

OPPOSITE TOP The T-1000 cyborg in *Terminator 2: Judgment Day* (1991), directed by James Cameron, was a significant landmark in the use of CG visual effects.

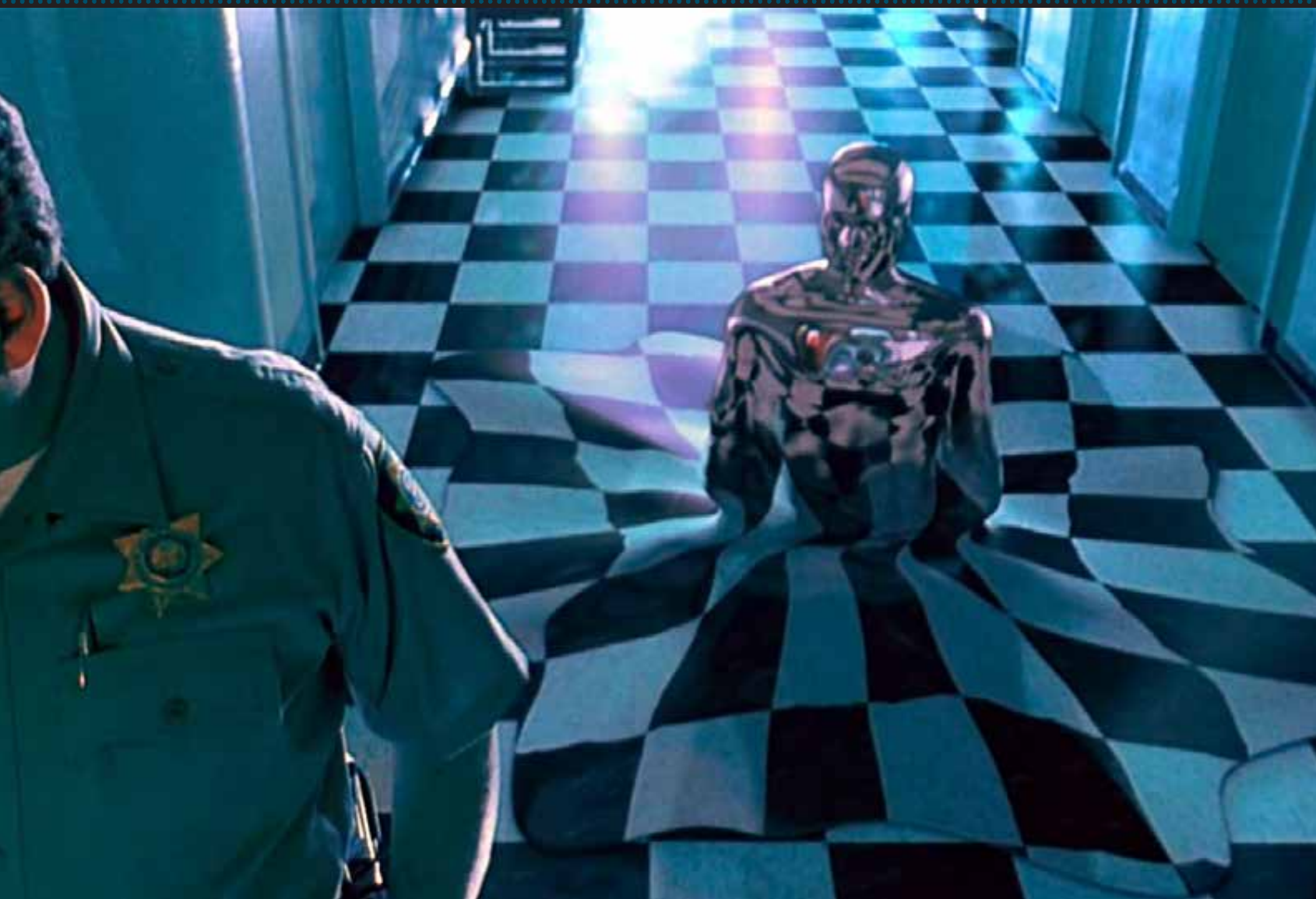
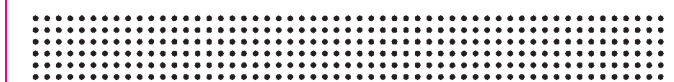
BELOW AT-AT walkers go into battle in *The Empire Strikes Back* (1980), directed by Irvin Kershner. A form of stop-motion animation called “go motion” was developed by Phil Tippett and the ILM team for such characters and the technique originally was to be used for the dinosaurs in *Jurassic Park*. Steven Spielberg, dissatisfied with the results, engaged CG animators to bring his dinosaurs to life.



Another Schwarzenegger vehicle, James Cameron's 1991 *Terminator 2: Judgment Day*, was also a significant landmark in the use of CG visual effects. The story has a second-generation Terminator, T-1000, sent by Skynet — the evil artificial intelligence intent on destroying mankind — to kill John Connor, the ten-year-old who has been coached to lead a future human resistance (opposite). Unlike T-800 — the mechanistic first-generation cyborg played by Schwarzenegger in both the original *Terminator* (1984) and *Terminator 2* — T-1000 has been fashioned by Skynet from what the screenplay describes as a “mimetic poly-alloy” resembling liquid mercury, which provides the super-cyborg with the ability to change shape and to transform its limbs into weapons at will, not to mention having the capacity to absorb bullets and explosions. Its wounds heal instantly, and when blown apart its body parts simply reassemble themselves. The amorphous poly-alloy can also mimic other substances such as flesh, and, when required, can morph into a convincing surrogate human being, like the police officer whose form it assumes in one part of the movie (opposite).

The visual effects called for during several min-

utes of key scenes involving T-1000 demanded a massive helping of CG animation, supplied by George Lucas's Industrial Light and Magic facility under the scrutiny of director Cameron and ILM visual-effects supervisor Dennis Muren. This was by far the most extensive use of CG special effects since *Tron* and *The Last Starfighter*, and the level of sophistication involved was far beyond anything seen in either of those movies. To generate a model of the T-1000 character, ILM artists and technicians first scanned and digitized the body of actor Robert Patrick into the memory of the Silicon Graphics (SGI) computers they used, generating a wireframe that would form the basis for future animation. In scenes where T-1000 exists in his quicksilver form, he could be rendered relatively easily, since there was no need for the animation to show details of human musculature. Rather, they needed only to render a highly reflective metallic skin, making sure that highlights and reflections remained accurate and convincing. T-1000's smoothed-out anatomy made it look rather like the statue that adorns the Academy Awards trophy, so it was only appropriate that ILM's CGI team were presented by the Academy with the Visual Effects Oscar for their work on *Terminator 2*.



At about the time that *Terminator 2* was released, preproduction was gathering steam on what would be another breakthrough movie where CG effects were concerned. This was Steven Spielberg's *Jurassic Park*, based on a novel by Michael Crichton, which would reach the screen in June 1993. Crichton's novel — about a nature park where dinosaurs, cloned from DNA preserved in amber, roam the forests — had generated considerable excitement even before the book was completed. Prominent directors like Tim Burton and Richard Donner bid for the movie rights, as did a number of major studios, and it was Universal that eventually bought the property for Spielberg, reportedly for \$1.5 million, with the understanding that Crichton would be paid another \$500,000 to write the screenplay. From Universal's point of view it proved to be a bargain, because *Jurassic Park*, which broke records at the box office, also provided the basis for hugely successful rides at Universal Studios Hollywood and in the Islands of Adventure theme park in Florida.