

# Plastic Models

A caricature tends to overemphasize selected characteristics—giving someone elephant ears or a beer-keg stomach—and in so doing often comes closer to resembling the real thing. These same techniques are used when designing a plastic model. The first step in designing a plastic model is a careful inspection of the actual object. To make a model car, for example, you begin with a trip to the manufacturer where from 400-700 photographs are taken. Next come specific measurements of every part on the car, in detail! Using this information, a 2-D illustration is created. CAD technology is then utilized to make a 3-D image that is used to form a preliminary model shape out of synthetic resin material. Next, a designer goes through many iterations of modifying and adjusting this shape to ensure it is just right. The last step involves using the resin model to create a metallic mold that will be used to produce the plastic model. But the most critical step is the extensive testing and modification of the resin model by the designer, which requires the techniques of caricature.

“If you simply scale dimensions down to the size of a plastic model, it won’t look real. An exact scale model of a tank, for example, won’t give you the feeling of strength or weight.

Similarly, model cars cannot be simply scale replicas because we view them from a much higher vantage point than an actual car.” (Yukihiro Unno, Manager of Media Promotion Section, Tamiya, Inc.).

If you shrink down a car body exactly to scale, without changing anything, it will seem too long. For this reason, model cars are made slightly wider than a true scale model. To distinguish their shape from other cars, characteristic lines are sometimes overemphasized or exaggerated. The body is often lowered to make a car appear heavier. Similarly, as for tanks surfaces are often roughened slightly to simulate the weight and coldness of iron. As you can see, a number of techniques for exaggeration are used to produce a realistic-looking model.

More than 2,000 years ago our ancestors used these same tricks of exaggerating certain characteristics. The main floor of the Greek Parthenon, for example, is slightly raised with respect to the edges, and its pillars lean slightly inward. The result is that the floor looks flat and the pillars appear straight. Still, even though trial and error has allowed us to use optical illusion techniques for a very long time, the exact mechanism as to how and why they work is not fully understood. If these mysteries were

fully solved, we might gain more techniques for exaggerating the shapes of plastic models.

As models become more detailed, beautiful and realistic looking, they can appear more enchanting to a young child. Today computer games have taken over, however, and models are not growing in their popularity with children.

So what will become of the plastic model?

“In the past we only focused on shape. But now we include sound and movement when designing plastic models. Last August, for example, we developed a ‘Tiger 1’ radio-controlled tank that incorporated the sound of a real tank engine and of a tank cannon firing. The engine sound varies with tank speed, and firing the cannon causes lights to come on and the tank to recoil backwards. This was all part of an effort to increase emotional appeal. By offering a more advanced simulation of reality we hope to attract a new generation.”

In contrast to fantasy worlds we construct only in our minds, models stimulate our imagination through a tangible object.

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