" (LASL 1956: "Year XIV")

Sandia: "[nuclear weapons are] still our main task, but in doing it we have learned much in the way of theory and advanced technique that has application outside the field of weaponry" (Sandia 1958 "Challenge of New Frontiers").

Why?



# Non-Nuclear and Nuclear Adjacent Work: 1964



Among recent developments in upper atmosphere research at Sandia are rocket-boostered particle samplers called SAND (Sampling Aerospace Nuclear Debris). SAND will explore the regions between balloon ceilings and satellite perigees to enable radioactive debris inventories and to develop forecasting schemes for debris dispersal. SAND-LO will extract particulate matter by filters in 8 ft. long whirling vanes during parachute retarded descent from 225 to 100 kft. SAND-HI, operating from 200 to 600 kft or higher, looks to condensation of near-molecular particles upon a 10 ft. circular mylar sail deployed by centrifugal force. Both will hermetically seal the sample for recovery and laboratory analysis. Flight tests are now underway. When operational, SAND will also augment other systems in an international program of high altitude geochemical and geophysical studies.

Sandia scientists and engineers do related work in many diversified fields including: Aerothermodynamics; Polymers, Plastics and Foams; Solid State Physics; Human Factors Engineering; Aerospace nuclear safety; Electronic and mechanical design and development of systems and components.

Sandia Corporation is a Bell System subsidiary and a prime contractor of the Atomic Energy Commission engaged in research, design and development of the non-nuclear phases of nuclear weapons. At Sandia you would work in Albuquerque or in Livermore in the San Francisco Bay area.

Sandia Corporation recruits on many major campuses and is primarily interested in recent and current outstanding graduates in many of the engineering and scientific disciplines at all degree levels. Consideration of applicants is based solely on qualifications and without regard to race, creed, color or national origin. U. S. citizenship is, however, required. For current opportunities, contact the Sandia recruiter at your college or write Professional Employment Organization 3151, Ref. 559-C, Sandia Corporation, Post Office Box 5800, Albuquerque, New Mexico, 87115.

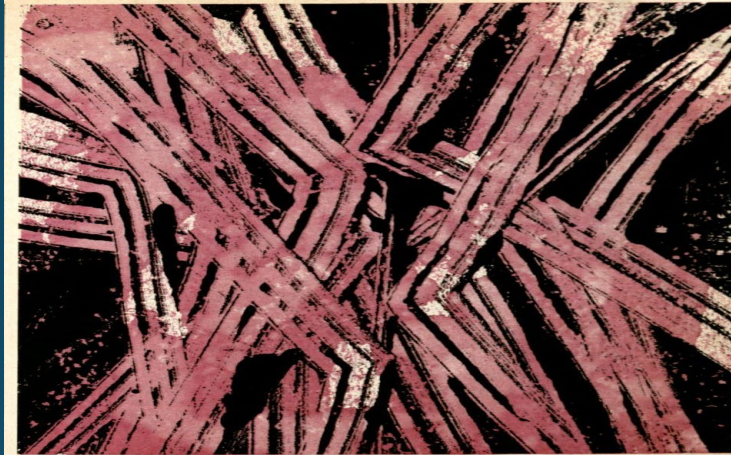
**SANDIA**

CORPORATION



ALBUQUERQUE, NEW MEXICO / LIVERMORE, CALIFORNIA

104 • APRIL 1964 • PHYSICS TODAY



Interpretation by William Thonson

## Predicting Behavior of Reactor Fuel Elements

**PROBLEM:** The development of new analytical methods in solid mechanics to evaluate the stress-strain behavior of fuel elements during nuclear reactor experiments. The major source of stress results from thermal strains induced by heat flux equivalent to a power density of scores of megawatts per cubic foot. The inelastic and time-dependent behavior of the materials in multiconnected regions, their inhomogeneous and anisotropic properties, and time-varying microstructure changes at very high temperatures in an intense radiation environment, inject unusual challenge into the problem.

Qualified applicants interested in research and development at Los Alamos are invited to send resumes to:  
Director of Personnel  
Division 64-129

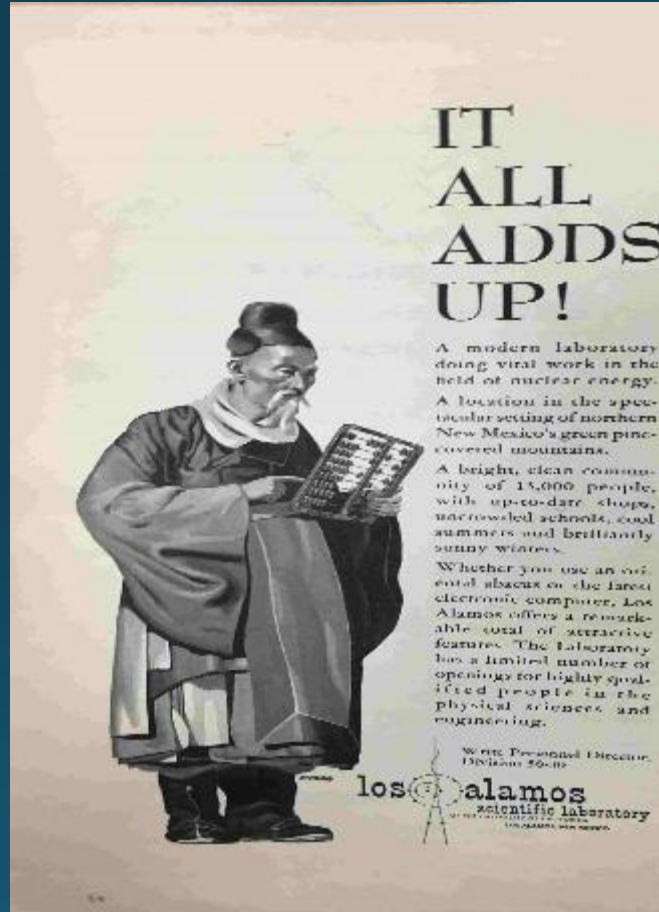
**los alamos**  
SCIENTIFIC LABORATORY  
OF THE UNIVERSITY OF CALIFORNIA  
LOS ALAMOS, NEW MEXICO

An equal opportunity employer. United States citizenship required.

PHYSICS TODAY • DECEMBER 1964 • 65



# Imaginaries of Modernity and New Mexico

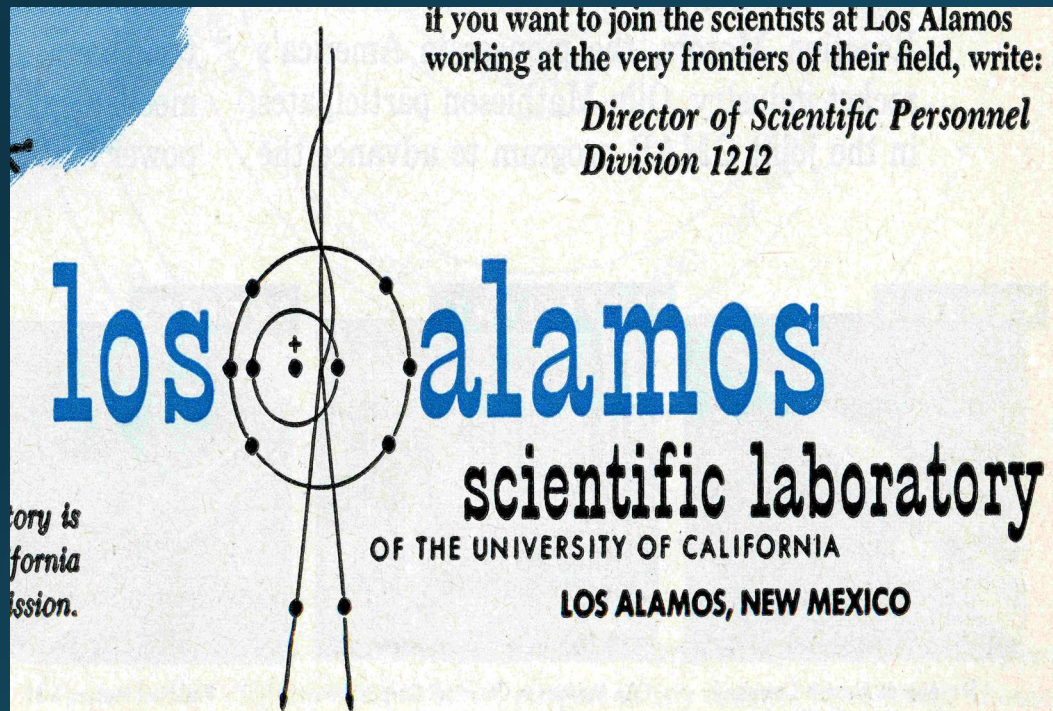


1) Both labs repeatedly contrast hyper-modern nuclear tech imaginaries to supposedly pre- or non-modern exoticized imaginaries of New Mexico, Native peoples, and other “Others.”

2) These implicit and explicit contrasts, among other things, work to construct tautological progress narratives (Voyles 2015).

3) It is largely through these imaginaries that Sandia justifies the Bomb.

# Imaginaries of Modernity and New Mexico: Logos





# Imaginaries of Modernity and New Mexico, LASL

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**Los Alamos . . .  
a challenging place to work  
a stimulating place to live**



At Los Alamos, creative people are finding that intangible "extra" that makes their work more satisfying and gives their lives a lift.

This extra is found in the scientifically equipped laboratories . . . in the friendly support of some of the nation's finest scientific minds . . . in the challenge of doing really important work with the serious and safe use of nuclear energy.

You'll find it, too, in the spectacular scene's setting high in the pines, pine-covered mountains of Northern New Mexico . . . in the bright, clear community of 19,000 people . . . in the up-to-date shopping centers, the air-conditioned schools, the merry churches. It's in the healthful climate, the cool streams and the mild winters. For scientific research and enjoyable living, Los Alamos has no equal.

If you are a graduate scientist or engineer, seeking that intangible extra, your inquiry about employment will be answered promptly.

**los alamos**  
scientific laboratory  
OF THE UNIVERSITY OF CALIFORNIA  
LOS ALAMOS, NEW MEXICO

LOS ALAMOS SCIENTIFIC LABORATORY IS A NON-PROFIT SERVICE OPERATOR OF THE UNIVERSITY OF CALIFORNIA FOR THE U. S. ATOMIC ENERGY COMMISSION

DECEMBER, 1957

Los Alamos Scientific Laboratory is located in a delightful small city, high in the pine forests of northern New Mexico. It is a city of

## Leisurely living . . .

**and Career Opportunities**

The Laboratory has immediate openings for scientists in:

**THEORETICAL PHYSICS AND MATHEMATICS**

Theoretical studies provide guidance and support for all of the Laboratory programs as well as conceptual design of nuclear weapons. In addition, basic research is carried on in theoretical physics and mathematics. All these activities are supported by four modern high-speed electronic computers.

**EXPERIMENTAL NUCLEAR PHYSICS**

Among the facilities available are three Van de Graaff generators, a variable energy cyclotron and a number of reactors. The Laboratory is well known for its basic research in neutrons and charged-particle physics and, more recently, for its confirmation of the existence of the free neutron.

**WEAPONS PHYSICS**

As the nation's principal institution for fission and thermonuclear weapons research, the Laboratory is interested in a wide variety of problems associated with the design, development and testing of systems for the release of nuclear energy.

**NUCLEAR REACTOR RESEARCH AND NUCLEAR PROPULSION**

In a large area of the peacetime application of nuclear energy, the Laboratory is currently developing new research reactors and power reactors of various design. Several remotely controlled critical assemblies constitute neutron research tools of a unique character. The Laboratory is actively engaged in the application of nuclear energy to the new and challenging field of self-propelled mobile reactors.

If you feel you are an above-average candidate, if you want to join the scientists at Los Alamos working at the very frontiers of their field, write:


**Director of Scientific Personnel  
Division 1212**

**los alamos**  
scientific laboratory  
OF THE UNIVERSITY OF CALIFORNIA  
LOS ALAMOS, NEW MEXICO

Los Alamos Scientific Laboratory is operated by the University of California for the U. S. Atomic Energy Commission.



# Imaginaries of Modernity and New Mexico, Sandia



**WARHEAD**  
*circa 400 A. D.*

Centuries ago, the Indians of New Mexico designed and developed warheads like this one.

Today, we at Sandia Corporation do very much the same job—but we call it research and development in the ordnance phases of nuclear weapons for the Atomic Energy Commission.

The people who made these primitive warheads also applied many of the same skills and techniques to produce implements of peace—grinding stones, knives, needles, and quite a few others.

Here again, we at Sandia follow a similar pattern. In the pursuit of our main task, we study many things in widely-varied fields ranging from nuclear phenomena to numbers theory, from meteorology to metal-working. We learn basic scientific facts and advanced techniques that have important applications far removed from nuclear weapons.

We probe new frontiers of science and engineering. We meet and solve challenging problems in many areas of advanced technology. These are activities which require the services of outstanding engineers and scientists in many fields in our work to maintain our nation's defensive strength.

We have such men—both at Sandia in Albuquerque and at our branch laboratory in Livermore, California. But we need more—at the highest academic and experience levels.

If you are interested in exploring the exceptional opportunities for professional growth and advancement with Sandia Corporation, please write to Staff Employment Section 569C.

**SANDIA CORPORATION**  
ALBUQUERQUE, NEW MEXICO

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the challenge of new frontiers



Here in the West, where sweeping plains and lofty mesas once challenged the conquistadores of New Spain, Sandia Laboratory now explores new frontiers of science and engineering—seeking the answers to vital questions in many areas of knowledge.

Sandia Corporation was established in 1949 to perform research and development in the ordnance phases of nuclear weapons for the Atomic Energy Commission. This is still our main task, but in doing it we have learned much in the way of theory and advanced technique that has application outside the field of weaponry. For example, Sandia Corporation, working in support of the AEC's nuclear physics laboratories, is currently studying problems concerned with the non-military uses of nuclear energy and with techniques involved in the control of thermonuclear reactions.

Approximately 1,800 engineers and scientists work with the support of 5,700 other employees at our laboratories in Albuquerque, New Mexico, and Livermore, California. These laboratories are modern in design and equipment, with permanent facilities valued at \$65,000,000. Equipment available, or in the process of installation, includes an electron and positive ion Van de Graff accelerator, a 5-megawatt tank-type heterogeneous nuclear reactor, a wind tunnel operating in subsonic through hypersonic ranges, digital and analogue computers, and various devices developed for specialized uses. Extensive test facilities are provided for the research and development engineer for proving design theories and concepts.

Engineers, mathematicians, and physicists—particularly those with advanced degrees—will find many new and challenging frontiers at Sandia in the fields of fundamental and applied research; design and development; aeronautical, manufacturing, reliability, and test engineering; and quality assurance.

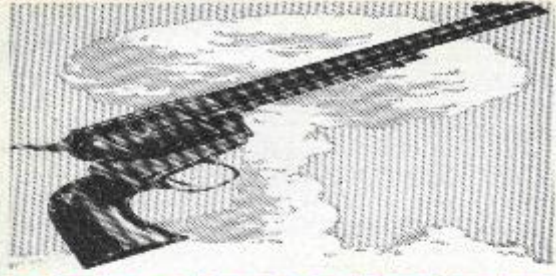
Sandia's liberal employee benefits include our graduate educational aid program, life insurance, sickness benefits, retirement plan, and generous vacations. These combine with excellent working conditions to make Sandia an exceptionally attractive place to work.

Albuquerque is a modern city of about 225,000 people, known for its excellent recreational attractions and its mild, dry, sunny climate. Livermore, located in the San Francisco Bay area, offers suburban advantages close to metropolitan San Francisco. Both are fine places in which to live.

Our illustrated brochure will tell you more about Sandia Corporation and the opportunities it offers to engineers and scientists. Write for your copy to Staff Employment Section 569D.

**SANDIA CORPORATION**  
ALBUQUERQUE, NEW MEXICO

# Imaginaries of Modernity and New Mexico: Sandia Justifies the Bomb



**PEACEMAKER**

They called this weapon the Peacemaker. In the hands of the Western lawman, it brought peace and order to the turbulent frontier.

In the West today, Sandia Corporation engineers and scientists explore new frontiers in research and development engineering to produce modern peacemakers... the nuclear weapons that deter aggression and provide a vital element of security for the nations of the free world.

Sandia Corporation, a subsidiary of the Western Electric Company, operates Sandia Laboratory in Albuquerque, N. M. and a branch installation at Livermore, Cal. under direct contract with the Atomic Energy Commission. At both of these locations, engineers and scientists who look to the future find challenge and opportunity... the challenge of advanced problems in a broad range of research and development activities, and the opportunity for professional growth and individual advancement in a stimulating new field. In addition, they enjoy excellent living and working conditions, and outstanding employee benefits.

Qualified engineers and scientists interested in joining our professional staff are invited to write for further details.

Please address:  
STAFF EMPLOYMENT DIVISION 559.

**SANDIA CORPORATION**  
ALBUQUERQUE, NEW MEXICO

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**NO SECOND BEST**

When an aggressor threatens, you can't be second best. That's the way it is in our business, too. Our business is design and development of nuclear weapons—weapons that stop potential aggressors and defend our freedom. And in this kind of work, either you're best, or you're nothing. We can't afford to settle for less than the best—ever. That applies to our engineers and scientists, too. As our job and its importance grows, we need more capable scientists. To those who qualify, we offer exciting opportunities for professional growth and individual advancement. Engineers, physicists, mathematicians, and other scientists are needed in a broad range of specialized fields. We offer attractive living, too. In Albuquerque, a fine climate and a blending of ancient and modern cultures provide peace-of-mind, relaxed, pleasant living. The University of New Mexico, located here, provides opportunity to earn advanced degrees under a Sandia-sponsored educational aide program. Varied recreational activities are nearby and homes for rent or purchase are available. MORE INFORMATION about Sandia Corporation, the work we do, and the opportunities now available are contained in our illustrated brochure. For your copy, please write Staff Employment Division 559.

**SANDIA CORPORATION**  
ALBUQUERQUE, NEW MEXICO

SEPTEMBER 1957



# Conclusions



- 1) My research needs more funding.
- 2) Nuclear weapon laboratory advertising interacts with, reflects, and contributes to broader sociocultural and historical contexts and events.
- 3) Nuclear weapon laboratory advertising continues—in gendered & colonial ways—the disproportionate use of semiotic, labor, and land resources of the “American Southwest” for US nuclear projects.



# Conclusion: So What?



- 1) How we think and talk about nuclear weapons influences what we do with them.
- 2) Understanding how we make meaning about, around, & through nuclear technology can enable us to more effectively act to reduce nuclear risk.
- 3) Themes of nuclear lab ads resonate in contemporary debates and discussions.

# What Questions do You Have?



# Works Cited: Ads

Los Alamos Scientific Laboratory. 1956a. "Leisurely Living....and Career Opportunities." *Scientific American* 195 (3): 195.

Los Alamos Scientific Laboratory. 1956b. "Year XIV in the Age of Nuclear and Thermonuclear Development." *Scientific American* 194 (2): 140.

Los Alamos Scientific Laboratory. 1957a. "Breaking Problem Barriers..." *Scientific American* 196 (4): 171.

Los Alamos Scientific Laboratory. 1957b. "Los Alamos..." *Physics Today* 10 (2): 21.

Los Alamos Scientific Laboratory. 1958. "It All Adds Up." *Scientific American* 199 (6): 54.

Los Alamos Scientific Laboratory. 1959. "What's a Babe...Or a Shake?" *Scientific American* 200 (4): 202.

Los Alamos Scientific Laboratory. 1960a. "Diverse Interests." *Scientific American* 202 (2): 177.

Los Alamos Scientific Laboratory. 1960b. "Space Propulsion for the Future from the KIWI Family of Reactors." *Scientific American* 203 (1): 123.

Los Alamos Scientific Laboratory. 1963. "The First 20 Years." *Scientific American* 208 (1): 148.

Los Alamos Scientific Laboratory. 1964a. "Predicting Behavior of Reactor Fuel Elements." *Physics Today* 17 (12): 65.

Los Alamos Scientific Laboratory. 1964b. "Problem: Plasma Containment." *Scientific American* 211 (5): 139.

Sandia Corporation. 1956a. "...Out of this Nettle, Danger, We Pluck this Flower, Safety." *Scientific American* 195 (1): 104.

Sandia Corporation. 1956b. "Peacemaker." *Scientific American* 195 (2): 110.

Sandia Corporation. 1956c. "Sandia Corporation Invites Well-Qualified Physicists and Engineering Physicists to Investigate Current Opportunities in the Challenging Field of Nuclear Weapons Development." *Physics Today* 9 (2): 21.

Sandia Corporation. 1956d. "The Whole is the Sum of Its Parts..." *Physics Today* 9 (11): 39.

Sandia Corporation. 1957a. "Frame of Reference." *Physics Today* 10 (8): 25.

Sandia Corporation. 1957b. "No Second Best." *Physics Today* 10 (9): 33.

Sandia Corporation 1957c. "Our Product is Not for Sale." *Scientific American* 197 (2): 117.

Sandia Corporation. 1958a. "About Men and Weapons." *Scientific American* 198 (5): 135.

Sandia Corporation. 1958b. "The Challenge of New Frontiers." *Physics Today* 11 (11): 33.

Sandia Corporation. 1958c. "Warhead." *Scientific American* 199 (3): 211.

Sandia Corporation. 1959. "Beyond the Rim." *Physics Today* 12 (6): 39.

Sandia Corporation. 1962. "Decision Maker in Space." *Scientific American* 205 (2): 169.

Sandia Corporation. 1964a. "Materials in Space Environments." *Scientific American* 210 (3): 59.

Sandia Corporation. 1964b. "SAND." *Scientific American* 210 (4): 75.

Union Carbide. 1953. "Promise of a Golden Future with Uranium Ore from Colorado Plateau." *Scientific American* 188 (3): inside front cover.



# Works Cited: Not Ads

- Alchian, Armen Albert, Kenneth Arrow, and William M. Capron. 1958. "An Economic Analysis of the Market for Scientists and Engineers." Research Memoranda RM2190-RC. Santa Monica, CA: RAND Corporation. [https://www.rand.org/pubs/research\\_memoranda/RM2190.html](https://www.rand.org/pubs/research_memoranda/RM2190.html).
- Anderson, Benedict. 1983. *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. London: Verso.
- Goffman, Erving. 1981. "Footing." In *Forms of Talk*, 124–59. Philadelphia: University of Pennsylvania Press.
- Goffman, Erving. 1986. *Frame Analysis: An Essay on the Organization of Experience*. Boston: Northeastern University Press.
- Jasanoff, Sheila. 2004. "The Idiom of Co-Production." In *States of Knowledge: The Co-Production of Science and the Social Order*, 1–12. New York: Routledge.
- Jasanoff, Sheila. 2015. "Future Imperfect: Science, Technology, and the Imaginations of Modernity." In *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*, edited by Sheila Jasanoff and Sang-Hyun Kim, Paperback, 1–33. Chicago: University of Chicago Press.
- National Nuclear Security Administration. "Castle Romeo." March 27, 1954. [https://commons.wikimedia.org/wiki/File:Castle\\_Romeo.jpg](https://commons.wikimedia.org/wiki/File:Castle_Romeo.jpg). Accessed April 25, 2018.
- O'Driscoll, Jim. n.d. "The Soto Affair, Working out the Trajectory: Some Useful Concepts from Interpersonal Pragmatics." *Slideshow posted to Slideplayer.com*. <https://slideplayer.com/slide/13788722/>. Accessed October 13, 2018.
- Parmentier, Richard. 1994. *Signs in Society: Studies in Semiotic Anthropology*. Bloomington: Indiana University Press.
- Peirce, Charles Sanders. 1955. "Logic as Semiotic: The Theory of Signs." In *The Philosophical Writings of Peirce*, edited by Justus Buchler, 98–119. New York: Dover Publications, Inc.
- Peirce, Charles Sanders. 1998. "What Is a Sign?" In *The Essential Peirce*, edited by The Peirce Edition Project, 2 (1893-1913):4–10. Bloomington: Indiana University Press.
- Voyles, Traci Brynne. 2015. *Wastelanding: Legacies of Uranium Mining in Navajo Country*. Minneapolis: University of Minnesota Press.
- Wyatt, Ian D., and Daniel E. Hecker. 2006. "Occupational Changes during the 20th Century." *Monthly Labor Review*, March, 35–57.