

אוסף עזרא אוריון
ארכיון אמנות במרחב הציבורי
Ezra Orion Collection
Public Art Archive

כותרת: פיסול על מאדים, התכתבות עם JPL פסדינה 1982-4
התכתבויות

מיקום בארכיון

ארגז: 25

תיק: 1

תת תיק: 3

**Title: Mars sculpture, Correspondence with JPL Pasadena 1982-4
Correspondence**

Location in Archive

Box: 25

Folder: 1

Sub folder: 3

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מכון לנוכחות ציבורית
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V.P.L.S. 11ka

7. אהרן נשאל על ידי אלהים על שם האל
אשר יקראו את שם ה' ויבטחו בו

JPL

Jet Propulsion Laboratory

California Institute of Technology, 4800 Oak Grove Drive, Pasadena, California 91109

August, 2, 1982

Dear Mr. Orion:

This letter is to confirm the result of the stimulating conversation we had today concerning the possibility of creating simple sculptures or art forms on other planets by means of automated spacecraft. In the last twenty years U.S. and Soviet spacecraft have landed on and manipulated to some degree the surfaces of three extraterrestrial objects - Venus, the Moon and Mars. It now lies easily within our technical capability to mount surface exploration missions with the ability to lift, move and drill surface materials on other planets for scientific as well as aesthetic reasons. We appreciate your interest and that of other artists in the possibilities that our space explorations open up for the expansion of human activity and culture. I hope that we will be able to mount such exiting missions in the near future and that we may look forward to true "space sculpture" as a part of this activity.

Sincerely,

(-)

Torrence V. Johnson
Senior Research Scientist

QUESTION NO. ה'תשנ"ה, וב ארץ, תל אביב

INSTRUCTOR'S COMMENTS

Prof. Bradford Hager ה"ר ברוך ברוך

Tectonic physicist

anal physics

מקור הביטויים של המילה פה המקור לתל' של המונח המכונה
המקור (המקור המכונה). המקור פה על ואלה המקור והמקור

[illegible]

הא' (יזרבל) ציה ברעאסערזאמאל אירוימאל שטאט
ט ברעאסערזאמאל אירוימאל שטאט

אין דער מענצונג פאר דעם העברעאישן ווארט "העבר" וואס
ווערט גענוצט אין דער תורה וואס זיין פארטאג
ווערט גענוצט אין דער תורה וואס זיין פארטאג



המילה את העלבים (אחראים/מחזיקים)

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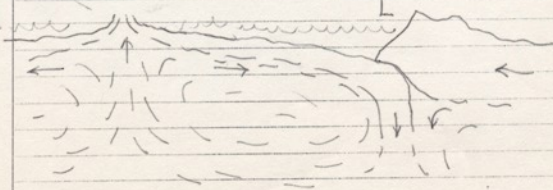
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הכספים הנתפסו אצלנו הם צאלי. אצלנו
הקלה ק' יתר. חזק נראה דם יתר. אצלנו
הם אצלנו (אצלנו).

200

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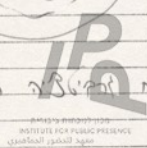


INSTRUCTOR'S COMMENTS

אין כזו הבלוה לטלונה של פלטה ו כספים אחרים
 ו היום ואל הוואים ק"מל כערה קליל וזכור
 נבלוה האלקטרוניס ומעורר הים מרכבים כערה אג
 הקום כן. אק אלא סכך היה פירח יק"א מאשים
 ומעורר



קל מוקד עבד. המבדל ממים
 על הקום מבדל קלננס ואום
 להפיל צמחור מורר ממשלח מחרת העיר



קמור המדאטלפה הנגן
 המלוג מבדיל את
 צמחור ופיל של קלום

Ezra Orion Collection

Public Art Archive

ה מרקרי - כספ צורו שלטונה של הממשלה וקד ק"ל
 כמור נפח מורר קילי וממור קלום סלף ספיר אפיל
 לטלונה. ככל שחורם קלן יוגר וטל המרים לו
 אלא יסוג הוא יקבר מורר יוגר ופמור פלטה את
 והפס - -

הק קלום הוא אגז אמבטוריון טוטל. כלל המכספים
 סלור המה המלוג, פלטה הוא כדסירא האוור
 1/10 פקלום

ציר כחול
המחזור השלישי
מקדש השמש



אוסף עזרא אוריון
ארכיון אמנות במרחב הציבורי

מכון לזיכרון דיגיטלי
INSTITUTE FOR DIGITAL PRESENCE
مركز للذاكرة الرقمية

Ezra Orion Collection
Public Art Archive

ציר האנטי-ציר
5

ציר ב
שטח אובסון גוף כפי השפה
מחזיק את התחבול השלישי - אג ותיקת המכשיר
א ל הפלטות

ת"מ - 1/106

1 Frank Bristow Manager J.P.L Public information office	2/8/82 א"ח קדמון ע"ה חמ"ד חמ"ד
2 Bradford Hager caltech Ins. Prof.	2/8/82 ה"ח חמ"ד חמ"ד ה"ח חמ"ד חמ"ד
3 Torrence V. Johnson, JPL Prof. Senior Research Scientist	2/8/82 ה"ח חמ"ד חמ"ד ה"ח חמ"ד חמ"ד
4 Kermit S. Watkins Dr. Viking Project manager	ה"ח חמ"ד חמ"ד
5. Carl Sagen אוסף עזרא אוריון cornell University	ה"ח חמ"ד חמ"ד
6. George Ginnopoulos Viking Lander Project Manager	ה"ח חמ"ד חמ"ד
7. Dave Pieri, chief Scientist Viking Lander Project Ezra Orion Collection Public Art Archive	ה"ח חמ"ד חמ"ד
8. Louis Friedman The Planetary society	ה"ח חמ"ד חמ"ד
9. Yash Pal U.N.	" " " "
10. Gary Spitzer Avionics Planing office Virginia	ה"ח חמ"ד חמ"ד
11. H.J. Moore U.S. Geological Survey california	" " " "
12. Ray Batson " Arizona	" " " "
13. Don Crouch Aerospace Division colorado	" " " "
14 Sidney Liebes stanford University	" " " "

5/8/82

Project: A Sculplural Act on the Moon/Mars

objectiv: To develop an arm, in a designated spacecraft, that could lift a stone from moon/Marsian surface and put it on-top of another stone, by receiving an order from the earth.

Sculptor: E. Orion

Endorsment: IS.C

Approch: Bruce Murray, Director, J.P.L.

Ezra Orion Collection
Inst. of Technology
Public Art Archive

reference: Meeting at the J.P.L -

- Frank E. Bristow, Manager
office of Public information

- Prof Torrence V. Johnson

Senior Renserch Scientist

+ Prof Bradford Hager, Caltech Ins.

Joe Davis

(see letter) E. Orion

Mr. Bruce Mummy

Director

J.P.L.

4800 Oak Grove Drive

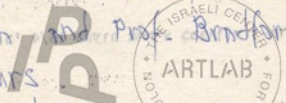
Pasadena, CAL. 91109

U.S.A.

24/8/82

Dear Sir:

Space sculptures

This letter is in a second step after the preliminary talks that ~~had~~ I had with Mr Frank Bristow, Prof. Torrence Johnson and Prof. Bradford Hager on the 2nd August, at your 

I understand that the next mission to Mars may be 10 years. Ezra Rich Collection here is also in some possibility to reactivate the Viking Lander of 1976. (reactivated)

Let me suggest then to perform by the Viking) or by an arm of a future spacecraft, a sculptural laconic act of lifting a stone from the surface and putting it atop another stone, by receiving a radio order from earth.

I would upreciate your reaction and would ~~like~~
willingly cooperate with any side-effort that
could, if possible, be made by your Laboratory,
towards the execution of this idea sometime in the
eighties.

Enclosed: Prof. T. Johnson Letter
Catalogue
copies: Prof. T. Johnson
Frank Bristow

Dr. ~~Prof.~~ Carl ~~Stegman~~
אוסף עזרא אוריון
ארכיון אמנות במרחב הציבורי

David Forchhoff

Dr. Roger F. Maimin



Ezra Orion Collection
Public Art Archive

RECEIVED
JAN 11 1988
THE ISRAELI CENTER FOR ARTS AND HOLOCAUST STUDIES

August 24th, 1982

Mr. Bruce Murray
Director
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91109
U. S. A.

Dear Mr. Murray,

This letter is a second step after the preliminary talks I had with Mr. Frank Bristow, Professor T. Johnson, and Professor B. Hager on August 2nd at your Laboratory.

ארכיון אמנות במרחב הציבורי

I understand that the next mission to Mars may be ten (10) years ahead but there is also the possibility of reactivating the Viking lander arm of 1976. I would, therefore, like to suggest that either by this Viking reactivated arm or by means of an arm of any future spacecraft, a sculptural-laonic-act of lifting a stone from the Martian surface and placing it on top of another stone, through a radio-beamed order from earth.

I would appreciate your consideration and comments on the subject and will be happy to cooperate with any efforts on the side which could, if possible, be made by your laboratory towards the execution of this idea some time in the Eighties.

Public Art Archive

Hoping to receive your reply at your earliest opportunity, I am

Yours sincerely,

Ezra Orion
Sculptor
Midrashat Sde-Boker

EO:mrh

encl. (2)

cc: Prof. T. Johnson, Frank Bristow
Prof. B. Hager
Dr. Carl Sagen, Prof. Robert Hobbs
David Furchgott
Dr. Roger Malina

82 70000 1000

DR. KERMIT S. WATKINS *← VIKING PROJECT DIRECTOR*
CODE 169-230
NASA / JPL
4800 OAK GROVE DRIVE
PASADENA, CALIFORNIA 91109

DEAR DR. WATKINS,

ALLOW ME TO INTRODUCE MYSELF:

I AM AN ARTIST WITH A RATHER TECHNICAL SENSIBILITY THAT HAS RESULTED IN WHAT IS NOW THE FIRST SPACE SHUTTLE PAYLOAD FOR THE ARTS - PART OF AN UNLIKELY CHAIN OF EVENTS THAT BRINGS ME TO WRITE THIS LETTER.

THE PROGENITOR OF THIS WHOLE BUSINESS CANNOT BE REACHED BY PHONE OR WIRE, IN FACT TO MEET WITH HIM ONE MUST UNDERTAKE AN UNCOMFORTABLE JOURNEY TO ONE OF THE MOST INHOSPITABLE AND DESOLATE PLACES ON EARTH. EZRA ORION IS AN ISRAELI SCULPTOR WHO LIVES AND WORKS IN THE HEART OF THE NEGEV DESERT. HE HAS SPENT YEARS CREATING MARVELOUS MONUMENTS FROM NATIVE BOULDERS AND MONOLITHS THAT SOMEHOW COMBINE SIMPLICITY AND POWER IN TESTAMENT TO THE VICTORY OF HUMAN WILL IN ITS LEGACY OF STRUGGLE WITH THE HARSH AND CHAOTIC FORCES OF NATURE.

NASA APPROPRIATELY ANTICIPATES THE FUTURE. PROJECTS MUST BE MODELED AND SIMULATED LONG BEFORE THEY ACTUALLY COME INTO EXISTENCE. SHARING THIS PREOCCUPATION, I FEEL VERY COMFORTABLE TALKING ABOUT THE FUTURE WITH NASA ESPECIALLY, AND OTHERWISE WITH MY OWN COMMUNITY OF THE ARTS. LATELY I HAVE BEEN ADDRESSING GROUPS OF BOTH PROFESSIONS RATHER REGULARLY - THAT IS NOT TO SAY THEY EXIST TOTALLY SEPARATE FROM ONE ANOTHER - AND THE TOPIC MOVES FROM MY SPACE SHUTTLE PAYLOAD (ARTIFICIAL AURORAS) TO CONCEPTS ABOUT HUGE ENCYCLOPEDIA GLYPHS MARCHED OUT ON THE LUNAR SEAS BY SMALL SURFACE CRAWLERS; ADOBE TROJAN HORSE RUIN-MONUMENTS FOR THE MARTIAN DESERT ; AND BEYOND TO FANTASTIC LANDSCAPES OF SULFUR AND FIRE; LASER-ETCHING ICEWORLDS AND ASTEROIDS... AND MORE. IT WAS ON ONE OF THESE OCCASSIONS THAT I WAS FORTUNATE ENOUGH TO MEET EZRA ORION WHOSE PRACTICAL IDEAS AND NATURAL VISION SYNTHESIZED A CONCEPT WITH A LOT MORE COMMON SENSE THAN TO WHICH I AM ACCUSTOMED: EZRA AND I WANT TO USE THE VIKING ~~LANDER-ARM~~ *VIKING I* TO MANIPULATE ONE ROCK ONTO ANOTHER ROCK BEFORE WE LOOK AWAY FROM THIS SINGLE HUMAN OUTPOST.

AT THE LEAST WE'D LIKE TO USE THE VIKING MODEL AT JPL FOR A DRY RUN. THAT WAY WE COULD WORK OUT A REALISTIC IDEA OF PROGRAM AND COMMAND SEQUENCE; AND DISH TIME ON THE DEEP SPACE FACILITIES NETWORK NOT TO MENTION GETTING A REASONABLE HANDLE ON THE COSTS INVOLVED. I AM SURE NASA ITSELF WOULD HAVE APPROACHED THE PROBLEM IN A SIMILAR MANNER.

I WILL COME TO JPL ON A MOMENT'S NOTICE AT YOUR CONVENIENCE
TO DISCUSS THESE IDEAS IN DETAIL ; TO USE OR ARRANGE FOR THE
USE OF THE VIKING MODEL, ETC.

I HAVE TO LEAVE FOR PARIS ON SEPT. 16 TO ADDRESS THE INTERNATIONAL
INSTITUTE OF AERONAUTICS AND ASTRONAUTICS CONFERENCING THERE THIS
YEAR. YOUR RESPONSE BEFORE MY PLANNED DEPARTURE WOULD BE SINCERELY
APPRECIATED.

BEST IN SPACE,

JOE DAVIS

אוסף עזרא אוריון
ארכיון אמנות במרחב הציבורי



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LEM/CENTERLANDER-1

PROJECT STATEMENT

FOR IMMEDIATE RELEASE

SEPTEMBER 3, 1982

CONTACT: JOE DAVIS, PROJECT MGR.
MIT CENTER FOR ADVANCED VISUAL STUDIES
40 MASSACHUSETTS AVENUE
CAMBRIDGE, MASSACHUSETTS 02139
(617) 253-4415

BILL LISHMAN
RR ONE
BLACKSTOCK, ONTARIO
LOB-1B0

(416) 986-4384

SURPLUS SPACESHIP: COLLABORATING ARTISTS PLAN LUNAR MISSION

A PROJECT NOW UNDER WAY TO MODIFY AND REFURBISH A CANADIAN-BUILT LUNAR EXCURSION MODULE (LEM) FOR USE WITH NASA'S INERTIAL UPPER STAGE WILL MAKE CERTAIN SPACES COMMERCIALY AVAILABLE ABOARD ONE OF THE MOST AMBITIOUS EXTRA-PLANETARY MISSIONS EVER UNDERTAKEN. SPACE SHUTTLE AND THE INERTIAL UPPER STAGE, IN COMBINATION WITH LUNAR ASCENT AND DESCENT STAGES ARE KEY COMPONENTS TO BE UTILIZED IN THE CENTERLANDER LUNAR-RETURN MISSION. MISSION CONFIGURATION INCLUDES THE FOLLOWING BRIEF PROFILE:

1. EARTH ORBIT INSERTION VIA NASA SPACE TRANSPORTATION SYSTEM ("EXCEPTIONAL USER", DEDICATED SPACE SHUTTLE MISSION)
2. DEPLOYMENT OF CENTERLANDER AND INTEGRATED NASA INERTIAL UPPER STAGE (IUS)
3. TRANS-LUNAR SEGMENT
4. LUNAR ORBITAL INSERTION / SOFT LANDING
5. RETURN SEGMENT
6. EARTH ORBIT / SHUTTLE-RETRIEVAL

ALL MAJOR MISSION COMPONENTS ARE EITHER TO BE NASA-PROVIDED (CONTRACTED), OR BASED ON NASA-DESIGN (CENTERLANDER). CENTERLANDER ASCENT AND DESCENT STAGES WILL BE OVERHAULED AND REASSEMBLED AT CENTER FOR ADVANCED VISUAL STUDIES IN CAMBRIDGE, MASSACHUSETTS. RECOGNIZING THE POTENTIAL FOR UNPRECEDENTED HUMAN BENEFIT, SPACE ABOARD CENTERLANDER WILL BE MADE COMMERCIALY AVAILABLE TO ARTISTS, POETS, AND OTHER ARTS PROFESSIONALS, AS WELL AS TO QUALIFIED SCIENTIFIC AND TECHNICAL RESEARCHERS WITH EXPERIMENTS THAT CAN DEMONSTRATE SOME FORM OF TANGIBLE HUMAN BENEFIT IN TERMS OF ART AND POETRY (HUMAN A&P). SPECIAL TERMS ARE NOW UNDER CONSIDERATION FOR EXPERIMENTS AND INVESTIGATIONS THAT HAVE CRYSTALIZED FROM THE EARLIER SURVEYOR AND APOLLO PROGRAMS, SO LONG AS AESTHETICS REMAIN IN TACT, AND THE PROPOSED EXPERIMENT DOES NOT VIOLATE THE SPIRIT OF THE PROJECT. NO CENTERLANDER PAYLOAD WILL BE REJECTED SIMPLY BECAUSE IT CONTAINS OR PERTAINS TO SCIENTIFIC INVESTIGATION.

EZRA!

BACK IN PASADENA. THINGS ARE
REALLY LOOKING GOOD.

YOU SHOULD BE RECEIVING
A LETTER FROM THE VIKING
PROJECT OFFICE. ^{אוסף עזרא אוריון} ^{ארכיון אמנות במוזיאון תל אביב} GOOD NEWS!

BEST EVER,

JP



JOE DAVIS

מכון למסכות דיגיטליות
INSTITUTE FOR DIGITAL PRESENCE
مركز للتحقق الرقمي

Ezra Orion Collection
Public Art Archive

14/9/82

82 תשנ"ב
JOE DAVIS

Massachusetts Institute of Technology Center for Advanced Visual Studies 40 Massachusetts Avenue Cambridge, Massachusetts 02139

EZRA ORION
MIDRASHAT SDE-BOKER
84990
ISRAEL

DEAR EZRA,

WELL WHAT DO YOU KNOW, VIKING II HAS INDEED BEEN DEACTIVATED (OVERLOOKED IS A BETTER WORD), BUT VIKING ONE IT SEEMS IS STILL ACTIVE AND IS SCHEDULED TO STAY IN BUSINESS FOR MORE THAN TEN YEARS, INTO THE 1990'S.
ארכיון אמנות במרחב הצבאי

THE PROBLEM IS THE ANTENNA-TIME, IN ORDER TO USE THE LANDER IT IS NECESSARY TO INVOLVE THE USE OF NASA'S DEEP SPACE FACILITY NETWORK - WHICH IS A SYSTEM OF HUGE (64-METER) RADIO DISHES LOCATED AT STRATEGIC POINTS AROUND THE WORLD SO THAT CONTINUOUS COMMUNICATION IS POSSIBLE AS THE EARTH SPINS WITH ANY PARTICULAR POSITION IN DEEP SPACE - SUCH AS MARS. TIME ON THIS SYSTEM COSTS SOMEBODY APPROX. \$16,000 PER HOUR; WORSE, THE SYSTEM IS TIME BUDGETED. ALL KINDS OF PEOPLE USE THE SYSTEM: RADIO ASTRONOMERS, CHEMICAL PHYSICISTS, VOYAGER PROJECT RESEARCHERS, AND SO FORTH. IN FACT, THERE IS SO MUCH DEMAND ON THE SYSTEM THAT EVEN NOW, WITH \$16,000 IN HAND FOR EVERY HOUR YOU WISH TO RESERVE, IT IS IMPOSSIBLE TO RESERVE TIME ON THE DEEP SPACE NETWORK ANY EARLIER THAN WELL INTO THE 1990'S. WELL AFTER THE TIME VIKING I HAS ALSO BEEN DEACTIVATED.

THE ACTUAL DATA COMING BACK FROM VIKING HAS CONTAINED ALOT OF DUPLICATION. THEY HAVE PHOTOGRAPHED AND REPHOTOGRAPHED THE SAME LANDSCAPE FOR YEARS AND YEARS. MEASUREMENT OF TEMPERATURE AND ATMOSPHERIC PRESSURE HAS ALSO BEEN A MATTER OF CONTINUOUS PROCESS THROUGHOUT THE TIME VIKING HAS BEEN IN PLACE AND ACTIVE. THERE IS OF COURSE VERY GOOD REASON FOR CONSISTANT, REGULAR OBSERVATION OF THESE AND OTHER ENVIRONMENTAL FACTORS FOR WHICH VIKING WAS EQUIPPED TO MONITOR, BUT IT IS ALSO CLEAR THAT THE BENIFITS FROM SUCH LONG-TERM OBSERVATION HAVE ALREADY BEEN DERIVED. THE TIME INVOLVED IN ATTENTION TO OUR COMPARATIVELY SMALL PROJECT WOULD MAKE NO STATISTICALLY SIGNIFICANT DIFFERENCE IN THE ULTIMATE CALCULATIONS OF SCIENTIST WHO ARE USING THE LANDER NOW. IT IS LOGICAL THEN, TO GO AFTER THE PEOPLE WHO ARE ALREADY SCHEDULED FOR ANTENNA-TIME DURING THE PLANNED LIFETIME OF THE LANDER: WHICH IS BASICALLY WHAT I AM DOING. FIRST, AFTER THE TIME THAT HAS ALREADY BEEN ALOTTED TO VIKING SCIENTISTS. NEXT, AFTER TIME ALOTTED OTHER SCIENTISTS, AND ONLY THEN AFTER TIME WE'D CALL OUR OWN. THERE ARE MANY VERY REASONABLE ARGUMENTS TO PUT TO THEM, IN THEIR OWN TERMS, THAT ARE GOING TO BE DIFFICULT FOR THEM TO REJECT OUT OF HAND, AND TO MAKE THINGS EASIER, I AM ALSO TRYING TO FIND A PATRON OR COLLECTOR, OR GROUPS THEREOF, TO SPONSOR THE ANTENNA COST ANYWAY, SIGNALS TRAVEL FROM

EARTH TO MARS AND BACK IN ABOUT 38 MIN. (\$10,133 - 266.66 PER MIN.),

IN ORDER TO MINIMIZE COST, AND TO GARNER A BETTER, MORE COMPLETE UNDERSTANDING OF THE JOB WE PROPOSE, I SUGGEST THAT WE GO BACK TO JPL TO USE THEIR EXACT VIKING MODEL FOR THE PURPOSE OF PRACTICING THE MOVEMENT OF THE 'ARM'. THERE IS A MODEL OF THE LANDER AND ADJACENT LANDSCAPE - INCLUDING FCSIMILIES OF THE MARTIAN ROCKS - IN PASADENA. WE WOULD FIND THE SPECIFIC LANGUAGE IN WHICH TO SEND THE SPECIFIC ORDERS, AND THE MINIMUM TIME NEEDED TO SEND THEM, THIS IS A VERY IMPORTANT PART OF THE WORK AND I THINK THAT SIMULTANEOUS PRESS ABOUT WHAT WE WERE DOING WOULD HELP MOBILIZE PUBLIC OPINION IN OUR BEHALF, THEREBY INCREASING THE PRESSURE ON NASA.

MEANWHILE I HAVE ALREADY CONSCRIPTED THE HELP OF SOME OF JPL'S OWN SCIENTISTS WHO ARE WORKING ON OUR BEHALF NOW, FROM THE INSIDE: SCIENTISTS IN THE PROGRAM OFFICE WHO WILL HELP US WITH THE COMPUTER PROGRAMMING IT TAKESTO SEND THE ORDERS, AND THE DIRECTOR OF THE DEEP SPACE FACILITIES NETWORK WHO IS IN CHARGE OF SENDING THE ORDERS (BY SHEER LUCK IT TURNS OUT THAT I'VE KNOWN THIS GUY FOR SEVERAL YEARS). I DECIDED TO GO DOWN TO L.A. IMMEDIATELY AFTER THE SCULPTURE CONFERENCE TO GET THE BALL ROLLING. REST ASSURED THAT OUR NAMES HAVE BEEN MENTIONED A HUNDRED TIMES IN SUBSEQUENT WEEKS THROUGHOUT THE HEIRARCHY OF NASA-JPL. I HAVE OF COURSE WRITTEN THE APPROPRIATE LETTERS AND KEPT IN TOUCH BY TELEPHONE. ALSO, I PLAN TO GO BACK TO JPL BEFORE I LEAVE FOR EUROPE (SEPT. 16).

THE NAME AND ADDRESS OF THE VIKING PROJECT MANAGER:

DR. KERMIT S WATKINS
MAIL CODE 169-230

NASA-JPL

4800 OAK GROVE DR.
PASADENA, CALIF. 91109

I SUGGEST YOU WRITE HIM A LETTER, AND IF YOU KNOW ANY RENOWNED SCIENTISTS, GET THEM TO WRITE AS WELL. BEYOND THAT, I HAVE ONLY JUST STARTED IN WASHINGTON.

I HAVE BEEN ASKED TO DELIVER TWO PAPERS IN PARIS THIS SEPTEMBER AT THE CONFERENCE OF THE INTERNATIONAL INSTITUTE OF ASTRONAUTICS AND AERONAUTICS. I WILL ANNOUNCE THIS COLLABORATION THERE.

DON'T BE SURPRISED IF I SHOW UP IN THE NEGEV.

SINCERELY,

JOE DAVIS

PS IF YOU HAVE ANY CATALOGS TO SPARE, AND COULD SEND ME TWO OR THREE, THEY MAY BE HELPFUL IN THIS PROCESS OF NEGOTIATION.

September 14, 1982

DR. KERMIT S. WATKINS
VIKING PROJECT
CODE 169-230
NASA/JPL
4800 OAKGROVE DRIVE
PASADENA, CALIFORNIA 91109

RE: ARTISTS' USE OF VIKING I SAMPLER ARM FOR MANIPULATION OF
SMALL STONES ON THE PLANET MARS

DEAR DR. WATKINS:

IN THE INTEREST OF CLEAR COMMUNICATION I AM PROVIDING THE
FOLLOWING RESTATEMENT OF OBJECTIVES COVERED IN EARLIER CORRESPONDENCE:

WITH LIMITED TIME REMAINING IN THE WORKING LIFESPAN OF VIKING
I LANDER, COLLABORATING ARTISTS (JOE DAVIS AND EZRA ORION) PROPOSE TO
CREATE ELEMENTAL SCULPTURE AT THE CHRYSE PLANITIA LANDING SITE USING
USING VIKING'S 2.9 METER SAMPLER ARM TO MANIPULATE SMALL STONES
ACCESSIBLE WITHIN THE SWING OF ITS 110° OF ASMUTH.

A TENTATIVE PROCESS OF EVENTS COULD BE CONFIGURED IN THREE
SUBSEQUENT PHASES:

- ONE - RESTORE AND UTILIZE VIKING LANDER MODEL AND MARS SCAPE
FACSIMILIE AT JPL (OR ACCESS DATA NECESSARY TO RECREATE
SUCH A MODEL, REAL OR MATHEMATICAL) TO EVOLVE MODEL SOFT-
WARE, PROGRAM AND COMMAND SEQUENCE, AND TO ESTABLISH
MINIMUM SIGNAL DURATION.
- TWO - TRANSMISSION OPTIONS: A) SPLICE COMMAND SEQUENCE MODULE INTO
PRE-BUDGETED, EXISTING VIKING TRANSMISSION, B) ACCESS OTHER
PRE-BUDGETED TIME ON NASA DEEP SPACE NETWORK OR, C) ACCESS
NEW-SPONSORED TIME ON DEEP SPACE NETWORK.
- THREE- AWAIT NORMAL CAMERA SCANNING SEQUENCE FOR DOCUMENTATION BY
VIKING LANDER CAMERA #1 (SLOW SCAN VIDEO).

PLEASE NOTE THAT THE ARTS PROJECT FOR VIKING LANDER IS PROPOSED WITH SPECIFIC CONSIDERATION FOR PRACTICAL BENEFITS, THE STANDING PREREQUISITE FOR ALL NASA PROJECTS.

BESIDES TECHNICAL BENEFITS IN THE ANALYSIS OF 0.39 GRAVITY MECHANICS, THE PROPOSED SCULPTURE FOR CHRYSE PLANITIA ALSO REPRESENTS NEW OPPORTUNITIES FOR THE OBSERVATION OF ENVIRONMENTAL FACTORS; HELPING TO PROVIDE AN INDICATOR FOR CALCULATION OF STRESS AND WINDLOADS IN STRUCTURES WE WILL INEVITABLY BUILD FOR FUTURE MISSIONS TO MARS.

PERHAPS MORE IMPORTANTLY, THE SCULPTURE WOULD DEMONSTRATE, BY CLEAR PRECEDENT, THE FORSEEABLE EXTENSION OF ONE OF SPACE AGENCY'S CURRENTLY MOST BENEFIT-LADEN TECHNOLOGIES: REMOTE SENSING TECHNOLOGY WILL DEVELOP INTO TECHNOLOGY FOR REMOTE MANIPULATION AS A MATTER OF NECESSITY.

אוסף עזרא אורון

ALTHOUGH VIKING'S SOIL-SAMPLING EXPERIMENTS AMOUNTED TO DIRECT INVESTIGATION OF EXTRA TERRESTRIAL MATERIALS, THE EXTENT OF INTENDED MANIPULATION CAN BE MEASURED AGAINST THEIR ULTIMATE DISPOSITION. WITH A PRECISE MATERIALS DISPOSITION, THE SUCCESS OR FAILURE OF SCULPTURAL CONSTRUCTION AT CHRYSE PLANITIA WOULD PROVIDE VALUABLE HERETOFORE UNOBTAINABLE BASE-LINE DATA TO SCIENTISTS NOW CONCEPTING FUTURE PLANETARY LANDERS; PROBES DESIGNED FOR EXPANDED INVESTIGATION OF PLANETARY MATERIALS; CLOSE PROXIMITY MAPPING AND SURVEYING, AND LATER EVEN FOR MINING AND CONSTRUCTION.

موقع الدكتور الناصري

VIKING HAS THE CAPABILITY FOR REMOTE MANIPULATION. INVESTIGATORS AND EXPERIMENTERS IN VARIOUS FIELDS WILL LOOK TO VIKING FOR THAT PRECEDENT. IT IS A PRECEDENT THAT NASA HAS EARNED AND A RESOURCE THAT CERTAINITY SHOULDN'T BE WASTED.

IN KEEPING WITH NASA'S ORIGINAL CHARTER TO BRING TECHNOLOGY BACK TO THE PRIVATE SECTOR, STILL ANOTHER FORM OF PRACTICAL BENEFIT DERIVING FROM THIS PROJECT WOULD BE AN INCREASED PUBLIC UNDERSTANDING OF THE IMPORTANCE OF PLANETARY RESEARCH. ASSOCIATED MEDIAL COVERAGE WOULD HELP FOCUS ATTENTION ON DILEMMAS, FINANCIAL AND OTHERWISE, FACING NASA IN GENERAL, AND THE VIKING PROJECT IN PARTICULAR.

NASA HAS NOT BEEN HISTORICALLY INCLINED TO RECOGNIZE THE ARTS FROM THE PERSPECTIVE OF PRACTICAL BENEFIT, THOUGH IT HAS INVOLVED A FEW GRAPHIC ARTISTS FROM TIME TO TIME TO DOCUMENT VARIOUS PROGRAMS FOR REPORTS, BROCHURES, AND OTHER PUBLICATIONS. UNFORTUNATELY, THE THE INHERENT UTILITY OF THE ARTS MAY HAVE REMAINED SUBMERGED IN THE FABRIC OF SUCH A NARROW APPLICATION.

CONFUSION ABOUT WHAT ARTISTS SHOULD BE ALLOWED TO DO MAY HAVE RESULTED FROM A CONFUSION ABOUT WHAT ARTISTS ARE SUPPOSED TO DO. ONE WAY TO SHED LIGHT ON THIS APPARENT CONTRADICTION MAY BE TO QUOTE A RENOWNED PAINTER, WASSILY KANDINSKY, WHO SAID "ART DOES NOT REPRODUCE THE VISIBLE, BUT MAKES VISIBLE". ART IS ABOUT THE PROCESS OF DISCOVERY, AND WITH SCIENCE, HAS ALWAYS SHARED THE FRONTIER OF HUMAN AWARENESS.

IF THERE IS AN ETHIC FOR ARTISTS, IT MUST BE TO TELL THE TRUTH: A RESPONSIBILITY TO TREAT THE WORLD ACCORDING TO THE REALITY OF THE HUMAN CONDITION. WE HAVE TO PAINT AS CLEAR A PICTURE OF OUR OWN EXPERIENCE AS THE CAVE PAINTERS PAINTED OF THEIRS. IN A WORLD OF MICROWAVES AND RADIO, INTERNAL COMBUSTION MACHINERY, ELECTRICITY, PLASTICS, AND SPACE AGENCIES, THE TECHNICAL ASPECTS OF LIFE NATURALLY ASSERTS THEMSELVES IN OUR VISION AND SENSIBILITIES AND BECOME THE LANGUAGE OF OUR EXPERIENCE. ~~IT IS DIFFICULT, IF NOT IMPOSSIBLE TO PAINT A CLEAR PICTURE OF THIS EXPERIENCE - TO TELL THE TRUTH - WITH TECHNOLOGY THAT IS 3-500 YEARS OLD.~~ IN A WORLD WITHOUT PAINT OR CANVAS, OR WHERE PAINT AND CANVAS MAY SOMEHOW BECOME OBSOLETE, THERE ARE STILL ARTISTS. THEY WILL USE THE MEDIUM AT HAND.

IT SEEMS A LOGICAL SEQUENCE OF EVENTS THAT THE TECHNICAL ASPECTS OF LIFE, THAT TECHNOLOGY ITSELF BECOMES THE ARTIST'S MEDIUM.

THE ARTIST LOOKS TO TECHNOLOGY FOR THE FARTHEST LIMIT OF AWARENESS, FOR SCALE; TO PLACE HIS OR HER WORK IN THE CONTEXT OF ITS OWN SCENARIO. THE ENVIRONMENTAL ARTIST LOOKS TO THE GREATEST SCENARIO: SPACE.

SINCERELY,

Ezra Orion Collection
Public Art Archive

JOE DAVIS

CC: George Gianopulos
Ezra Orion



JET PROPULSION LABORATORY California Institute of Technology • 4800 Oak Grove Drive, Pasadena, California 91109

Pasadena, September 17, 1982.

Mr. Ezra Orion
Midrashat Sde-Boker
84990
Israel.

Dear Mr. Orion,

אוסף עזרא אוריון

ארכיון אמנות במרחב הציבורי

Enclosed is the artist rendition of the Olympus Mons image,
Frank Bristow promised to send you.

We hope it will meet your requirements.

Sincerely yours,

מכון למוסדות ציבוריים
INSTITUTE FOR PUBLIC PRESENCE
مركز للثقافة العامة



Ezra Orion Collection
Public Art Archive

Jurrie J van der Woude
Public Information.

for Ezra Orion

INTERNATIONAL SCULPTURE CENTER

October 14, 1982

Bruce Murray, Director
Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109

Dear Bruce Murray:

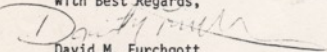
This summer while our organization was sponsoring the Twelfth International Sculpture Conference in San Francisco/Oakland, I had the pleasure of discussing the possibility of extraterrestrial sculpture with Ezra Orion, an Israeli sculptor who was an invited guest of the Center to the Conference and who represented Israel in our international exhibition.

Ezra Orion's work has evolved from a concern about nature and the earth, and through that to tectonic movement. His work was reviewed and significantly mentioned in a recent article in the Village Voice on the biennial conference. I know from my discussions with him that his concerns have now evolved to encompass the natural relationships of the movement of the earth's planes and the relationship of these movements to movements of objects within the solar system.

Ezra is very interested in working with scientists at the Jet Propulsion Laboratory, and/or with NASA, to plan with you for the inclusion of program to create a man-made sculptural-type object as a part of a future space exploration to the moon or another planet. He discussed this concept with Terrence V. Johnson at your facility during his visit to J.P.L. this past summer. The concept of inclusion of a sculptural "act" into the plan for a future space program brings another aspect of the world of man into space.

As Executive Director of the International Sculpture Center, I heartily endorse Ezra Orion's concept. I would hope that the Jet Propulsion Laboratory and other space-exploration oriented facilities would be able to consider the inclusion of activities like this into your planning agenda, and that perhaps you could lend him some assistance and cooperation in realizing this project in the future. If the International Sculpture Center can be of any assistance in the realization of this project, please let me know.

With Best Regards,


David M. Furchgott
Executive Director

cc: Ezra Orion
Terrence V. Johnson, JPL
Dan Kiyam, Embassy of Israel, Washington, D.C.

26 Nov. '82

Joe Davis

Ezra Orion
Midrashat Sde-Boker
84990
Israel

Dear Ezra,

I had hoped to be able to announce a successfully negotiated commitment from NASA for sculpture at Chryse Planitia before now. In fact, I'd hoped to make that announcement in Europe where I recently delivered a paper at the 33rd International Congress of Astronautics and Aeronautics, in Paris and participated in various events and panels at SKYART/ARS ELECTRONICA in Linz, Austria. It would have been perfectly dramatic. Drama however, is not a prerequisite to realizing this project, or paramount in any way to the actual work of art. We will just do it less conspicuously.

I am enclosing copies of letters of support written on behalf of the project.

Letters from Israeli artists and scientists interested in the project to move stones on Mars should be addressed to:

George Gianopoulos, mgr.
VIKING LANDER PROJECT
mailcode, 180-404
NASA/JPL
4800 Oak Grove Dr.
Pasadena, CA 91109

copy to:

Dr. Dave Pieri, chief scientist
VIKING LANDER PROJECT
mailcode, 183-501
NASA/JPL
4800 Oak Grove Dr.
Pasadena, CA 91109

What's left of NASA's once-extensive VIKING simulator is apparently now at Langley Research Center in Virginia. There may be some similar equipment, software or hardware, at Martin-Marietta Corp. Aerospace Division, in Boulder, Colorado. Martin-Marietta was the contractor that built the VIKING lander. Anyway, it will be necessary to go to one or both places in order to make a model command sequence, in a language VIKING-I will understand, instructing the robot-arm to move particular stones.

I would like to hear from you, I hope you are receiving this mail. And then, I worry that you may have some disapproval or disappointment about how I am performing the work, or representing your name.

Awaiting your reply,


Joe Davis

cc: Joe Davis

18 November 1982

Dear Mr. Gianopulos,

I am fascinated by the proposal of Joe Davis to use NASA's Viking Lander to create a rudimentary sculpture on Mars. I have met Joe and several other people like him in a couple of Sky Art Conferences where I came to share another perspective, in my view of deep significance, of the space age. New innovations and technical inventions become the total experience of society only after its artistes, myth-makers, and story-tellers introduce it into its fold and fabric. I believe that the space enterprise has a larger meaning which goes beyond development of new capabilities in order to touch people everywhere on earth. We need means and methods of communication which scientists alone cannot handle. There is a whole new store house of experience which can be opened only through the apparently non-utilitarian pursuits of a few people in society.

Without going into specific details of the proposal submitted by Joe Davis, I would like to record my personal commendation for this type of creative activity in which people like Joe are engaged, in the pursuit of a different type of knowing which might come to influence the colour and character of society in the space age.

Yours sincerely,



Yash Pal

Secretary-General

United Nations Conference on the
Exploration and Peaceful Uses of Outer Space

Mr. George Gianopulos
Viking Lander Project Manager
NASA/JPL, Mail Code 180-404
4800 Oak Grove Dr.
Pasadena, California 91109

THE PLANETARY SOCIETY

110 South Euclid Avenue, Pasadena, CA 91101 • (213) 793-5100

October 14, 1982

Mr. George Gianopoulos
Project Manager, Viking
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109

אוסף עזרא אוריון

Dear George: ארכיון אמנות במרחב הציבורי

Joe Davis, the artist from the MIT Center for Advanced Visual Studies, has presented his idea of composing a sculpture on Mars with the Viking lander arm. I think the idea is interesting and sound, and, should it not conflict with project objectives or safety requirements, I hope you might consider it.

I did talk to Dave Pieri about Mr. Davis' proposal and was encouraged to learn that, at first consideration, the idea was feasible and perhaps consistent with other scientific suggestions.

In my opinion, the creation of a symbolic sculpture on Mars by robotic use of the Viking lander is consistent with all national space objectives and would be a significant addition for popular understanding of space exploration.

If there is any way for me to help in enabling fulfillment of this idea, assuming you find it consistent and safe, please let me know.

Sincerely,

Louis Friedman
Louis Friedman

LF/pf
cc: Carl Sagan

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20/12/82

Dear Joe -

Thanks a lot for the Pasadena raid letter of 14 September, and the 29th November one. I am very encouraged by your storming energy and getting next a feeling of brake-through. Here I want to share with you some aspects of the Mars project:

Somewhere, without knowing each other we were conceiving ideas about space-Art. ~~that~~ The concrete idea of sculptural act by putting a stone atop another stone, by the Viking Lander arm ^{on Mars} ~~was~~ ^{אוסף עומא אוריון} proposed by me to the JPL people on the 2nd August at my visit there to Pasadena. then we met at the conference and established the "co-project Framework". It ~~was~~ ^{אוריון} then understood that you, while pursuing ^{אוריון} ~~your~~ ^{אוריון} "Columbia shuttle" project will "give ^{אוריון} ~~me~~ ^{אוריון} a brand for my Project". No word on that I read in ^{אוריון} ~~the~~ ^{אוריון} letters of support. ~~on the~~ other hand there is ~~now~~ ^{אוריון} doubt in my mind that without your energy the idea would have been dead by now. (Unfortunately) we can't meet ^{אוריון} ~~now~~ ^{אוריון} somewhere on the globe...

I suggest that our project will have a formal name:

"The Ezra Orion & Joe Davis project: A sculptural act on Mars"

As for the negotiation with the actual people, we need now a full 360° panorama of Viking Lander surroundings. On that panorama we must have the radius of the arm marked by a clear line. Maximum

could be the basis to develop the "command"
for the Lander.

I enclose here a reminiscent letter to Bruce Murray
who didn't yet answered my Project letter of
24th August.

Keep searching
Sincerely yours

אוסף עזרא אוריון
ארכיון אמנות במרחב הציבורי



מכון לזיכרון ופיוזיות
INSTITUTE FOR PUBLIC PRESERVE
مركز الذاكرة العامة



Ezra Orion Collection
Public Art Archive

16 January 1983

Joe Davis

Massachusetts Institute of Technology Center for Advanced Visual Studies 40 Massachusetts Avenue Cambridge, Massachusetts 02139

Ezra Orion
Midrashat Sde-Boker
84990
ISRAEL

Re: Developments on project for sculpture at Chryse Planitia

Dear Ezra,

On 16 December Viking Project Chief Scientist, Dr. Dave Pieri informed me that the project office at JPL has been asked by NASA administrators to make an evaluation of proposals for sculpture at the Viking I landing site. This is the second time that the project office has indicated that they would be coming up with an official response; hopefully you should be hearing from them soon.

ארכיון אמנות במרחב הציבורי
Incidentally, the landing site at Chryse Planitia has been dedicated by the Space Administration as the THOMAS A. MUTCH MEMORIAL STATION after a NASA associate administrator who figured significantly in the Viking effort as the Lander Imaging Team Leader. Mutch died on Oct. 6, 1980 in a climbing accident in India. NASA has already had a memorial plate engraved for eventual placement at Mutch Station.

On 17 December I met with Mr. Cary Spitzer, a member of the original Viking team, at NASA Langley Research Center in Hampton, Virginia. Mr. Spitzer was part of a scientifically motivated operation which involved moving martian stones in order to obtain soil samples from underneath.

NASA's only working model of the Viking Lander is now at Langley installed as an exhibit in their visitor reception center. It is equipped with all of the inputs necessary to conduct a pilot command sequence; the same equipment NASA used for their own 'dry runs'. Spitzer feels that NASA would not be opposed to the use of the Langley model for our purposes, but he thinks that ultimately it may not be necessary.

NASA experts on the use of the Viking sampler-arm, in fact, no longer work for NASA directly, rather for government contractors, or for federal agencies outside NASA. They are as follows:

* H.J. MOORE
U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

Mr. Moore originated the locator program used to position the sampler-arm, and is still in possession of detail surface data needed to make a sensible command sequence.

* Mr. Cary Spitzer, Avionics Planning Office
NASA/Langley Research Center MAIL CODE 472
Hampton, Virginia 23665 USA

• Ray Batson
U.S. Geologic Survey
Flagstaff, Arizona (I have no more complete address at the moment)

Mr. Batson built the three-dimensional model mars-scape NASA used in conjunction with the Viking model. Made of 'sculpted' styrofoam with implanted weights to simulate mars-gravity and imagined center-of-gravity, the model stones and sand were dismantled(disposed of) several years ago. A few of the model stones might be sitting around on former Viking project workers' living room tables, but if a second mars-scape model becomes necessary it would have to be built from scratch. Mr. Batson's experience in this would be most valuable.

• Don Crouch, Aerospace Division
Martin Marietta Corp.
Denver, Colorado

Don Crouch is Martin Marietta's expert on the Viking sampler-arm. Martin Marietta, of course, built the original Viking Lander components for NASA, and still maintains a working simulator for the sampler-arm ; hence Mr. Spitzer's suggestion that a NASA-operated simulation may not be necessary.

• Sidney Liebes Jr. (pronounced, "LEE-BEES")
Stanford University
Palo Alto, California

Mr. Liebes compiled the most extensive data published to date on the martian surface topography adjacent to the Viking Lander sites. His book, NASA CONTRACTOR REPORT 3568 - VIKING LANDER ATLAS OF MARS is available through the government printing office in Washington, D.C. I will try to obtain copies and forward one to you.

It is Mr. Spitzer's opinion that for the most part these gentlemen may be very favorably approached to be of assistance in developing a command sequence for sculpture at Chryse Planitia(Mutch Station). I will attempt to contact all of them over the next several weeks.

What follows are miscellaneous excerpts from notes I made at Langley:

- An estimated 200 individual commands (see page 8 in the enclosed NASA rock pushing and pulling document) will be needed to carry out the proposed placement of one stone on another.
- Such a sequence may be transmitted in the preferred one-hour transmission time.
- An ordinary soil-sampling sequence requires approximately 100 commands
- The sampler-arm can push about 20 lbs., and retract or pull about 30 lbs.
- The sampler-arm cannot be used for side-ways manipulation, as the arm has no side-to-side or torsional strength.
- The arm consists of a single sheet of aluminum which is rolled longitudinally for its intended manipulative function; and then rolled latitudinally(side-ways) for stowage on the lander in its retracted state.
- COLOR: The surface materials that look biege, or sandy-tan on Mars would look dark chocolate-brown on Earth due to differences in lighting.

- The Smithsonian Institution in Washington D.C. (Air&Space Museum) is in possession of a full-scale working model of the Viking Lander, identical to the Lander model at Langley.
- The typical sampler-arm command will be in terms of AZMUTH (the nominal 110° is actually closer to 180° of swing), ELEVATION (a function of command duration, or timing), and EXTENSION, or distance along the arm's radial axis (minimum extension is determined by the short end of Viking's stereo camera range).
- A full automated rotation of the Lander cameras requires about a six-month period, although the automatic scanning sequence could be overridden to photograph a specific point. Such a command override would require additional transmission time, of course.
- The stones at Viking Lander sites are judged to be basaltic.
- The existing locator program is an HP (Hewlett Packard) 35 program

As you can see the project is becoming rather awesome. I need financial assistance to pursue all of this as I would like, without it I will continue to work of course, but progress will be much slower than it should be. My efforts to raise support are complicated by the fact that my other projects (lightning, Ruby Falls...) are already cost intensive. Travel is a big concern; it is often necessary to look right into their eyes. When you're looking for something it is usually appropriate to go out and find it yourself rather than to wait around for delivery.

Anyway, I'll keep you informed as pieces fall into place.

Sincerely,

Joe Davis

مركز تراث اورون
Ezra Orion Collection
مركز الفنون العامة
Public Art Archive

Ezra Orion Collection
Public Art Archive

Ezra,

Enclosed correspondence from H.J.Moore.

!#*¢?\$\$!! I'm nowhere near finished with this guy.
I think at the very least we'll be shaking up his
sensibilities about art. 'Chief Sculptor' indeed !

The program samples should help a great deal; still,
I think we need better stereo images and V-profile data.
more later...

Joe Davis

Ezra Orion Collection

Public Art Archive

PS: You know Viking cannot "lift" per se, rather
the sampler-arm can push or pull one stone on to
another. No thumb, and no up-and-down strength(neither
side-to-side) beyond the strength necessary to position
the arm itself. The pushing and pulling in a straight
line from the arm axis, however, is quite possible.



United States Department of the Interior

GEOLOGICAL SURVEY

Branch of Astrogeologic Studies
345 Middlefield Road, MS 46
Menlo Park, California 94025

14 February 1983

Joe Davis
Center for Advanced Visual Studies
Massachusetts Institute of Technology
40 Massachusetts Avenue
Cambridge, MA 02139

Dear Mr. Davis:

This letter is in reference to your letter of 8 February 1983 in which you discuss your desires and efforts, with Ezra Orion, to convince NASA to allow artist's use of the surface sampler of the Mutch Memorial Station (Lander 1) to create elemental sculpture at the Chryse Planitia landing site on Mars.

It appears to me that you are too late; it has already been done. The two landers on the surface are beautiful monuments sculpted by countless artists under the general supervision of James B. Martin, Chief Sculptor and Manager of the Viking Project.

The simple placement of one small rock upon a larger one could scarcely rival these two monuments to mankind on Mars.

Other monuments, similar to the one you and Orion propose, have already been constructed on Mars. During the Extended Mission conical piles of martian soil were constructed on the ground and on top of rocks. They were beautiful and resembled miniature versions of Mount Fuji -- despite their diminutive heights of 3 to 5 cm. During attempts to push a rock (called Badger) at the Lander 2 site, the originally flat rock was tilted on end; this rock would be considered a monument by many.

The problem of placing a small rock upon a larger one is not as simple as it appears. There are a number of uncertainties. One must identify a small rock (about 4 cm across) and this is not an easy task because some rocks are partly buried so that only a small part of a larger rock can be seen and, additionally, it is difficult to identify and separate rocks from clods of soil by viewing the pictures. Indeed, no samples of demonstrable rocks were ever collected and chemically analyzed by either lander despite repeated efforts to do so. If one could, in fact, identify a rock it would have to be picked up. While this is possible, I know of only one rock (3 cm across) and one clod (3 cm across) that were picked up by the samplers. The rock now resides in front of Lander

2 and the clod resides on the X-ray fluorescence funnel of Lander 1 (Mutch Memorial Station). Placement of a rock upon a larger suitable rock, if one can be found and picked up, is a lesser problem.

I have enclosed a summary of surface sampler activities of Landers 1 and 2. Two sets of maps portray, in stages, the surface of Mars sculpted by the Landers, and tables briefly describe the sculpture.

If the surface sampler of the Mutch Memorial Station (Lander 1) is ever operated again, I would propose that it be used for distinctly different purposes than the one that you and Orion propose. We still have much to learn about the beautiful and eerie world of Mars. The sculpting and monuments are already present on Mars and a host of superb artists are responsible for them.

Best wishes to you on your proposed art for Space Shuttle. Such art work would stand a much better chance to reach a large segment of mankind than the one you propose for Mars.

אוסף עזרא אוריון

ארכיון אפואת בפרחב הציבורי Sincerely,

Sincerely,

Henry J. Moore

cc: George N. Gianopulos,
Viking Project Manager, JPL
Cary Spitzer, Langley, VA

معهد الدكتور الجماهيري

Ezra Orion Collection
Public Art Archive

28.2.83

למירון גורדון
קונסולית ישראל בסן פרנסיסקו
אח"כ

שלום -

- - מזמן לא התראינו - -

עם שובי ארצה מהועידה, ניסחתי הצעה פרויקט עבור ה - JPL: לבצע ע"י
פקודות רדיו אקט פיסולי של תצבת אבן על אבן באמצעות זרוע ה - Viking Lander מס' 1.
ההצעה נוסחה ב - 24 לאוגוסט, ארו מאתר הרציתי את הגב של מהזיאה ישראל, היא נשלחה
משט למר ברוס מארי מתישהו באוקטובר. העתקים לפראנק בריסטוב, טורנס ג'ונסון וכו'.
בועידה עצמה התברר לי שכמעט איש באח"כ לא עובד בכיוון זה וכי הוא חדשני יותר
משערת. פטל אחד בשם ג'ו דינוליס, אשר עוסק כבר זמן מה בנסיון לבצע משהו עם מעבורת
"קולומביה", התלהב והסכים לסייע לי. באוגוסט בלתי פורמאלי יצרנו פרויקט משותף.
מאחר ולא קיבלתי תשובה כלשהי, שלחתי לברוס מארי תזכורת ב - 10 לדצמבר וגם עליה לא
קיבלתי כל תגובה.
רציתי לבקשך לנסות להכנס לתמונה ולברר, אולי דרך פראנק בריסטוב: מה קורה?
ומהן הדרכים לקידום הנושא?

- - להתראות - -

עזרא

העקת: גב' אביבה בריסקמן

מצורפים: צילום התזכורת

צילום מכתב אחרון מג'ו דינוליס.

Dear Jo,

Back from army service I got your letter of 16 January. Many thanks! The rock pushing...! No answer yet from the J.P.L. ~~Neither~~ Neither for the reminder of 10 December that I sent to Bruce Murray. I am too far to get a clear picture, so I thought to try another two directions:

- 1) Through the ^{אוסף עזרא אוריון} foreign office. They have ~~there~~ a unit of cultural affairs. To get the Israeli cultural attache into the ~~matter~~ ^{ארכיון אוריון במרכז} to some extent. (Washington D.C.)

Ezra Orion Collection
Public Art Archive
I wrote to someone in the Israel consulate in San Francisco to ~~try~~ ^{try} contact those people whom I met on 2 August.

- 2) Through the Leonardo magazine. I just got a response from them on a manuscript that I sent to them on 1 September. They want more data. So I will elaborate more about our project. It would be great if somebody like Dr. Dave Pierri could give us a preliminary positive ~~statement~~ statement that I can put in the article.

once we have it we can try in the
U.S. and here to ~~raise~~ ~~raise~~ ~~raise~~ raise
the needed money. Did you try Prof Carl
Saxen (cornell University)?

Sincerely yours

~

אוסף עזרא אוריון
ארכיון אמנות במרחב הציבורי

המרכז
למחקר
והסברה
באמנות
הציבוריות
המרכז
למחקר
והסברה
באמנות
הציבוריות



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Public Art Archive



JET PROPULSION LABORATORY California Institute of Technology • 4800 Oak Grove Drive, Pasadena, California 91109

March 22, 1983

Mr. Ezra Orion
Midreshet Sde-Boker
Negev
Israel

Dear Mr. Orion,

Dr. Bruce Murray left JPL last July and I would assume he did not receive your letter. I will take the liberty of answering on his behalf.

Viking Lander 1 was shut down in April, 1980 and Viking Lander 2 is currently having a problem that has ended our communications with it, although we are still attempting to revive it.

I should note however that even if Lander 2 were still in communication it would be exceedingly difficult, if not impossible, to re-activate the sampler arm. The necessary engineering teams have been disbanded and the Viking control center is no longer in operation. Operating the arm was a complex effort and also required support of the Lander's cameras to see if it had obeyed commands properly.

As there are no future lander missions to Mars currently planned, your concept, of necessity, would be in the distant future.

I regret having to give a negative reply.

Sincerely,

Frank Bristow
Frank Bristow
Manager

Public Information Office

cc: Meron Gordon
Consulate General of Israel

9/4/83

Dear Joe

Thanks for your letter of 18/3 including Moore's letter to you, and the sampling data. Few days ago I got an indirect answer from JPL by Frank Bristow whom I met 2 August. (letter included) His statement that Viking Lander I is "shut down in April ¹⁹⁸⁰" contradicts the information that it is going to ^{ארכיון המחקר במרחב הקוסמוס} operate for into the nineties. What is your interpretation to that ^{לדעת} indication?

Facing Bristow's ^{לדעת} and Moore's statement that he is against our project, ^{אנחנו} make me think that we should try to push for the ^{one of} time being ^{limited objective} first step: Activating ^{one of} the Viking Lander I Modelos in the U.S. computing, simulating on 1:1 scale sampling field. Which items do we have to get (contacts, money etc) in order to get this ^{objective} step ~~executed~~ executed?

Here I plan to approach the science minister of the Israeli cabinet. It would be possitive if you can instruct me with the ~~needed~~ relevant information.

6 May 1983

Ezra Orion
 Midrashat Sde-Boker
 84990
 ISRAEL

RE: Sculpture at Chryse Planitia

Dear Ezra,

I'm still not satisfied that we should give up. In the first place I don't know, for that matter nobody seems to know, exactly what happened. I want the time to conduct my own little investigation in Los Angeles and elsewhere. Besides, we still need to contact other members of the original Viking working group in order to produce a NASA-appropriate command sequence.

Even in a worst-possible-scenario, where the Lander's antenna is oriented toward the martian surface, away from the sky, a reflected signal might work. If there are no transmitters on the earth powerful enough to do the job, it would be conceivable that a 'flyby' space vehicle in the appropriate 'window' or transmission angle, could transmit with sufficient signal strength to bounce a command off of the martian surface and subsequently realign the errant Viking antenna.

If no nation was willing to mount a specific space mission to carry such a transmitter, it is not outside the realm of possibility that a workable transmitter could be 'piggybacked' on the third stage of launch vehicle whose primary mission was to place an unrelated payload in a deep-space, helio-centric (high energy orbit), or geo-synchronous trajectory. On these types of missions the third stage of a variety of launch vehicles, Delta and Ariane among them, continue on into deep space after separating from the primary payload. What's more, piggybacking on them is an already familiar practice in Aerospace circles.

It seems to me that there are just too many possibilities for us to start taking "no" for an answer. They might want to change their minds.

Best in space,

Joe Davis

P.S. - I'm including a small laser-carved-with-light Mars-stone for you.

7 MAY(postscript)

...LATE BREAKING NEWS: NASA RELEASED INFORMATION TO THE PRESS YESTERDAY ABOUT THE FACT THAT VIKING MISSED A REGULAR TRANS-MISSION(LONG SINCE PROGRAMMED INTO LANDER-MEMORY) THAT SHOULD HAVE BEEN RECIEVED LAST WEEK SOMETIME: ANNOUNCING FLATLY THAT THE LANDER IS NOW OFFICIALLY "DEAD". WE"LL SEE. PROBABLY THE SAME ANTENNA PROBLEM. THE RADIO-ISOTOPE GENERATORS WILL LAST UNTILL 1994(see VIKING FACT SHEET).

AT THIS POINT I DON'T THINK I NEED MUCH MONEY TO PURSUE THIS, ALTHOUGH I WILL BE FLYING TO L.A. SOMETIME SOON TO INVESTIGATE. MOSTLY NEEDED IS TIME. I AM DEEPLY INVOLVED WITH THE SHUTTLE PROJECT - I HOPE TO FLY IT AROUND SEPTEMBER OF THIS YEAR. [for that I need money for turbines, triodes, ad infinitum] A MODEL MARS-SCAPE WILL HAVE TO BE CONSTRUCTED(FROM EXISTING DATA) BY US IN ANY EVENT. THIS SHOULD BE A FAIRLY COSTLY AND TIME-CONSUMING ENTERPRISE. THE ORIGINAL U.S.GEOLOGIC SURVEY /NASA MODEL WAS DISMANTLED YEARS AGO. I HAVE FOUND SEVERAL OF THE STONES ONLY, NOW IN THE PERSONAL POSSESSION OF A FEW MEMBERS OF THE OLD VIKING TEAM. PERHAPS I NEED SOME MONEY FOR PUBLICATIONS FROM THE GOVERNMENT PRINTING OFFICE, BUT IT'S NO BIG DEAL. THE MODEL MARS-SCAPE ON THE OTHER HAND WILL PROBABLY BE A BIG DEAL. MAYBE I CAN FIND SOME STUDENTS INTERESTED HELPING US OUT WITH THAT ONE.

- JOE DAVIS

مركز البحوث والدراسات
مؤسسة رابطة المصنفين
مركز البحوث والدراسات

Ezra Orion Collection
Public Art Archive

5/7/83

David Forchgott
Director
International Sculpture Center
Washington D.C. U.S.A.

Dear David,

About a month ago I met Doron Gazit in a Dune hapening, here. He gave me your regard, and informed me that you are planing the S/13 for next Summer in Boston.

אוסף עזרא אוריון

Let me give you an idea, that will be another step in the sculptural process that I try to develop: To include "Space Sculpture" in the Conference program: A panel of Space Sculptures like myself, Joe Daviss and others, and a demonstration of the sculptural act on Mars. Somewhere in Washington exist a 1:1 copy of Viking Lander. With the colabotation of the U.S.A. I guess that it is possible to perform a 1:1 simulation of The Act on 1:1 model of the sampling field that could be built in the conference campus.

The Landers' arm will be activated by a sequence of about 200 radio order broadcasted to its computer. Waiting to your response.

A friend that showed me the May issue of "Art in America", were the Act is reported as Joe Daviss' ... I hope there was a misunderstanding. Enclosed is a copy of a letter to the editor.

A catalogue of the project is in print now. I hope to send it to you at the end of this month.

Sincerely yours,

Ezra Orion.

Midrashat Sde-Boker
84990
ISRAEL.

FRANK E. BRISTOW

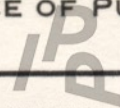
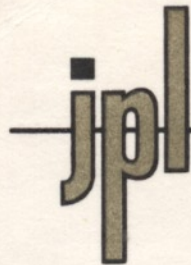
MANAGER

OFFICE OF PUBLIC INFORMATION

JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
4800 OAK GROVE DR./PASADENA, CALIF.

91109

(213) 354-5011



מכון לזיכרון ציבורי
INSTITUTE FOR PUBLIC PRESENCE

Ezra Orion Collection
Public Art Archive

Mr. Frank E. Bristow
Manager
Office of Public Information

August 15, 1983

Prof. Torrence V. Johnson
Senior research scientist

Jet Propulsion Laboratories

Dear Sir,

Thank you for your March 22 letter, negative as it was. And thank you again for your hospitality on August 2 last summer. In order to go ahead with the project of the Sculptural act on Mars I published this booklet which I send here to you.

Realizing the present circumstances I would like to ask your advice on two possible directions:

- 1) Execution of a simulation of the Sculptural act on Mars on 1:1 scale model of the sampling field by one of the Earthbound Landers.
- 2) Combining a sculptural work in the program of the future Mars Rover. At the cliff edge of one of Vales Marineris chasmas. The suggested work is of the character of My Desert sculpture here (see catalogue).

Maybe these directions could progress with a co-operation of the International Sculpture Center.

I would appreciate an instructive and helpful reply

Sincerely

Co: David Furchgott
International Sculpture Center
Igael Zalmona
Israel Museum

Ezra Orion
Sculptor

E. Orion



JET PROPULSION LABORATORY California Institute of Technology • 4800 Oak Grove Drive, Pasadena, California 91109

Mr. Ezra Orion
Midreshet Sde-Boker
Negev
Israel

November 18, 1983

Dear Mr. Orion,

In regards to your proposals in your August letter,
which I only recently received, I can only offer the
following:

1. NASA does not have current plans for a Mars-Rover.
The only possible mission in the next few years is a
Mars orbiter.
2. The only lander currently on exhibition is at the
Air and Space Museum in Washington D.C.
To determine if there is an interest in your idea
you should contact, Mr. Ted Maxwell, National Air
and Space Museum, Washington D.C. 20546.

Sincerely,

Frank Bristow
Frank Bristow
Manager
Public Information Office

המחלקה לחינוך
DEPARTMENT OF EDUCATION

: 117900 / OUR REF.

6/12/83

looking for is a way to
"idea" which materialist
s of young maybe is
any gods. Can you fri
ner? Orion Collection

Please give my regards to Prof. T. Johnson

Sincerely yours

E. Prion

היחידה לחינוך סביבתי. קרית שדה בוקר
טל. 057-88691



JET PROPULSION LABORATORY California Institute of Technology • 4800 Oak Grove Drive, Pasadena, California 91109
December 20, 1983

E. Orion
Environmental Education Unit
Sdeh-Boker Campus
84990

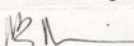
Dear Mr. Orion,

There were studies for a Mars Rover some years ago including several Rovers under development at JPL. But the funding for the studies stopped and the concept of a roving mission was relegated to an indefinite future. But during that period authors and scientists did use our photos and write about a roving mission.

There are studies now for a mission to return samples of Martian soil. Maybe in the '90s. The final plan may involve a Rover.

The head of the planetary office responsible for the planning is Dr. Geoffrey Briggs, M/S EL-4, NASA Headquarters, Washington, D.C. 20546.

Sincerely,

 (for Frank Bristow)

Frank Bristow
Manager
Public Information Office

3 February 1984

Ezra Orion
Midrashat Sde-Boker
84990
Israel

Dear Ezra,

In the months preceeding the demise of the VIKING lander, and continuing through the period in which the lander's fate seemed at all uncertain, I had made considerable progress in unraveling the extremely complex technical and political problems we were facing in what I felt was a collaborative effort to actualize sculpture on Mars.

אוסף עזרא אוריון

I had managed to obtain model command sequences, and was beginning to accumulate data on bit-maps, format, etc., that would have allowed us to write original command sequences to carry out the work. As you know I approached many members of the existing (at that time) VIKING project team at Jet Propulsion Laboratories, as well as members of the original VIKING groups, which were now scattered across the country together with valuable segments of the data we were looking for. Some of these people I approached by correspondence, and some I managed to approach personally.

Ezra Orion Collection

In every document, and in every conversation you can be sure I had considered my work to be on behalf of both of us, as collaborators, and referenced this fact frequently - with industry, as well as with the press, with whom I am often interfacing largely as a result of the Shuttle project, NEW WAVE RUBY FALLS.

I was disappointed at the lack of any reference to you personally in the ART IN AMERICA article, 'Report From Boston', but at the same time I am aware of the tradition of questionable accuracy in the media and am usually satisfied with say, an accuracy of 80%. In this case, I must admit they were at least 50% wrong, but of course, it was not because I had forgotten about you. The reporter deleted that reference; reporters delete alot of references.

In the meantime I had been deluged with letters and phone calls that had their unmistakable intimations about some presumed unethical behavior on my part, which of course was unfounded. Worse, word of this presumed, or should I say progenisis of contention between you and I filtered down from the VIKING office at JPL. Great! people were writing letters in every direction...

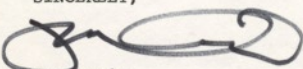
... and needless to say, that coupled with the eminent demise of the lander, such an atmosphere severely crippled my last efforts for sculpture at Chrÿse Planitia, Tectonic, Laconic, or otherwise.

Since then, in the time I have had to think about issues beyond the panoply of physics and electronics for 'RUBY FALLS, I have indeed continued to think in terms of planetary sculpture. I worked out a sandw of computers and machine tools which makes it possible to laser-carve stone or other materials remotely, that is, I can carve a stone that I am thousands of miles away from; ideally, the stone could be on the moon. Also, I have started to develop a thermal engine drive system for planetary crawlers. the engine is based on Nitinol, a nickel-titanium based memory alloy. Perhaps we can have them marching across the Negev.

In another effort, I am planning a trip to Zaire, where I intend to survey a unique volcano: NYIRAGONGO, in the Rift National Park. It is unique in that it is one of two volcanos in the world with a permanent lake of lava. The other volcano is in Ethiopia; inaccessible to any American national. Off the earth, there are various active volcanos on several planets and planetoids. The idea is to do a feasibility study on using the Nyiragongo lava lake as source of magma to cast large earthwork molds excavated from the slopes of the volcano. The castings would subsequently cool, creating possibly the single largest continuous casting ever created; and possibly the only ones in basaltic magma. The cooled castings would eventually become exposed by the processes of erosion, or intentionally, they could be excavated mechanically. I hope to travel to Africa in the company of a planetary geologist, who can help me determine the diffusion rates for the lava, soil density and compaction, etc., so that a realistic situation can be modelled. Now if indeed such a thing could be carried out on the earth, it is certainly large enough in scale to be detected, and materials non-intensive enough to be considered as a possible planetary application for Mars or Io.

. Ezra, I want to work with you in the future. I maintain considerable respect for your perspective and intuition. I think we have only to work out the organizational logistic of confidence and integrity.

SINCERELY,


Joe Davis
fellow, C.A.V.S.

PS: IF YOU WANT COPIES OF
RESEARCH MILES FROM ANY OF
THE AFOREMENTIONED RESEARCH
PLEASE LET ME KNOW

Centerpiece

Shuttle space ready for "New Wave Ruby Falls?"

By Marty Carlock
Special to Globe

Some time next year, Joseph Davis plans to light up the sky with a far-out piece of art — the first ever in space.

It has the potential to be the largest piece of art ever produced — Davis himself has no idea how many hundreds of miles of space it may occupy — and it could possibly be seen by the biggest live audience for any man-made event in history.

Working at the Center for Advanced Visual Studies at MIT, Davis and his colleagues are putting together what he calls "a little box of northern lights." The package will be carried into orbit by a NASA space shuttle mission, and, on command, it will paint the sky with colors over the most populous areas of the earth. He has titled it "New Wave Ruby Falls."

Will it work? "I'm taking all bets," the artist says.

Davis' project is on the NASA launch schedule, and they're accepting his money. Although he's a fellow at CAVS/MIT and has a studio there, like most fellows he receives no funding from the institution. So he's paying NASA \$10,000 launch fee out of his own earnings as a parttime carpenter, motorcycle-repair welder, and freelance commercial artist.

"NASA has a budget payment plan for its contractors, and I'm up to date on the payments so far," Davis reports. How can he do it? "Some people pay that much for a car," he shrugs.

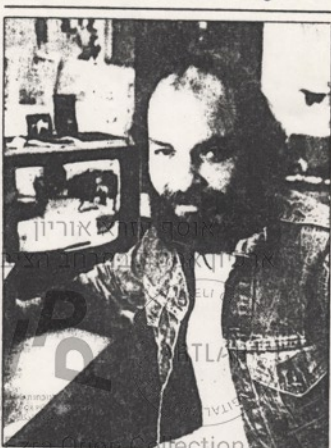
The earliest possible launch date now would be aboard a flight next month, numbered STS Space Transportation System 11, the Shuttle Space Flight Center has told Davis it has openings on at least six other flights next year, so the launch date can be modified depending on when the package is completely tested and approved.

Simply to get on the schedule, Davis has had to overcome a lot of obstacles and answer a lot of questions, such as: Does art belong in space? Will it contaminate the atmosphere? How can you produce northern lights at all? How can you put the apparatus in a package whose maximum size is five cubic feet and whose maximum weight is 200 pounds? And is it art anyway?

Davis fought for six years with NASA to establish the idea that art has as much right to travel into orbit as scientific and commercial ventures. NASA has a "social benefit" policy which decrees that the shuttle can only carry into space payloads that are of practical benefit to society. Davis disagrees with the policy — "It's biased and anti-art," he says — and adds that he can justify his project on scientific grounds if NASA insists.

A camera and a data recorder will be included in the "Ruby Falls" package, and documentation of Davis' work can be used in the continuing investigation of the relationship between the ionosphere and the magnetosphere, he says. "Creating an artwork shows you the shape of the magnetosphere at that time; it's like dying a biological specimen on a slide so you can see it better," Davis explains.

Every project scheduled to go aloft on the shuttle is extensively reviewed, and "New Wave Ruby Falls" has passed all the bureaucratic tests so far. Davis and his colleagues have had one conference with their assigned safety officer at NASA, and he was surprised at the result. "We expected them to reject certain components," said Eric Begger, a graduate student in visual studies who is assisting with the project. "Instead they just asked for more information."



JOSEPH DAVIS: "I'm taking all bets."

GLOBE PHOTO BY JOHN BLANDINO

The contents of the northern lights box make up a physics lab's shopping list: electron gun, turbine, generator-actuator, bearings, capacitors, composite pressure containers, cathodes and anodes, radio frequency shield, auxiliary battery, solenoid initiator, pressure lines and fittings, three-point gas discharge nozzles, capacitor banks and diagnostic instrumentation including magnetometer, thermistor, pressure transducers, electrostatic analyzer, tachometer, data recorder and a 35mm. camera.

The component that Davis' crew thought wouldn't fly is one of three methods evolved for creating artificial auroras: release of chemical payloads. Davis says that the method has been used by scientists doing aurora research in arctic regions, but, in fact, NASA has never approved release of particulates from a package like this one.

Using the chemical particulates isn't essential, because the aurora borealis box will contain the apparatus for making northern lights in several different ways. The primary method involves a deft to laser technology — it creates light by bombarding atmospheric gases with free electrons.

"It's a phenomenon called field-induced drift and ion density," the artist explains. "When atoms in certain gases are excited, the electrons jump into different orbits. When they jump inward, they emit energy, photons, which we can see. The colors produced depend on the kind of gases and the amount of energy involved."

People often ask whether the project could contaminate the atmosphere. Emphatically not, Davis says. "The chemicals, if we release them, will break down and be absorbed in the plasmas, the gases, of the ionosphere. The electrons from the electron gun will be absorbed as well."

The contents of the northern lights box make up a physics lab's shopping list: electron gun, turbine, generator-actuator, bearings, capacitors, composite pressure containers, cathodes and anodes, radio frequency shield, auxiliary battery, solenoid initiator, pressure lines and fittings, three-point gas discharge nozzles, capacitor banks and diagnostic instrumentation including magnetometer, thermistor, pressure transducers, electrostatic analyzer, tachometer, data recorder and a 35mm. camera.

Davis says it will all fit, thanks to technological miniaturization. For instance, the 14-step program necessary for the project to function is contained entirely on a single E-prong computer chip.

The title? "It's about the American adventure, the trans-America vacation experience. When I was a kid, all over the United States you'd see bumper stickers that said 'SEE RUBY FALLS.' I finally did see Ruby Falls — it's at Lookout Mountain in Chattanooga, Tenn. and inside a cave there's a nondescript little waterfall."

"We got permission from the owner to use the name, though I guess it doesn't matter because we added 'New Wave' to imply its contemporary nature. We want to put a SEE RUBY FALLS bumper sticker on the shuttle's external tank. We might get permission because the external tank isn't reusable."

Joe Davis is one of a new breed of artist, one who has forsaken pigment for the aesthetic possibilities of space-age technology. "If the ethic for the artist is to tell the truth," he says, and if we have a technology 500 years old — how can I tell the truth for my time?"

Davis has done laser research at laboratories in Ohio and Wisconsin and has been visiting artist at a number of institutions, including Guilford College, N.C., the NASA Goddard Space Flight Center, New College in Sarasota, Fla., and the Hachbach School of Technik, a technical institution in Hilden, Germany.

Mississippi-born Davis hides beneath his courtly-polite Southern manners a volcano of ideas and nervous energy. He wears a peg leg, thanks to a motorcycle accident two years ago, but he still rides motorcycles. As he sits talking, answering softly, politely, he chain smokes almost without pause and his good leg jags in place as if eager to be off and working.

A dynamo in the studio, Davis uses excerpts not confined to space stuff. He's planning another work called the "Lightning Project," he built on a speck island in the Gulf of Mexico. It's a sculpture designed to attract lightning and generate a voltage that Davis noticed when he lived in Mississippi, an area of high storm incidence. That a lightning bolt changes color (jet yellow) as it approaches the ground.

He uses laser beams to burn glyphs on rocks. The internal carving of transparent material with high-energy lasers is a specialty of his. He's written about it for high-school textbooks. Now he's combining his laser expertise with video graphics and a microwave video transmission (via telephone line) so that he can sit in his studio in Cambridge and draw on his video screen with a stylus — and a laser in a lab in Wisconsin will engrave on rocks what he draws on the screen.

It has tremendous applications for industry: remote tooling of hazardous materials, or handling of tools in space," Davis says. Yet no engineer or industrial designer had combined these technologies and come up with the process.

But what makes "New Wave Ruby Falls" art rather than a scientific experiment? "The nature is beautiful," the artist argues. "Just as you've used a nother to clear a drain, or a screwdriver to open a can, or a saw; tools become another thing and have another function by the explicit use of the non-explicit. The technology in art I want to show that, in America, technology is both acceptable and beautiful and has a right to make a difference."

It has just now become possible to make a difference in the world," he continues. "The natural arts can transcend the limitations of place, and become epics of the act and ceremony of the moment."