

RENDERING
REFRACTIONS
SHADOWS
MARKERS
LIGHTING
COLORS
REFLECTIONS
MODELS
GROOVES
RIDGES
EMBOSSING
TESSELATION
CONSUMER
PRODUCTS
SCULPTING
RAYCASTING
ANIMATION
TRIMMING
CUTTING
FILLETS
PROJECTIONS
STITCHING
MATERIALS
T-JUNCTIONS
PENCILS
CORNERS
TRACING
ENCLOSURES
ROUNDING
TANGENCY
MASKS
LAYERS
TEXTURES
SKETCHES
SHADOWS
DIALS
SETS
CONTINUITY
CURVATURE
PLANES
MOLDS

STUDIO V7

PERFECT
FORMS
PERFECT
SURFACES

Alias | **wavefront**

A  Silicon Graphics Company



CONCEPT SKETCHING & MODELING: KEEP IT SIMPLE

Sketch, draw, create. StudioPaint 3D™ gives you the most advanced digital tools imaginable – clean, responsive pencils and airbrushes – allowing you to capture your design ideas. And present them with all the looseness and emotion of traditional markers and paper.

Then import your 2D sketch into Studio™ to build a 3D model. Use perspective matching – new in V7.0 – to quickly orient your sketch. Then use construction planes and curves, to easily trace key character lines and build a 3D model of the overall form.

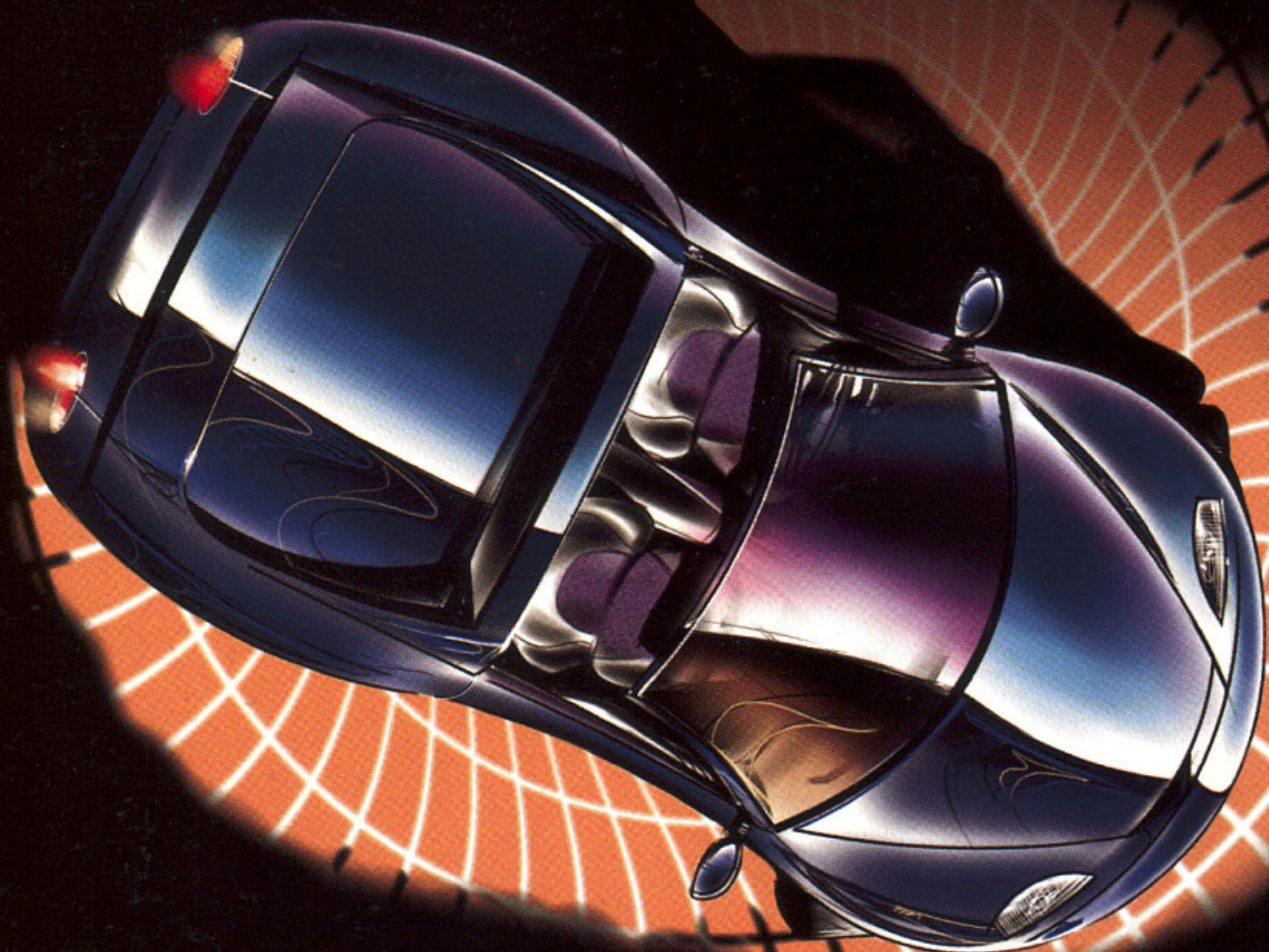
Retain all the details from your original 2D sketch by projecting your sketch onto the surfaces of your 3D model, using the new texture projection feature.

This lets you experiment with form and present your concepts in 3D – faster, more easily, and more effectively than ever before.

This is concept modeling.

We know the creative process never ends. And it certainly isn't linear. Working in this totally integrated environment means you can bring your 3D model back into StudioPaint 3D any time to paint refinements, textures, details or graphics – right on your model.

Studio grabs hold of your imagination. And it doesn't let go until you're done.



BRING YOUR 3D
MODEL BACK INTO
STUDIOPAINT ANY
TIME AND USE ITS
3D CAPABILITIES TO
PAINT ON DETAILS.



REFINING THE MODEL: TRUE TO FORM

Unlike other systems, Studio never boxes you into working with solids.

Start with the broadest range of NURBS-based modeling tools. Add curve networks and Boolean operations in V7.0, and it becomes obvious why Studio continues to be the "World's Best Modeler."

Pull on a sculpt curve and modify the shape of a surface network interactively. The system automatically builds surfaces based on the topology you specify, and automatically updates the surfaces whenever any of the underlying curves are edited. So you can fashion your model simply by raising, pushing, pulling, or increasing the curvature of any line — and know that the rest of the model will follow your lead.

Studio V7.0 combines the flexibility of NURBS with the power of Booleans.

Now you can create organic, free-form surfaces, stitch them together, and then apply simple Boolean operations to slice off corners, punch holes, cut out slats, shave off sections, or glue elements together to create an entirely new surface — all without the restrictions of solids modeling.

Studio V7.0 gives you the best of both worlds.

DESIGNERS CAN
NOW PRESENT
CONCEPT MODELS
INSTEAD OF JUST
CONCEPT SKETCHES.



READY FOR EXPORT: REALITY CHECK

If you've ever needed proof that Studio is more than pretty pictures, this is it.

Evaluate surfaces by viewing highlights and reflections dynamically as you tumble your model every which way. Check tolerances, curvature, and continuity. Automatically achieve G2 curvature continuity between adjacent surfaces. Evaluate physical properties such as volume and moments of inertia.

Studio gives you the surface evaluation tools you need to make sure your design pleases the engineers as much as it pleases the eye. And by requiring fewer hard model prototypes, your design lowers costs. And that pleases everyone.

Studio V7.0 excels at integration with CAD/CAM, with new features that accurately map freeform surfaces into topologies required by CAD systems. For example, the surface stitching feature automatically creates the topology needed in solids-based CAD systems like Pro/ENGINEER, so creating the solid model is now a one-step process. The stitching feature ensures that surface boundaries meet a prescribed tolerance, giving you, the designer, total control.

More than being the most cost-effective way to manage the design to manufacturing workflow, Studio's ability to transfer manufacturable surfaces to downstream CAD/CAM systems enables you to maintain the integrity of your design from art to part.

ALL
THE
ADVANTAGES
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WITH
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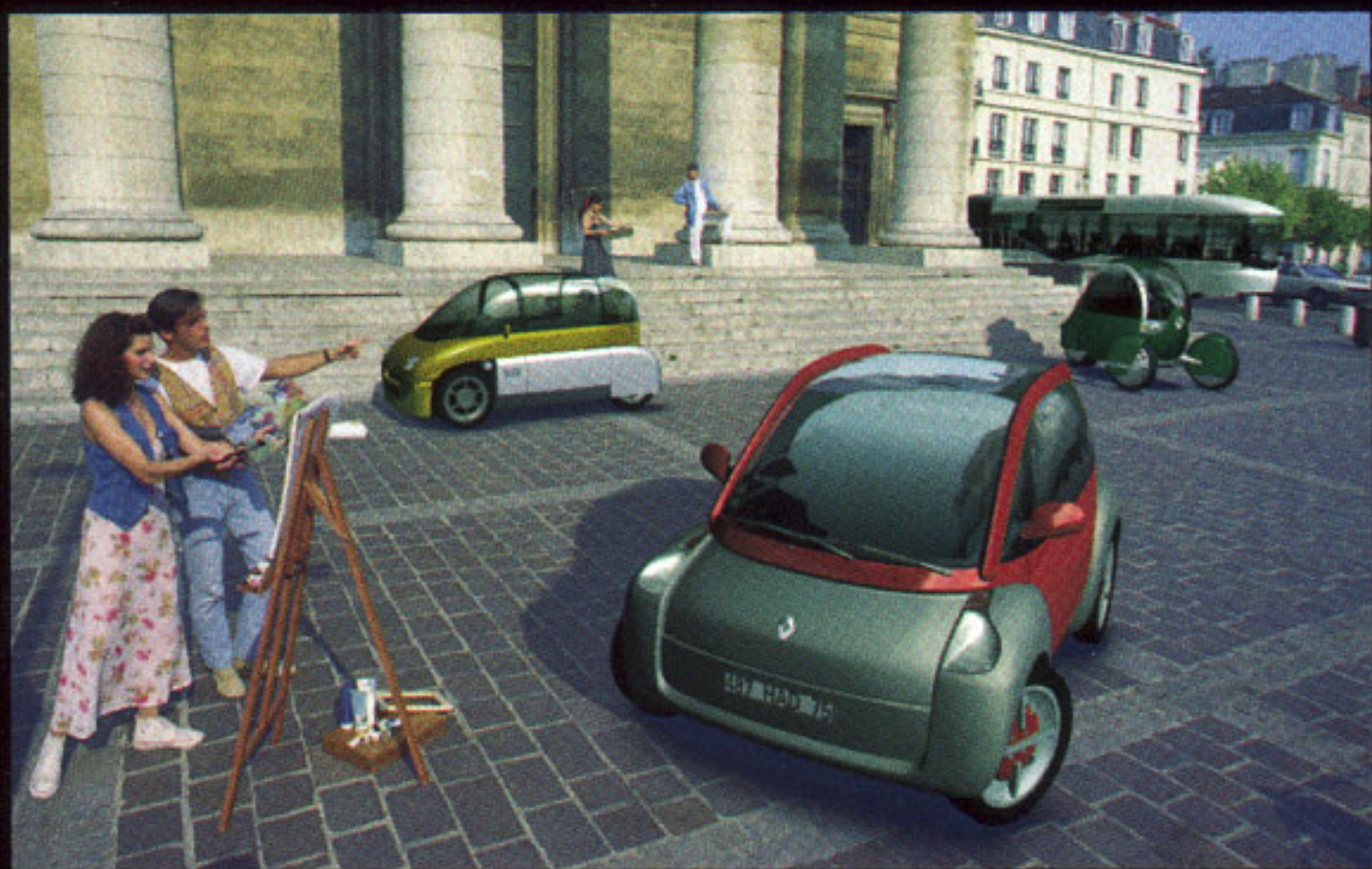


PRESENTATION SKILLS: LET YOUR DESIGN SELL ITSELF

At Alias|Wavefront, we're always looking for ways to help designers faithfully translate their vision into images that everyone can see. And approve.

And nothing helps the approval process along better than a product that looks real. A product that consumers can see even before it's manufactured.

This is where Studio's animation and rendering tools let you add a dimension of realism.



Make a 3D photorealistic version of your design, complete with environment mapping, texture maps, reflections and transparency. Light the scene. Define actual surface finishes. Then render and animate at high resolution – and create images so real, your marketing people can use them in catalogues, brochures, and even video presentations.

Using Studio as a creative source for marketing and promotional content not only saves money, it truly does give companies a competitive edge.

**STUDIO V7 REFLECTS
A VISION OF DESIGN
INTEGRATED WITH
MANUFACTURING,
ENGINEERING, MAR-
KETING AND SALES.**

USER INTERFACELIFT

We've taken a whole new look at the user interface. We started with Studio's single, integrated environment that lets you move from modeling to surface evaluation to visualization and back again in any order as you continuously refine your design.

Boosting both productivity and creativity.

Then we added intuitive graphical icons and a handy toolshelf where you can keep all your favorite tools, reducing the number of mouse clicks required for power operations. Keep as many toolshelves as you want.

Of course, hot-keys are always available.

Plus, Studio V7.0 includes marking menus – a feature you won't find anywhere else.

With marking menus, you don't have to keep going back to the menu bar. You can make a menu selection from anywhere on the screen simply by pressing down your mouse or stylus button. Up pops a radial menu – fully customizable – with all the commands you need. Then a quick gesture left, right, up, or down selects the command you want.

Once you become familiar with marking menus, you don't even have to wait for the radial menu to pop up. Just zip zip.

Very convenient.

And very fast.



IMAGE CREDITS

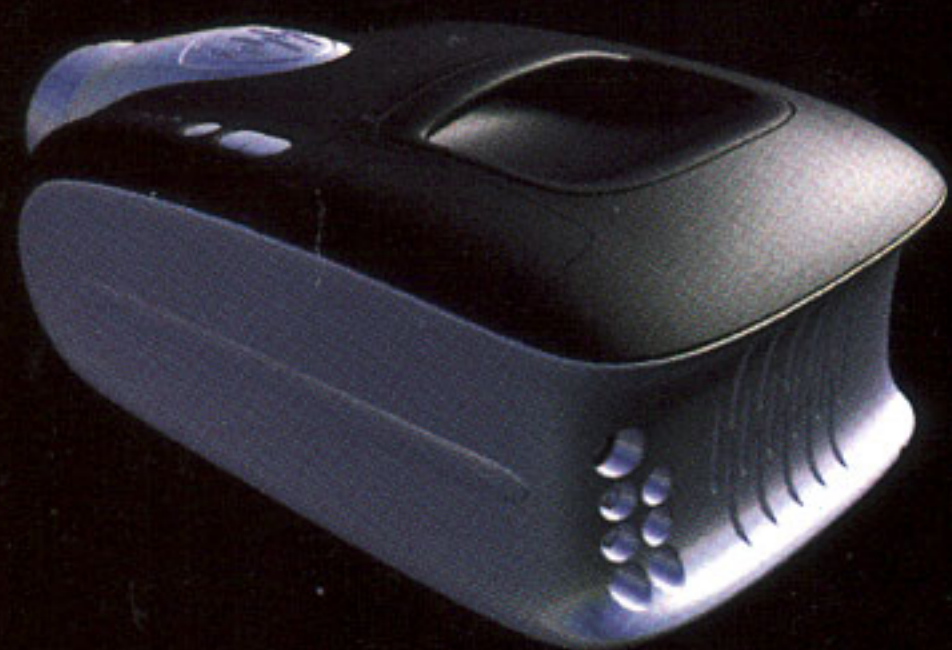
COVER: Gingko Design Inc. • INSIDE FLAP: (from top) Creative Aeroduet, Gingko Design Inc., Client: Creative Labs • Alchemy • Volvo Monitoring & Concept Center, Volvo Cars of North America
INSIDE SPREAD (top row, left to right) Headphones, Teague Associates, Inc. • Staplers, Gingko Design Inc. • Apple Speakers, Courtesy of Apple Computer Inc., Design: Susanne Pierce, Photography: Rick English • Motorcycle, Alchemy • Food Processor, Hamilton Beach/Proctor Silex Inc., Image by: Martin Brady • Personal Watercraft Concept by Gingko Design Inc., Client: Sea Doo/Bombardier Corporation • (left page) Car, R.Paul • Chair Sketch, Alchemy • (middle page) Vision™ Water Purifier, Product Genesis, Inc. Alchemy • (right page) City Fleet, Renault • Apple Powerbook, Wirefile courtesy of Apple Computer Inc., Rendered by P. Roy

OBJECTS OF DESIRE

DREAM. AN IMAGINARY PRODUCT. HOW DO I HOLD IT? WHAT SHOULD IT FEEL LIKE? SKETCH. TURN IT AROUND. KEEP IT LOOSE. MAKE THE LINES MORE DRAMATIC. HERE'S THE IDEA.

STUDIO INDUSTRIAL DESIGN AND STYLING SOFTWARE IS MORE THAN A POWERFUL SET OF TOOLS. IT'S A REFLECTION OF HOW YOU THINK. A WAY TO HARNESS YOUR IMAGINATION AND TURN YOUR IDEAS INTO PRACTICAL REALITY. BEGINNING WITH DIGITAL PENCILS, MARKERS, AND AIRBRUSHES, AND THEN WITH 3 DIMENSIONAL SCULPTING TOOLS, STUDIO ALLOWS YOU TO CAPTURE THE FORM FROM YOUR FIRST SKETCHES WHILE YOU SHAPE SURFACES AND EXPLORE STYLE, SO YOU NEVER HAVE TO START OVER.

ADD DETAILS. FILLET BETWEEN THESE SURFACES. STRETCH THE WHEEL. SOFTEN THAT LINE. EXTRUDE. MORE ORGANIC. LESS BOXY. THAT'S RIGHT. THIS CORNER'S NOT WORKING. PULL IT. PUSH IT. ROUND IT. YES. ROUND IT. CHECK CURVATURE. PERFECT.



STUDIO'S UNIQUE USER INTERFACE AND INTEGRATED APPROACH STREAMLINE THE CREATIVE PROCESS FOR POWER USERS WHILE ACCELERATING THE LEARNING PROCESS FOR NEW USERS. CREATED SPECIFICALLY FOR ARTISTS AND DESIGNERS, USERS CAN START DESIGNING WITH THE FAMILIARITY AND RESPONSIVENESS OF TRADITIONAL TOOLS.

NATURALLY.

WITH THE INDUSTRY'S BEST TOOLS FOR 3D MODELING, RENDERING, DESIGN ANIMATION AND ENGINEERING INTEGRATION, STUDIO LETS YOU DESIGN AND PRODUCE THE DISTINCTIVE PRODUCTS THAT TODAY'S CONSUMERS WANT — BETTER, EASIER, AND FASTER.

THE PROTOTYPE. ENGINEERING SHOULD BE PLEASED. PERFECT SURFACES. THE RIGHT MATERIALS. DIRECT EXPORT TO CAD/CAM. WHAT I SEE IS WHAT THEY GET. I LIKE THAT.

WITH EXCELLENT FEATURES TO TRANSLATE THE MATHEMATICALLY MANUFACTURABLE SURFACES INTO CAD/CAM READY FILES, STUDIO SPEEDS TIME TO PRODUCTION, AND MINIMIZES THE CHANCES OF COMPROMISING DESIGN INTEGRITY IN THE PROCESS.

THIS IS STUDIO V7.0: A MUCH BIGGER VISION OF DESIGN THAN AN ISOLATED ACTIVITY — A VISION OF DESIGN INTEGRATED WITH MANUFACTURING, ENGINEERING, MARKETING, AND SALES. THIS IS THE VISION OF ALIAS|WAVEFRONT.



STUDIO

Modeling

Industry-leading, NURBS-based surface modeler with Construction History.

- **New Curve** - Tools for creating and editing high quality NURBS curves of degree 1, 2, 3, 5 or 7. Create curves by interpolating points, control vertices, or sketching.
- **Curve Tool Box** - Create lines, arcs, circles, freeform curves and composite curves. Construction aids: perpendicular, tangent, parallel, etc.
- **Project Tangent** - Modify curves to achieve G0, G1, or G2 continuity at a point on a surface or intersection of two curves.
- **Rebuild Curve** - Interactive tool for curve fitting to point data or spline curves. Curve fitting options include: data reduction, degree elevation or reduction, curve smoothing and control of parameterization.
- **Combine Curves** - Create a 3D curve from 2D curves created in different views.
- **Basic Modeling** - Create surfaces by: revolving, extruding, skinning, boundary curves, bounded planes and filleting. Primitives: plane, sphere, cylinder, cone and cube.
- **Round** - Create variable or constant radius fillets between multiple surfaces.
- **Trimmed Surfaces** - Interactively trim away regions of a surface.
- **Curve on Surface** - Draw and edit curves directly on a 3D surface for surface construction or trimming.
- **Stitching** - Form shells by automatically stitching together adjacent NURBS surfaces in accordance with a specified tolerance.
- **Boolean Operations** - Produce new shells formed by the union, intersection or difference of two shells.
- **Align** - Modify two existing curves or surfaces to achieve G0, G1, or G2 continuity.
- **Smooth** - Interactively modify curves or surfaces to improve curvature distribution.
- **QuickShade™** - Model and animate shaded objects in real-time.

Advanced Surfacing Tools

Surface creation tools that maintain positional, tangent plane or curvature continuity between surfaces. Surfaces maintain a Construction History and automatically update when modifications are made to the construction curves, parameters or adjacent surfaces.

- **Curve Networks** - Create surfaces from a network or topology of curves.
- **Birail** - Create surfaces by sweeping one or more curves along two path curves.
- **Swept** - Create surfaces by sweeping a curve along a path curve.
- **Square** - Create surfaces by blending four bounding curves.
- **N-sided** - Create surfaces by blending up to eight bounding curves.

Concept Modeling

Tools to create a 3D model from a 2D sketch. Import your 2D sketch, trace out key character lines, build a 3D model and create a 3D sketch by projecting the original sketch onto the 3D model.

- **Perspective Matching** - Orient the 3D perspective camera to match the perspective of the 2D sketch.
- **Texture Projections** - Convey all the feeling and emotion of your original 2D sketch to your 3D model by projecting the sketch as a texture onto the surfaces of your model.

Evaluation Tools

Tools to analyze and evaluate the styling and physical properties of curves and surfaces interactively, while creating and editing geometry.

- **Curve Curvature Display** - Interactively plot curvature or inverse curvature information by displaying vectors normal to the curve.
- **Continuity Checker** - Automatically evaluate G1 and G2 continuity between curves and surfaces.
- **Min/Max Curve Curvature** - Identify points of minimum and maximum curvature.
- **Min/Max Distance** - Measure the minimum and maximum distance between points, curves and surfaces.
- **Dimensioning/Annotation** - Linear, angular and radial dimensioning plus annotation tools.
- **Mass Properties** - Examine mass properties such as volume and surface area.
- **ReallyReallyFastRender™** - Evaluate fully shaded models in real-time.

Animation

Tools to animate objects, lights, surface characteristics, shading parameters, and cameras. Animations can be used for high-quality design presentations, design analysis of mechanisms, motion and ergonomic studies, manufacturing or assembly simulation.

- **Design Animation** - Present your design with turntable animation.
- **Basic Animation** - Define parameter-based animations using key frames and motion paths.

Rendering

Tools to create photorealistic images using textures, colors, highlights, shadows, reflections and backgrounds.

- **QuickRender™** - Quick onscreen rendering for rapid feedback.
- **RayTracing** - Achieve realistic effects for glass, water or shadows.
- **MotionBlur** - Apply realistic blurring effects to individual objects or an entire scene.
- **Natural Phenomena™** - Create realistic natural effects for fire, smoke, fog and water.
- **Alias Digital OptiF/X™** - Create camera and lighting effects such as lens flare, fog, light beams, object and light glows, projector glows and fireworks.

Open Digital Studio™

Support for industry-standard data formats and a wide range of peripheral devices.

- **Alias 3DCD™** - A CD-ROM of 3D models, environments, textures, and animations.
- **OpenAlias™** - Develop your own programs as plug-ins that can be integrated with Studio's user interface.
- **OpenModel™** - Write your own programs to manipulate Alias models and animations.
- **CAD/CAM Data Input/Output** - IGES, VDA/FS, VDA/IS, DES, DXF, JAMA-IS, Pro/RENDER. Vendor-specific IGES interfaces: CATIA™, Pro/ENGINEER™, I-DEAS™, UNIGRAPHICS.
- **Rapid Prototype** - Output SLA (triangle based) or SLC (contour based) formats supported by rapid prototype systems.
- **Peripherals** - Scanners, Film Recorders, Printers, Plotters, StereoViewing, Video I/O.

OPTIONS

Advanced Modeling

- **Rebuild Surface** - Interactive tool for surface fitting. Surface fitting options include: data reduction, degree elevation or reduction, surface smoothing and control of parameterization.
- **ClayMate™** - Close the design loop by updating models using geometric information from external sources, such as a modified clay model.

Advanced Evaluation

- **Surface Evaluation Tool** - Interactive surface evaluation tool that creates actual modeling curves on surfaces. The curves are created using a reflection line model; lines of constant curvature; horizon or silhouette lines; cross sectional planes.
- **Highlight and Curvature Evaluation Image** - View reflection lines or surface curvature using a false rendering technique and interactive view manipulation.

Advanced Animation

- **Metamorphosis** - Stretch, distort and transform objects. Includes flow deformations.
- **Inverse Kinematics** - Position articulated objects in full 3D with point, orientation and aiming constraints that can be animated.
- **Dynamics** - Simulate physical phenomena such as wind, gravity, friction, air turbulence, and collisions.

PowerTracer™ PowerCaster™

Raytrace and raycast images using the parallel capabilities of multiprocessor systems.

StudioPaint 3D

Fast and intuitive system for 2D conceptual sketching with digital facelifts and 3D painting across multiple surfaces, with seamless integration to Alias 3D software.

Composer

Assemble video clips, animation sequences and stills in layers; sequence them in time and add special effects, audio, transitions, titles and annotations. Display on-line or write to standard external formats.

Alias | wavefront

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