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Creating video games that score

One startup stresses team efforts, another creative freedom. Both are winners

In one corner of Imagic Inc.'s Los Gatos (Calif.) headquarters is an area nicknamed "the zoo." Inside, behind locked doors, are Imagic's 30 video-game designers, most of them young men in their 20s. There are few rules in the zoo. Designers work any hours they choose. Some dress in shorts and T-shirts. One wears three earrings.

Activision Inc., in nearby Santa Clara, has a similar lab. It, too, is a distraction-free haven for game designers. Fewer than 10 nondesigners have access to the lab. No memos are ever delivered to it. The telephones there don't ring—they simply flash a small light.

Photographs by Paul Margolies

Imagic's Levine got the idea for Truckin', his new creation, on California's Highway 5.

If Imagic and Activision pamper their designers, it is with good reason. These small, elite groups are at the heart of the companies' product development efforts in the video-game software business, a cash mill that generated $1.4 billion in sales last year and may top $2 billion this year as game machines and home computers proliferate. Unlike other leading competitors, such as Atari Inc., these two stunningly successful startups rely entirely on internal development for their game ideas. But their approach to game design could hardly be more different.

Arts and sciences. Reflecting nearly opposite philosophies of product development, Activision tries to give individual designers as much creative freedom as possible, while Imagic emphasizes team projects and market testing. Says James H. Levy, Activision's president: "Creative businesses aren't factories. To be successful, you must deal with and live with uncertainty and surprises. If you try to make it too predictable, you squeeze all the life out of it."

Imagic comes at it from the other side. "Product development is not one artist creating something all by himself," says President William F. X. Grubb, who, at 38, is the oldest member of Imagic's management. "Here, the designer is more like an orchestra leader."

Activision's 31 designers, for instance, choose their own projects with no interference from the marketing department. In fact, Activision does no market research on a game until the designer is completely finished. "Market research will kill as many good games as bad ones," says Levy. Instead, during the game design process, which typically takes about six months, a designer constantly tries out new ideas on his fellow designers and on Activision's creative-development managers. These managers serve as sounding boards for ideas and as liaison with the rest of the company.

But for the most part, design at Activision is a one-person process. Each designer is responsible for all aspects: selecting the idea, writing the computer programs that control objects on the screen, and adding sound and background graphics. Activision managers believe team projects cut creativity. "Very few novels are written on an assembly-line basis," says Thomas M. Lopez, vice-president for editorial development. Says designer Steve Cartwright: "I wouldn't want to let someone else do my work. I'm the only one who will put in enough effort to make it right."

Toothpaste to the rescue. Cartwright has designed several of Activision's hit games, including Megamania, and has just finished Plaque Attack, set for release this summer. Rather than have the player fire missiles against a spaceship, this game calls for shooting a jet of toothpaste to defend a set of teeth against advancing columns of hamburgers, French fries, and ice cream cones. Cartwright spent months revising his original idea. "You go through hundreds of different combinations. There's a fine line between something that's challenging and something that's frustrating."

Throughout the long process of designing a game, Activision officials avoid imposing deadlines. "Time pressure makes the designer take short cuts," says Lopez. "It could turn a mega-hit into an average game. The game might lose that indescribable something that tickles neurons in millions of people."

At Imagic, designers write the computer motion and control programs that form the heart of the game, but in many cases a specialized artist designs the game's graphics, while another adds sound effects. This specialization is made possible, in part, by software tools developed at Imagic that make it easier to program a computer to perform special tasks. For instance, Imagic has developed a program called Da Vinci, which assists in designing graphics, and another called Handel, which helps create sound effects.

Activision's Cartwright pits teeth against junk food in his new game, Plaque Attack.

Imagic promotes close collaboration between the marketing and design staffs. Marketing managers even sit in

on the designers' twice-a-year "game-storming" weekends and sometimes throw out ideas of their own.

The Imagic product development process begins with those weekend meetings. After each one, designers draw up a list of 100 or so game ideas, then whittle that down to 30 or 40, and present these to the marketing department. Marketing produces story boards and game descriptions for each idea and then runs a "concept test" with about 100 teenagers. The results can influence the designer's approach to the game. One game originally involved a mouse trying to pick up cheese while being chased by a cat. Concept tests showed that teenagers preferred a game in which a prince tries to pick up treasures while being chased by a dragon. The designer followed the market feedback, and the game, called Dragonfire, is now a hit.

Designer Rick Levine got the idea for his new game, Truckin', during one of his regular 800-mi. round trips on Cali-

With stock options and incentives, top designers can become multimillionaires

fornia's Highway 5 to visit his girlfriend. Market research showed children preferred a truck game to a car game. The player learns about U. S. geography as he guides the truck around the country, making deliveries on a tight schedule.

Imagic designers do not have to use all concept-testing results in their games. "We like to see engineers follow about 80% of the results," says James H. Goldberger, vice-president of marketing. But if concept scores are very high or low, "we lobby very hard," he adds.

Licensing devotees. Most of the half-dozen other leading companies in the videogame software business hew to a product development approach totally different from those practiced at Imagic and Activision. They rely largely on licensing well-known arcade games and movie titles and converting them to home games. Atari's hugely successful Pac-Man, for example, was based on a license from Bally Mfg. Corp.

Coleco Industries Inc. attributes its zoom from zero to 8 million game cartridges sold last year to the "prerecognition" of its games drawn from arcade hits, such as Donkey Kong and Turbo. Releases for 1983 include licensed games based on the movie *Rocky* and the cartoon characters, the Smurfs. Coleco President Arnold C. Greenberg insists: "The real weak area [in home videogame sales] is the multiplicity of nonlicensed titles." But Activision and Imagic disagree; both believe that in the long run, internal development of original games will be the best way to survive.

Until recently, explains Levy of Activision, product development played only a modest role in the game software business. "The consumer developed a voracious appetite that couldn't be satisfied," he says. "To a certain extent, products sold no matter how good they were."

E.T. stays home. The seller's market fizzled last year when supply caught up with demand, and weaker software products no longer sold well. Earnings fell below estimates at several companies, including industry leader Atari, which was hurt by defections of key designers to Activision, Imagic, and elsewhere. One of Atari's most spectacular losers was a game based on a coveted license that seemed like a certain winner: the movie *E. T.* Atari paid $22 million in licensing fees. Thinking it could sell 4 million cartridges, it reportedly produced that many. It sold only 1 million—potential buyers found the game dull.

The supply of movie and arcade properties suitable for conversion to video games is limited, says Levy. "Each year, 100 titles will drive the business," he predicts. "The arcade business can provide 6 or 10 titles a year. Only a half-dozen movies could be the conceptual basis for video games. Where will the other 85 come from? They will be original product designed for the medium."

So far, that thinking has worked, and the payoff for Activision and Imagic has been remarkable. At Activision, founded in 1979, revenues for the nine months ending Dec. 31 topped $100 million. Imagic, which shipped its first product in March, 1982, sold more than $75 million worth of game software in its first year of business. Its Demon Attack won the game-of-the-year award from *Electronic Games* magazine last year. And in recent months two cartridges from Activision, Pitfall and River Raid, have occupied the first and second positions on the top 10 chart published by *Billboard* magazine. "When it comes to creative games, Activision and Imagic are definitely the leaders," says Michael J. Blanchet, who writes a syndicated column on video games for a variety of papers.

Thoroughbred talent. For the designers, too, the rewards stretch well beyond the freedom of "the zoo" and a phone-free lab. Both Activision's Cartwright and Imagic's Levine, for instance, receive royalties on games they have designed. And if, as expected, Activision and Imagic go public later this year, both men will become multimillionaires through their stock holdings.

Such incentives have helped Activision and Imagic attract the cream of the industry's design talent, giving them both a big advantage. "Design is the cornerstone of success in video games," notes Arnie Katz, editor of *Electronic Games* magazine. "If you don't have the horses, you can't run." ■

Industrial briefs

...t sales by U. S. suppliers fell short ...orecasts last year, climbing from ... million in 1981 to only about $190 ... on, not the predicted $220 million. ...ra Conigliaro, who follows factory ...mation for Prudential-Bache Securi... Inc., says a 28% rise in the dregs of ...cession is a bullish reflection of in... ...ry's acceptance of robots. She re... ...ns confident that sales will get back ...rack toward a $2 billion milestone in ... (BW—June 9, 1980). Conigliaro ...s 1983 sales by U. S. robot builders ...about $240 million, with Unimation ...hanging on to a shrinking market ...re lead over archrival Cincinnati Mi... ...on Inc., 17% to 14%. Last year th... ...t was 33% vs. 17%.

...ficial vision can do more than just spot ... parts. Responding to the renewed ...phasis on quality among U. S. manu...turers, Automatix Inc., a Billerica ...ss.) company, has developed a statis... ...d quality-control program that, used ...h its "seeing" parts-inspection sys... ...n, detects drifts away from quality ...cifications in time to warn of prob... ...s before rejects are produced.

...r 30 years of legal wrangling, Phillips ...roleum Co. in March finally received ... patent on the polypropylene plastic ...t two of its scientists invented in the ...ly 1950s. The company promptly sued ...eral major plastics producers—includ... Eastman Kodak, Exxon, Hercules ...d Shell Oil—for infringement. Phillips ...mates that it stands to collect $5 ...llion in licensing fees over the 17-year ... of the patent, because the polypro... ...lene is produced in large quantities. ...e delay in granting the Phillips patent ...lipses the 18 years it took R. Gordon ...uld to win his laser patent, granted in ...77, which touched off a storm of con...versy from manufacturers whose ...oducts were suddenly subject to royal... payments (BW—Oct. 24, 1977).

...ited Technologies Corp. in March ...edged $750,000 to the Very Large ...ale Integration research project ...anned at the Massachusetts Institute ... Technology. UTC's gift, one of the ...rgest private donations, brought indus... ...y contributions—from Digital Equip...ent, General Electric, GTE, IBM, and ...hers—to $8.3 million of the $19 million ...ised to date. The VLSI project, now ...ly $2 million shy of its goal, should be ...lly funded and staffed within three ...ars, according to MIT, and will do ad...nced research in microelectronics.