

Jean Dupuy

Born Moulins (Alliers), France, 1925
Resident New York City

A&T

During Jane Livingston's April '69 New York trip, several people suggested that she make a point of seeing Jean Dupuy; it was finally at Tony Smith's suggestion that she visited him. We knew of Dupuy at that time only through his participation in the Museum of Modern Art's Machine Show exhibition, in which he was represented by a work called *Heart Beats Dust*. JL saw *Heart Beats Dust* during her April visit to the artist's studio in the Bowery. According to Dupuy's description, this work consists of "a two-foot cube of glass in which a pile of dust—powdered pigment—rests on a rubber membrane. The machine includes coaxial speaker, a tape recording of heartbeats, or an electronic stethoscope so one can hear one's own heart, with various shutters and lenses. Moved by the vibrations produced by the heartbeats, the dust shapes and reshapes itself into strange formations, while a certain amount rises in suspension and is illuminated by a beam of light so that a pyramid of dust is defined." JL learned that Dupuy would be free and eager to work on a project for A & T if something could be arranged with a suitable corporation.

In June, Dupuy sent us a number of proposals for art works, which we forwarded to the Ampex Corporation for consideration; we requested Ampex's Dr. Charles Spitzer, with whom we had dealt for several months in trying to arrange a collaboration, to advise us regarding their interest in having Dupuy tour Ampex.

We were aware that not all of the proposals were appropriate to Ampex in terms of their technological capability, but hoped that one might interest them. The proposals are as follows:

Project: SPARKS

Words spoken into a microphone are converted into electrical impulses, then amplified to a voltage strong enough to generate sparks upon a metal plaque (bursts variable according to the phonetic properties of the words).

Technology: based upon the same principle as the color organ or the phonetic typewriter (I.B.M.) which will transcribe spoken words directly.

Project: INVERSE/REGENERATIVE

1. A labyrinth (realization simple, of lightweight, honeycomb cardboard; noise of electronic feedback within) which will lead to the chamber.
2. A room isolated from all sound, for one person at a time.

Put in this condition, totally isolated from all exterior noises, one can hear the physiological functions of the body (sound of heart, lungs, blood circulation, etc.).

Project: PROBLEM IN RE AERONAUTICS

An airplane flying at supersonic speed creates a cone of vibrations which begins from the nose of the plane and extends backwards in ever-enlarging diameter. At the moment when the cone touches the ground, it provokes the well-known boom by the intense accumulation of these vibrations.

Problem: How possibly to make this cone apparent?

Project: 'L 'INGENIEUR POMME' (THE ENGINEER APPLE)

1. A word is spoken into a microphone: Apple.
2. Apple is repeated by an echo chamber—A.P.P.P.P.P.
3. An audio-electronic system transforms the sound repeated by the echo into ultra-sonic sound.
4. Two ultra-sonic beams, projected by magneto-striction rods into a transparent sphere, diameter 4', meet at a certain point.
5. At this point, an apple is placed. It bursts.

Instrumentation:

Section 1: microphone

10 watt amplifier
loudspeaker
reverberation circuitry*

Section 2: audio to

5-kw amplifier at 30 kHz
3 magneto-striction transducers*
fixtures to mount and focus transducers*

Section 3: construction time for starred (*) items above

'APPLE' PROJECT

PURPOSE

The purpose of the technological phase of this project is:

1. Provide controlled reverberation of the spoken word,
2. Supply by transduction and gain, ultrasonic energy sufficient to shatter a spherical object, such as an apple,
3. Devise and construct the instrumentation and apparatus to carry out 1 and 2.

The subsequent description of the Project will be divided into sections corresponding to the above division.

SECTION 1: REVERBERATION

The action will be initiated by a spoken word or phrase. This will be picked up by a microphone, amplified, and supplied to a loudspeaker. By conventional controlled reverberation circuitry, a portion of this will be fed back

to the input and the spectator (participant) will hear a gradually diminishing repetition of the input sound.

SECTION 2: ULTRASONICS

Since inadequate energy is available in the audible portion of the spectrum, it will be necessary to transform the input into some other energy form to accomplish the desired effect. It has been decided to use ultrasonic devices. A portion of the audible output in 1 is heterodyned to provide an ultrasonic input. This is amplified to a level of several kilowatts and applied to two or three magnetostriction transducers. These will be aimed and focused on the apple. By adjusting the level of the input, and setting the time interval, the precise time after the word or phrase is uttered at which the apple is shattered can be determined. It is proposed that the transducers be located several inches away from the apple, but subsequent considerations may require contact.

SECTION 3: INSTRUMENTATION

The following apparatus will be required:

Section 1: microphone

10-watt amplifier
loudspeaker
reverberation circuitry *

Section 2: audio-to-ultrasonic converter

5-kw amplifier at 30kHz
3 magnetostriction transducers*
fixtures to mount and focus transducers*

Section 3: construction time for starred (*) items above

Shortly after these proposals were sent, Dupuy sent us an elaborated version of *Sparks*. [1] We felt this proposal to be the most likely possibility for Ampex, and thus sent it on with the following letter to the company president from Hal Glicksman:

Dear Mr. Roberts,

Ampex has shown interest in our Art and Technology project from its germinal phase in late 1967, and still no artist is at work in your company. After numerous artists have toured and submitted proposals, the choice has devolved upon a project by French artist, Jean Dupuy, called *Sparks*. Dupuy was one of six winners in a competition for artists and engineers who were included in the Museum of Modern Art's exhibition, 'The Machine as Seen at the End of the Mechanical Age.' This exhibition is currently on view at San Francisco Museum of Art.

Dr. Spitzer has seen the project and is concerned that a skilled electronics technician will have to work for 2½ months to complete the project. He has asked us to make a formal request to your office for this time. A

technician's time is precisely the resource that any artist would most need while working at Ampex.

If you could satisfy Dr. Spitzer's concern that his own department would not have to carry the task through unaided, we would be very grateful.

Ampex's response to HG's letter, written by Executive Vice-President Arthur H. Hausman, was negative:

Dear Mr. Glicksman:

Mr. William E. Roberts has forwarded to me your letter of 24 June 1969. I have reviewed this matter with Dr. Charles Spitzer, and discussed it with Mr. Roberts. It appears, from all the information which I have been able to gather that Mr. Dupuy has made a number of proposals which, while certainly interesting, places us in the somewhat embarrassing position of essentially constructing for him that which he, as the artist, in my judgment should be more responsible for creating. From discussion with Dr. Spitzer, some of the artists who toured Ampex appear to fit into the category reflected by Mr. Dupuy's proposals—i.e., they have an idea but they essentially want Ampex to do the bulk of the work in creating the art form, while other artists who have toured Ampex have left the impression that if they were to work in our company they would, in fact, be much more involved in the creative work itself than has been indicated by Mr. Dupuy.

Accordingly, I would suggest that since the success of this program depends upon a mutual understanding and a good rapport between the sponsors, the artist, and the company, that you seek to find another artist satisfactory to you, but with whom we believe we will find a better relationship than is indicated in the case of Mr. Dupuy.

Dupuy's proposals were not sent to other corporations—by this time most of those companies which could have implemented his works were either matched with other artists or had proved uncooperative. We relegated his file, with numerous others, to pending status.

In September, the Cummins Engine Company of Columbus, Indiana, having heard about A & T through the news media, telephoned the Museum to inquire about the program and perhaps offer their participation. We sent a packet of literature, with the brochure describing the terms of corporation participation, to Cummins' Public Relations representative Dan Graves. Graves telephoned within a few days to express Cummins' interest in becoming a Patron Sponsor; contracts were sent from the Museum. We began to think seriously about artists whom we felt might work with diesel engines. It was a problem requiring imagination. Through Dan Graves, whom JL spoke to on several occasions between mid-November, when the contract was finally signed and

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Jean Dupuy
1969

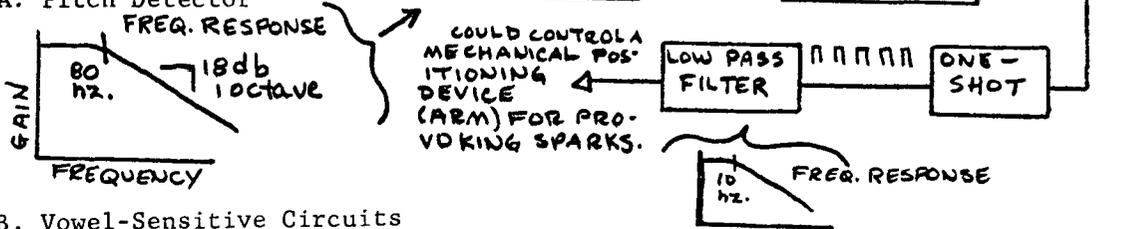
PROJECT: ~~THE ROOM~~ SPARKS

Words spoken into a microphone are converted into electrical impulses, then amplified to a voltage strong enough to generate sparks upon a metal plaque (bursts variable according to the phonetic properties of the words).

Technology: Based upon the same principle as the color organ or the phonetic typewriter (I.B.M.) which will transcribe spoken words directly. Specific information results from conversation with Mr. Cecil Coker, Bell Labs, Summit, New Jersey.

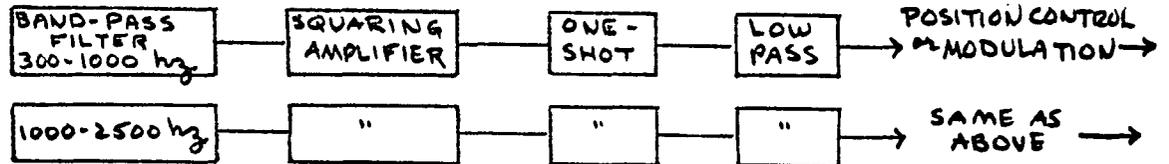
I. Speech Recognition Ideas

A. Pitch Detector

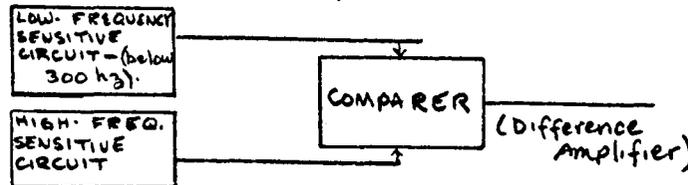


B. Vowel-Sensitive Circuits

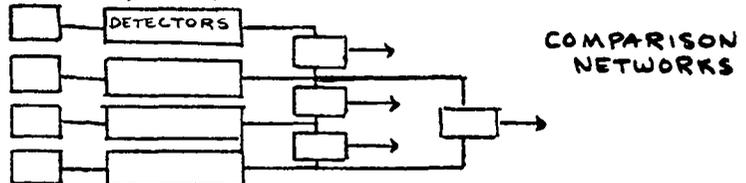
(Vowels are identified by resonances of the mouth - circuits can be built to select usually one resonance per circuit - a frequency meter system like the pitch detector can determine frequency of that resonance.)



C. Voiced - Voiceless Decision (Differentiation of Consonants)



D. Narrow Band Filters (say 300 Hz. wide) centered at various frequencies (300-500, 500-800, 1500-1800, etc.)



II. Spark Generation

A. Tesla Coil -- Corona Discharge (especially corona discharge loudspeakers used in microphone calibration).

B. Modulation of an Arc Welder

1. A-C Arc Welder with silicon controlled rectifiers (doubtful).
2. Modify the control circuits of a D-C arc welder; rapid on-off switching of welding machine controlled by SCR (silicon-cont. rect.).

Participation of public: 1. Properties of the spoken word (pitch, vowel- or consonant-structure) translated into varying bursts of sparks.

2. Possible manipulation of stylus which will provoke sparks.

returned, and January, we were pressed to consider a number of artists favored by Cummins' President, J. Irwin Miller, himself a collector of art and energetic promoter of corporation support of the arts. (The town of Columbus is famous for its many public and private buildings designed by eminent modern architects; Miller has been chiefly, if not solely, responsible for this.) The artists mentioned repeatedly as being foremost on Cummins' list of preferences were Vasarely, Warhol and Lichtenstein. The two latter were of course already matched to corporations under Art and Technology; Vasarely had been involved early in the project with a proposal studied by several companies, but was no longer under consideration. Aside from these factors, however, it was for obvious reasons not easy for us to envision any of these artists as likely candidates for Cummins. The artist who did come to mind as a possibility was Jean Dupuy. In late October, we had received a new proposal from Dupuy, via his friend Irene Winter in New York:

Project: THE AUTO

In a large space (hall), very dimly lit, an automobile—situated in the center of the room and slightly raised (the wheels in space). At the steering wheel, a driver. This latter will start the motor and will utilize alternately or simultaneously different energies of the vehicle which will in turn make 'sculptures' appear in different parts of the hall, related to the four natural elements.

AIR

Burned gas leaving the exhaust pipe will be conducted by an air-tight tube into a closed space, transparent on three sides and having an evacuation chimney. Within this space the vapors of the gas will be made visible by a luminous process (to be specified).

FIRE

From the rim of one of the two hind wheels a transmission band is relayed to the hub of another wheel equipped with a tire and placed perpendicular to a metal plaque in such a way as to create friction between the two. The point of a nail, fixed inside, extends from the wheel. The contact of metal plaque and nail on the plaque and an explosion of sparks each time the brake is hit.

EARTH

In a closed and transparent space, some kind of powder or dust made from earth will rest on a membrane of rubber stretched over a speaker. The vibrations of the motor, amplified by the acceleration and transmitted to the speaker by a simple electronic system, of which the volume will be controlled by the rotation of the steering wheel, will set the powder in motion—visible only in the beam of the two headlights which will thus create two horizontal cones of dust.

WATER

Perhaps utilize either the water from the windshield-wiper system or the water of the radiator (to be studied).

We contacted Dupuy in New York to mention the availability of Cummins. Dupuy and Miss Winter traveled to Columbus in January, toured the plant, met with Mr. Miller, and returned to New York feeling enthusiastic about the prospect of a collaboration. Dupuy said of his first meeting with J. Irwin Miller, "I described the engine project to him, and he understood it immediately. He is a charming man—shy, after all, like me. Very quick and intelligent. I made him a little drawing, and he said, 'O.K.' Just like that. 'Beautiful.' " It was decided that Dupuy would move to Columbus on March 1 and expect to reside there for three months.

After this initial visit to Cummins, Dupuy wrote up his proposal, which he called *Fewafuel* (1970):

A Cummins diesel engine will be shown in working condition. The public participates by sitting in a driver's seat and operating certain controls, such as pedal and clutch. The four natural elements: FIRE, EARTH, WATER, AIR, which, either as sources of energy or as wastes, are part of the functioning engine, will be made visible with minimal elaboration.

1. To respect the form of the engine.
2. To indicate the basis in Nature of the engine's system.
3. To sense the power of the engine by sound.

Clearly this conception derives from the *Auto* proposal which preceded it, and which Dupuy had actually presented to Renault in Paris, but which was considered too ambitious in scope for Renault to execute at that time.

Dupuy worked steadily at Cummins from March 1 through the end of May. He was received with extraordinary solicitude by the Cummins personnel. The first person Dupuy was put in contact with was a Swiss engineer, Willy Henny, the head of one of Cummins' engine divisions. Henny was to work closely with the artist during the entire development of the project. On the first day they met, according to Dupuy,

We spent the entire day talking. This man, who is absolutely remote from the art world, understood very well what I wanted. He was interested in a specific problem I presented, which was to make a window in the engine showing the combustion chamber while the engine was working. This represented a difficult technical problem to be resolved . . . I didn't know whether we could show the fire. I thought it might be impossible. I knew that there is no fire in an engine, except in the exhaust

part of a gasoline engine—but not in a diesel engine. So I thought the smoke would have to represent the fire, and the earth would be the carbon monoxide residue.

Henny was able to resolve this problem; in the completed engine, each element envisioned by Dupuy is displayed fully.

Cummins organized the Dupuy project to proceed like clockwork. Besides Henny, two other engineers worked daily on the development of the engine, and toward the end of the collaboration, three shop workers were involved on a full-time basis. The following memorandum, one of many, conveys some idea of the magnitude of the operation, and its logistical complexity:

Status Report—V-470 Engine
For Art Exhibit

The program is currently running slightly ahead of schedule. It is understood that a commitment has been made to representatives of the Los Angeles Art Museum who wish the 'package' early in May and the schedule of March 17, 1970, has been determined to accomplish this.



Following is the status of items on the March 17 schedule:

- Item 1—Assemble and mount engine and radiator—complete
- Item 2—Water flow tests—complete
- Item 3—Evaluate one bank operation—complete
- Item 4—Evaluate quartz crystal in cylinder head—Parts are in machine shop. This phase will be completed when unit is assembled. Expected completion date—5-15-70.
- Item 5—Mount complete unit—Expected completion date—5-1-70.

Item 6—Operate on test cycle—Planned completion date—5-29-70.

Item 7—Update unit and prepare for shipment—Expected completion date—6-5-70.

Item 8—Obtain or fabricate sub-base—Complete.

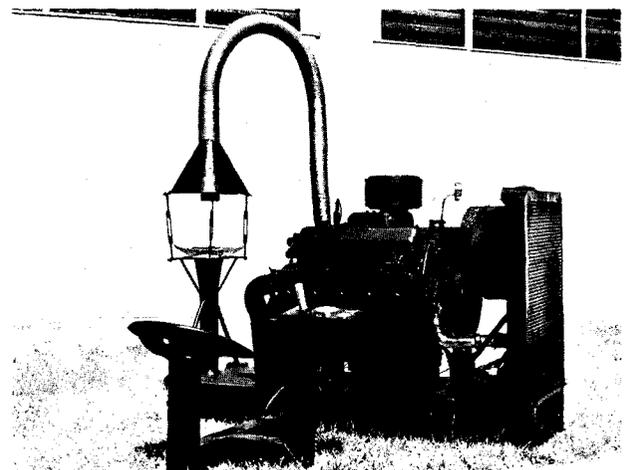
Item 9—Design and obtain cylinder head insert—Expected completion date—4-27-70.

Item 10—Obtain fuel tank, batteries, and controls. Fuel tank, battery eliminator, and electrical controls are on order. The throttle control will be developed when the unit is built.

Item 11—Design and obtain exhaust viewing chamber—Chamber has been obtained. Mounting parts are designed and a price is awaited from a local shop. Expected completion date—5-1-70.

Material for the exhaust system in the component area is held up because of labor problems in the trucking industry. If material is not received this week substitute material will be used so that the system is operable by May 1, 1970.

In early May, Jane Livingston stopped in Columbus for two days en route between New York and Los Angeles, and saw the *Fewafuel's* maiden voyage. The black painted engine was not yet completed, missing still the inverted bell jar which would collect carbon debris and thus represent the "Earth" element, and the window which would provide a glimpse of the fuel in combustion, thus "Fire"; but the other two elements—water, gushing through a section of glass piping; and air—being the fan system—were in evidence. Perhaps most conspicuous was the element of sound, which was overpowering. The only device finally incorporated to allow spectator participation was a throttle with which one could speed up or slow the rate of engine turnover.



Dupuy's final statement, or description, of the work, is essentially a simplified version of his earlier proposals:

Fewafuel

A diesel engine will be shown in working condition. The four natural elements: FIRE, EARTH, WATER, AIR, which (either as sources of energy or as wastes) are part of the functioning engine, will be made visible with minimal elaboration.

The public will participate by sitting in a driver's seat and operating a throttle.

In several respects, the Dupuy/Cummins collaboration was singular in the context of A & T. Dupuy, unlike many of the other artists, lived and worked in the corporation for three months, without interruption, and he made a distinct impact, not only on the corporation but on the community of Columbus by his presence there.

During the first two weeks of Dupuy's residence in Columbus, Cummins rebuilt his *Heart Beats Dust* piece, and arranged for it to be shown publicly in a local high school auditorium. The artist also presented two other works, one involving projected slides, the other film—*Paris-Bordeaux* and *Central Park*, both made in 1969. These presentations were received with lively interest by the community.

Dupuy said later,

For the first time, I was working on an art project which involved a whole town . . . I met a great many people who asked, 'What is your project? What are you doing with an engine?' These people were waiting for the results. I showed *Heart Beats Dust* and two other works in local high schools. This town was really involved in a piece of art . . . for the first time. That was terrific—because for me art is quite dead. The art world is so

small, actually, that society generally is not concerned . . . It was for me a new relationship between art—my art—and society.

It was difficult for me sometimes. The second day I was there, I was arrested by the police, when I was walking at night. I suppose it was because of my long hair, etc. But I wanted to be visible, not invisible, precisely for the reason that I am an artist, and I want to *push* people in the direction of art. These people, you see, are so far from my own philosophy, if I have one . . . But finally it worked. By the end, the people were receptive. Just before I left, I presented my *Paris-Bordeaux* work in a high school gymnasium, and it was a success.

The collaboration between Dupuy and Cummins resulted in what is certainly the most literal esthetic embodiment of a particular industrial product or technology produced under A & T. Rather than using a specialized process, or combination of techniques, as means to an essentially nonmimetic esthetic end, Dupuy chose simply to work with a functional machine, allowing it to remain essentially integral. He said,

My intention has been to escape an esthetic point of view—thus I show the engine as it is . . . The engine has a certain reality. The car or the truck is probably the most usual object of our time. The engine is also probably the primary image of the capitalist economy . . . [But] to show the engine is to show nature, not just technology . . . It is the humanization of a technological thing. I destroyed the function of the engine, and transformed the fuel, taken from the earth, into earth again. Earth to earth—that's too Biblical—but that's what I did.

Jane Livingston