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PROBING ALIEN WORLDS

EXTRATERRESTRIAL VIDEO

EDITOR'S NOTE: O n June 6, 1987, a Los Angeles PBS television station, KCET-28, aired an astonishing 30-minute show simulating the contact of an unmanned probeship with an alien "planet" in the Alpha Centauri system. Entitled "California Stories: Contact," the program was produced using a battery of Amigas and supporting graphics/video software. Centering on the work of CONTACT—a group of prominent scientists, aritists and science fiction writers that meets annually to discuss human futures in space and possibilities of extraterrestrial life—the PBS show filmed the group's March 1987 conference, which culminated in the Amiga-generated probe sequence. The finale—the reconstruction of an alien being from an unearthed skull—was both a haunting experience and a striking display of the power of the Amiga.

As Harv Laser, moderator of the Amiga Forum on PeopleLink, remarked in a message posted after the show, "The program . . . makes the heaviest use of Amigas I have yet seen in any aired program . . . it is well worth 30 minutes of your time, not only for the subject matter, but to see Amigas actually being used on a television show to do something, instead of just sitting there looking like high-tech props."

A co-host of CONTACT—Joel Hagen, a graphics artist responsible for much of the Amiga work in the program—shared with us details of this fascinating project . . .

by JOEL HAGEN

A1: Position and orbit of Planet Achilles (far right) in Alpha Centauri System

A5: Land masses on the planet—with lovely ragged coastlines—are seen against ocean background.

A9: Close-up view of site area as skull (bottom right quarter) is composited into landscape.

T

he 1987 edition of the CONTACT conference in Aptos, California, proved to be as fascinating an exercise in visualizing the possibilities of life in outer space as anyone is likely to experience. And it was a team of Amigas and computer artists who would turn this annual gathering of artists and scientists into a remarkable documentary exploration of the prospect of extraterrestrial life.

I had been using the Amiga primarily for graphics. I did a series of astronomical renderings during the 1986 Voyager encounter with Uranus (see *Amiga World*, Sept./Oct. 1986, p. 26), and recently I had illustrated science fiction books using DeluxePaint II and Digi-View. I had planned to bring my Amiga to CONTACT to use in place of a sketchpad during the fast-paced brainstorming sessions. It soon occurred to me that I had a unique opportunity to field test this personal computer as a "universal tool" to handle all our needs.
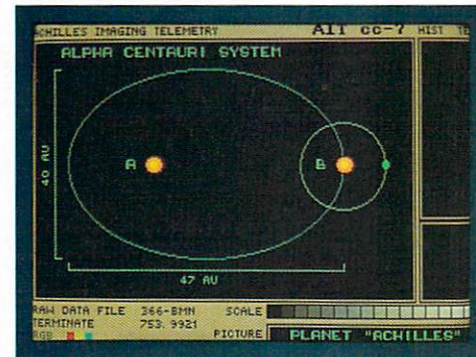
With the Amiga, we could replace sketchpads and chalkboards with graphics and CAD software, typewriters with word processors, orientation sheets with computer slideshows and so on. We could even do the mailing lists, letter writing and other business on the same system. Support from all fronts was enthusiastic. I soon had assurance of a powerful range of tools for the experiment.

In addition to academic symposia and workshops, the focus of the conference was to be a creative experiment in which participants would be divided into two teams. One group would create a future spacefaring human culture. The other group would create an alien planet and populate it with a culture-bearing life form. The

Right: Probe Series A

APPROACH TO

PLANET ACHILLES

finale of the conference would be a meeting of the two teams, acting out a contact scenario.

One of my pre-conference tasks was to create clear visual designs of the human spacecraft. I used the Aegis Draw Plus CAD package to design a huge spherical ship conforming to guidelines suggested by members of the human team. Draw Plus is an interesting package. The display you see on the high-resolution screen is only a representation of the drawing—the coordinates are independent of the screen. If you want to zoom in, the lines remain the same thickness, the curves remain true and detail suddenly jumps out at you. I had fun creating sections of hardware, shrinking them to fit on a dish antenna I made, then shrinking the whole assembly down to store it. I later added it as a small detail on the drive section of the ship. It looked as good on the 640 x 400 screen, and when I zoomed in on that section, suddenly there was a screen full of sharp, new detail. ►
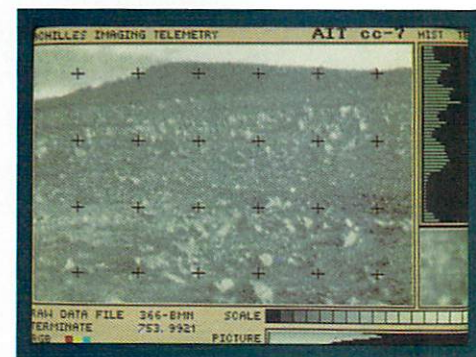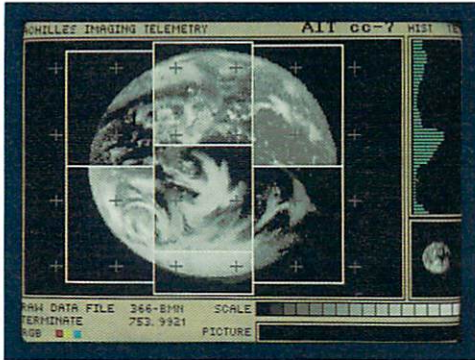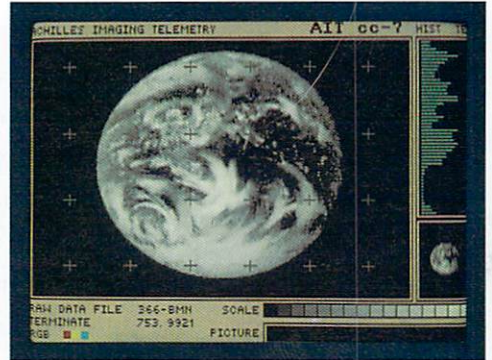
A2: Close-up of first isolated view of Achilles from Earth probeship.
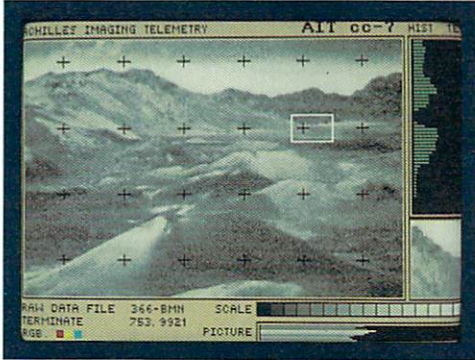

A3: Framework overlay delineates a variety of topographical sectors of the planet's surface.
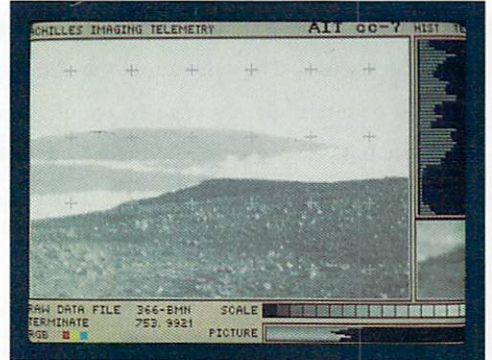

A4: As probeship approach continues, details of surface start to become more definite.
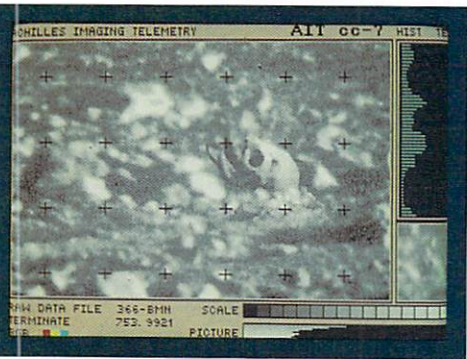

A6: Textures of landscape become well defined as probeship moves quite close to the surface.

A7: White rectangle at upper right in further close-up shows site area where skull will be found.
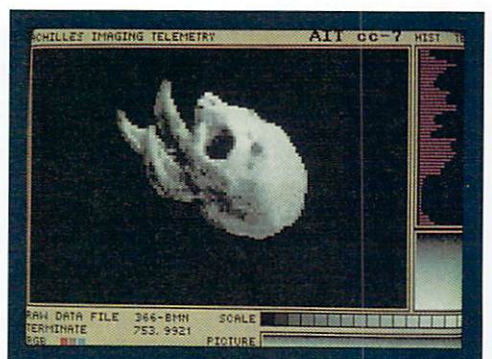

A8: Area of detail from previous frame reveals site area as rocky, barren landscape.

A10: Close-up of the alien skull, now clearly recognizable in the rocky landscape.

A11: Animation sequence continues as skull apparently begins to be removed from surrounding image.

A12: Details of background are completely cleaned up, leaving only the alien skull.

My next task combined sculpture, photography and computer art in preparation for representing the alien planet. Using work from the alien team, I sculpted the creature and made a full-size model of its skull (see Probe Series B photo sequence). I digitized these with Digi-View, storing many images from all angles on disk. I also digitized photos I had shot in Hawaii of barren basalt terrain at 14,000-foot elevation. These would serve as suitably desolate alien landscapes (see Probe Series A photo sequence, A6–A9).

Using DeluxePaint II, I cleaned these pictures up, removing extraneous backgrounds from the models and making palettes consistent. The combination of Digi-View and DeluxePaint II is a favorite of mine. For digitizing, I picked up an old black-and-white RCA home video camera and found it very sensitive to light. I get clear pictures without using intense lights to illuminate my subject. I usually set the Digi-View sharpness up about +5 for a little extra detail, and I hold it there through an entire sequence of images for a consistent look. The only annoying thing about this otherwise fantastic digitizer is the shuffled palette it gives you when you digitize in black and white. This palette does make the menu bars easy to read when you load such an image into DeluxePaint II, but it cripples features like "shade" and "blend" that require a sequential scale of values to operate properly. You get around the problem by bringing up the palette in Deluxe Paint II. Use "spread" to sequence the values from black to white, then "remap" the picture to the new palette before saving it.

Right: Probe Series B

RECONSTRUCTING THE ALIEN BEING

GEARING UP FOR THE JOURNEY

Armed with this preliminary scrap file of extraterrestrial images on disk, I arrived at the conference. The computer room was open 24 hours a day, and by the end of the first evening, that room was packed with hardware, cables, video gear and glowing screens. By the end of the weekend, it looked like a flight control center.

I was soon joined by CONTACT's other computer artists. Keith Doyle was working on sound synthesis and alien speech in addition to graphics and animation. Darrel Anderson was doing beautiful 3-D animations of space probes. In short order, we had five Amigas up and running with a couple of expansion RAM boards, a hard disk drive, a couple of printers and a spare high-persistence monitor. ▶
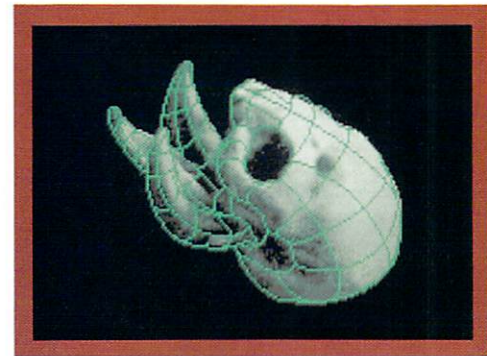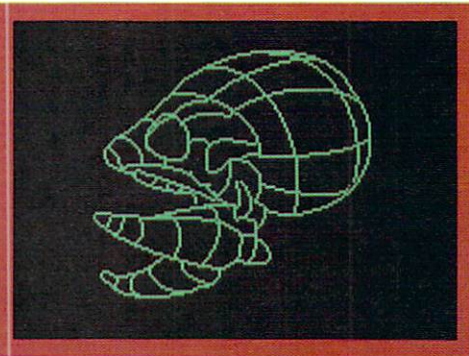

B1: Partial wireframe representation of skull begins, superimposed on solid skull.
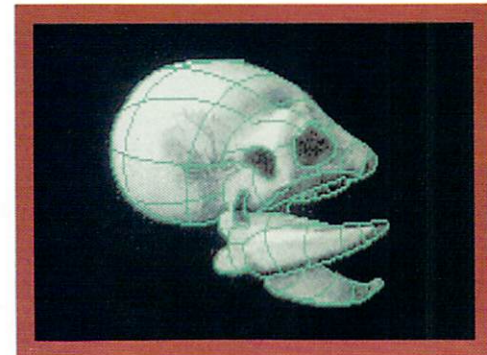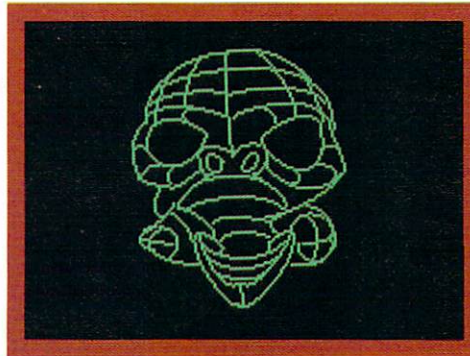

B5: Removal of wireframe structure begins, as skull has rotated to full right view.
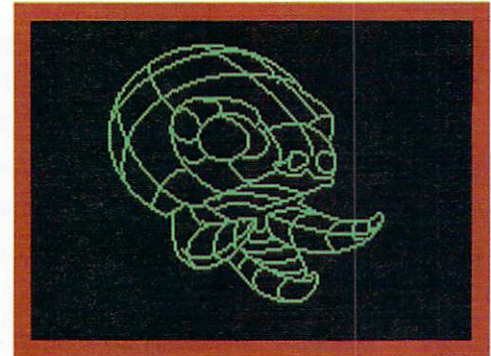

B9: Alien head is now fleshed out using sculpting techniques to texture skin.
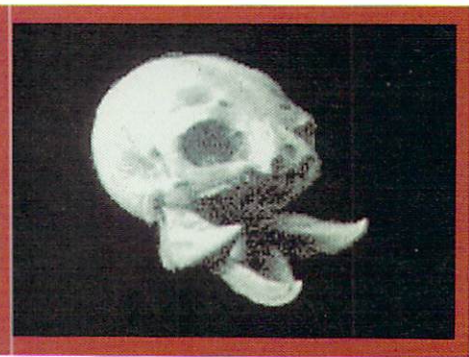
B2: With curved-line feature of DPaint, wireframe representation of left view of skull is completed.
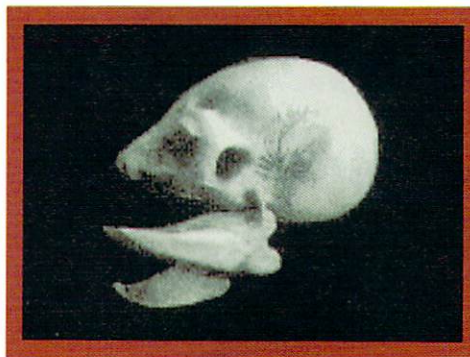

B3: Wireframe representation begins rotation to full head-on view.

B4: Animation sequence continues with wireframe rotation moving toward right view.

B6: Animation sequence now reverses toward left with skull intact.

B7: Full rotation of solid skull now complete, returning to original left view.

B8: Musculature for alien head is painted using DPaint's "fix background" mode.
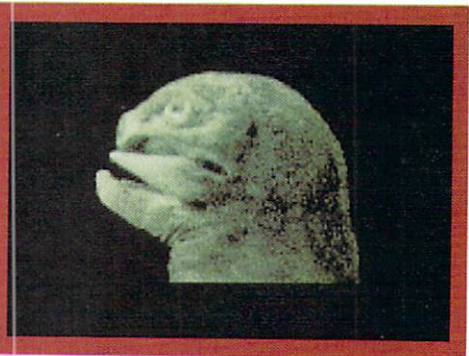
B10: Color is now added to the completed, fully-textured alien head.

B11: Final animation sequence of the alien head begins with rotation right.

B12: Head-on view of the fully-reconstructed alien creature from Planet Achilles.

By the second day of CONTACT, we were rolling at full speed. The alien team was supplying us with data that we translated into charts and animations to simulate telemetry for the human team. I used DeluxePaint II to create false color orbital views of the planet the human team was "approaching."
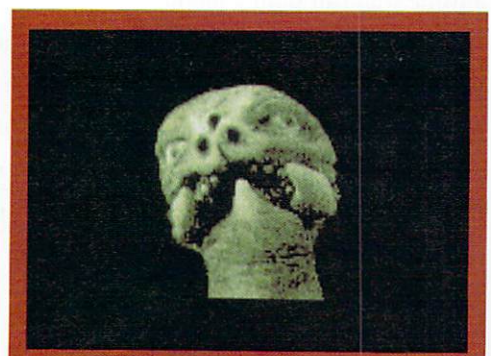
Using yellows and greens, I isolated a palette range from bright yellow at one end to dark green at the other. I filled the entire screen with dark green, then made a one-inch circular brush. Using the "shade" feature, I rapidly moved around the screen, alternately using the left and right mouse buttons to shade up and down the selected palette. Making the brush smaller, I continued the process. In less than a minute, interesting "aerial" views of random landscapes began to emerge from the smoothly graded color areas. Finishing details of fjords, islands and channels were done with a yet smaller brush (see Probe Series A3–A4). The final step was to fill the large dark green areas with blue. This "popped" the "land" masses out against the "ocean" background, leaving beautiful ragged coastlines, very fractal in appearance (see Probe Series A5). I am continually impressed with DeluxePaint II. Nearly every project I do passes through that paint system at some point. I can't imagine the Amiga without it.

The conference attendees were loving the Amigas. Throughout much of the day, the audience was involved with the main conference program, but at night the computer room was standing room only. A popular program running on one of the machines was a version of "Animal" Kieth Doyle had rewritten for the Amiga. We changed the prompts in such a way that users seemed to be consulting a vocational guidance computer that suggested various functions they might perform aboard a colony starship. By the end of the weekend, there was an extensive and interesting database.

We found two pieces of software that were used to greater effect after, rather than during the conference. The data accumulated by our vocational guidance program was well suited for entry into the Expert System Kit—a program that lets you establish a set of rules, then functions as an expert, to be consulted for logical answers on the subject. The second program, Infominder, is designed to store and access information. It creates a hierarchical structure of documents and graphics available through menus and outlines. Entering the information can be quite a project, but the results are clean, powerful and easy to use by anyone who can push a mouse.

Another program popular at CONTACT was Aegis Animator. This is probably the most instantly gratifying animation software on the market. Anyone can sit down and use the morph feature to create colorful moving and changing shapes in minutes. We used one of the digitized alien models with Animator to put the jaws and mouth parts in motion. Cutting the jaws out as windows, we laid out movement paths for them to follow in an endless loop. It worked pretty well.

ALL SYSTEMS GO: FILMING THE PROBE SEQUENCE

The television crew was beginning to look anxious when they came to check our progress. They were waiting for the end of the conference to shoot the computer room sequences,

PRODUCT INFORMATION

AEGIS ANIMATOR
Aegis Development
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$139.95

AEGIS DRAW PLUS
Aegis Development
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THE EXPERT SYSTEM KIT
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INFOMINDER
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Austin, TX 78759
$89.95

and I could see they were wondering what we could put together in the time remaining. I wanted to simulate a realistic space-probe telemetry sequence on the Amiga. The Voyager encounter I had witnessed at Pasadena's Jet Propulsion Laboratory had made a vivid impression on me. I wanted to capture something of that flavor. I intended to show the approach to the planet, penetration of the atmosphere, survey of the surface, discovery of an alien skull and simulated computer modeling of the living creature based on analysis of the skull. I wanted it to look real.

I needed to be able to use the full palette, not be limited to eight colors. I needed to generate text, I needed page-flipping control over partial screens without disturbing the rest of the display, and I needed custom control over the way pictures were displayed in order to simulate a telemetry scan. I knew from experience that none of the software available could handle this. Keith Doyle, however, had been developing a display and animation language called The Director (which he has since developed into a remarkable commercial package). When I talked with him prior to the conference, he seemed confident that The Director could produce all the effects I was after. He brought a beta version with him to CONTACT and showed me how to use it.

I quickly became a believer. Simple commands similar to BASIC language statements controlled everything. It was possible to build up a very complex display in easy stages. The probe sequence gradually took form. I used DeluxePaint II to composite the skull into the rocky landscape (see Probe Series A8–A10). Keith took this and animated an impressive sequence in which the computer seemed to remove the skull from the surrounding image (see Probe Series A11–A12). While he worked on this, I used the curved-line feature of DeluxePaint II to draw wireframe representations of the skull (see Probe Series B1–B5). I painted musculature for the alien head (Probe Series B8) using the "fix background" mode to keep a skull intact as an underpainting while I worked on top of it like an overlay. These images were packed into four screens for a page-flipping animation in which the wireframes rotate, are analyzed and rotate back as solid skulls.

The imaginary modeling of the alien started from the buried skull and worked through wireframes and musculature to the fleshed-out creature (see Probe Series B9–B12). The sequence ran flawlessly to cheers from the group packed around the monitors. At that point I knew we had something solid for the PBS crew. The Director had more than lived up to Keith's claims. We had a visually exciting computer film that illustrated dramatically the thread of the CONTACT conference.

On the final day, the crew filmed the computer room in full operation. They were also able to take advantage of the Amiga's direct video output. The entire probe sequence, from planet approach through alien modeling, was recorded onto tape from a 512K Amiga 1000 in one long, real-time take. Initial reaction to the first PBS airing of the probe sequence, and indeed the entire conference proceedings, was remarkable. CONTACT had provided a hectic but fascinating experiment in using the Amiga for a full variety of conference operations. Clearly the Amiga had more than lived up to its claim to be the best desktop video computer on this or any other planet. ■