"Real" Wars: Esthetics and Professionalism in Computer Animation

Lev Manovich

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Introduction

The rise of modern mass culture has created a new profession — a designer. Like other professionals, designers must satisfy their clients while upholding a professional identity. Unlike the others, designers also establish their professionalism through the appearances of their products. The appearance of every design product not only reflects the client's desires but also signals the designer's excellence.

I will follow this idea on the example of a particular design field — three-dimensional computer animation created for broadcast and corporate markets. Such animations include companies' and networks' logos as well as simulated products and environments as used in commercials and corporate presentations. The distinguishing feature of this design practice is its over-determining concern with illusionism. In the words of the pioneers of computer animation technology, this technology aims to provide simulations of visual reality, "virtually indistinguishable from live-action motion picture photography" and "visually rich as real scenes". [1] Therefore, illusionism in computer animation refers to the simulation of perceptual properties of real-life objects and environments (shape, shading, texture, atmospheric effects) as seen through the simulated codes of traditional cinematography (composition, lighting, choice of lens and camera movement.)

The strive for illusionism in computer animation should not be taken for granted as a natural progress. The notion of illusionism acts as an umbrella for a number of distinct aesthetic standards, such as the smoothness of image and complexity of motion. The role played by these standards is not to make computer-generated images more illusionistic, more life-like, or more persuasive to the viewers. Rather, they allow the designers to signal their professional status, thus serving as the tools of competition within the industry. The struggle for the simulation of the real masks another struggle — the real war for professional survival.

The starting point of my analysis is the theory of culture developed by French sociologist Pierre Bourdieu in his influential Distinction. [2] For Bourdieu, aesthetic choices and judgments are never divorced from practical life, as Kant has it, but, on the contrary, have crucial social functions. Aesthetic preferences have the power to legitimate social distinctions precisely because they are proclaimed to be free of social values, to be grounded in a universal experience of beauty. In particular, the aesthetic taste of the ruling classes served to legitimate their social privilege:

"The denial of low, of course, vulgar ...in a word, natural enjoyment, which constitutes the sacred sphere of culture, implies an affirmation of the superiority of those who can be satisfied with the sublimated, refined, disinterested...pleasures forever closed to the

profane. This is why art and cultural consumption are predisposed, consciously and deliberately or not, to fulfill a social function of legitimating social differences." [3]

Bourdieu shows how this aristocratic taste defines itself structurally, by inverting the preferences of popular aesthetics of lower classes. And within the grand hierarchy of high and low aesthetics, every social class distinguishes itself by adopting particular aesthetic values, separating itself from the classes below and above. Thus, the logic of aesthetic choices is one of distinction. This logic justifies both meanings of this word — to distinguish, to separate something from the rest, and at the same time to subordinate, to create the relations of hierarchy.

Although Bourdieu talks about the consumers of cultural products, his insights can be extended to account for the mechanisms of distinction among the producers of culture, including design professionals. Following the argument of Distinction, we can expect that the aesthetics of computer animation is exactly the domain where the distinction between the professionals and the amateurs is legitimated.

In its emphasis on illusionism, the aesthetics of computer animation can be seen as a successor of earlier photographic and film technology. Before confronting computer animation directly, it is useful to see how the mechanisms of professional distinction historically developed in these industries.

Amateur-Professional

Recent writings demonstrated the importance of the amateur-professional distinction in shaping photographic [4] and film industries [5] around the turn of the 20th century. The professional and the amateur come into existence simultaneously and are defined in relation to each other, as separate markets. Crucial for the creation of this division is the adaptation of a particular technical standard, requiring considerable investment, as a professional format (such as 35 mm in the film industry). Unable to afford the cost of professional equipment, amateurs are excluded from the competition in the professional's market. As Yefimov says:

Amateurs were defined in purely technical terms and were those practitioners who were not yet able to see a financial return on their inventions or practices but, through the system of patents, had a real possibility and a great chance of becoming entrepreneurs. The aesthetic and social terms of amateurism appear only much later. At the next stage, the professional and amateur markets are separated, when a few companies establish professional standards for equipment, film, and distribution, and thus control access to a large industry segment. The amateurs still compete in the arena of "substandard" cost-cutting technology, hoping to eventually hold patents and introduce standards on their own. Eventually, the professional segment of the market subsumes the amateur market by turning competitors into consumers. [6]

Today, the importance of technical standards in keeping amateurs from entering into professional markets can be seen even more clearly in the video industry. The acceptable video signal for broadcasting is explicitly regulated by the Federal Communications Commission. This specification excludes those who can't afford the high initial investment of professional NTSC equipment from entering into the video

production for broadcast. The amateur users are defined by their own standards (VHS, 8 mm). The professional video market is itself segmented into sub-markets, each competing for different clients, each defined through the use of a particular tape format. Companies in the industrial market use 3/4 or BETA, those who produce for broadcast —1 inch or component BETA; and top players use digital formats. The difference in quality between the formats in not very substantial, but the cost differential is steep.

Aesthetic and technical standard

Industry defined technical standards (such as NTSC video signal in broadcast and 35 mm gauge in film) are just one mechanism by which the professional — amateur distinction is sustained in film, video and photography. There are also unspoken standards on the level of the aesthetic.

Re-examining the history of these industries, we can see that the creation of the aesthetic standards went along with the adaptation of technical ones. For instance, in the era of classical Hollywood cinema, just eight companies controlled 95% of the US box office receipts. As Roy Armes points out, "outsiders were kept from this selected "club" not by patent rights and restrictions, but by the level of investment required". [7] The prohibitive cost of individual film production included not only the cost of professional equipment but also the costs of elaborate sets and costumes, services of numerous technicians, actor's fees, etc.

Thus, the particular aesthetic standard of movie industry, rather than catering to a pre-existent taste of audiences for grandiose spectacles, was deliberately constructed by those who controlled the market to legitimate their monopoly. This, of course, is in perfect agreement with Bourdieu's proposition that aesthetic ideals, rather than being grounded in essentialist experiences of pleasure and beauty, serve to legitimate social privileges.

In a similar fashion, in computer animation, the competition among the professionals and the exclusion of amateurs is also supported by aesthetic standards. These aesthetic standards function like the technical standards in that they justify the high investment required to produce a truly professional production. The widely held notion of illusionism of computer animation conceals these standards by claiming them to be the features of perceptual reality, rather than the mechanisms of professional identification.

In the next three sections, I will consider some of these aesthetic standards and the ways in which they are achieved by those who commission and produce computer animations.

Smoothness

The separation between amateurs and professionals in computer animation is, first of all, achieved through the aesthetic standard of smoothness. Professionals in computer animation are recognized as those who can produce smooth images — made possible with more costly equipment.

Inexpensive software/hardware for 3D modeling and animation uses the same algorithms as the most expensive professional packages and it provides the user with the same design tools. Yet, while the amateur can design 3D images as sophisticated as the ones produced by professional companies, the final images will unmistakably look non-professional, with jagged lines and continuous tones broken into visible stripes. In contrast to this characteristic "low-res" look, the images produced on expensive equipment have sharp lines and smooth transitions between colors. This happens not only because more expensive displays have higher resolution and larger color pallets, which automatically make any picture smoother. Most importantly, professional 3D software includes antialiasing — special algorithms which compensate for the limited resolution of displays, producing smooth images even with low-res displays. In addition, while both cheap and expensive packages offer the ability to do texture mapping (the technique of wrapping images around objects, which is the primary tool in modeling natural-looking scenes), only the expensive ones can antialiased maps properly, resulting in smooth images. Thus, amateur CG equipment excludes exactly those features which are needed to produce professional-looking images. The "clean" look of properly antialiased images is presented as more illusionistic and then the "jaggies" of inexpensive equipment, functions to separate professionals from the amateur users, at the same time legitimating their difference.

Among professionals who already use expensive equipment with antialiasing capacity, the criterion of smoothness takes on a metaphorical dimension. The competition for the sleekest images is carried out not just through more expensive technology but also through the choice of what the images represent. Commercial 3D designs uniformly model particular types of materials. While some man-made materials are smooth (metal, glass, plastic), most natural objects have irregular textures, rough edges, uneven color, etc. Although the techniques to model this irregularity of natural phenomena are well known, they are very rarely used in commercial 3D animations. Instead, the typical logo animation presents an environment made from super-smooth "high-tech" surfaces, a world of glass, plastic and reflecting chrome. Such an image becomes a visible metaphor of smoothness, clearly signaling a designer’s professionalism.

And when natural phenomena are simulated, the criterion of smoothness is still maintained. Many computer graphics researchers spend their careers perfecting algorithms to simulate the geometry of natural phenomena, atmospheric lighting effects, environmental reflections and so on. They devote months and even years polishing a single image or a short animation which will demonstrate the state-of-the-art in digital simulation of nature. The images incorporate a tremendous amount of detail, yet the "nature" in them looks too clean, too airbrushed, too unnatural. [8] The authors stop short of putting in their images the full irregularity and "dirtiness" of real scenes — because it may threaten their professional identity, associated with the ability to produce "clean" images. To present truly irregular images is risky, since the imperfections may be attributed not to the intentional modeling of natural randomness, but to cheap equipment or animator’s mistakes!

Complexity

If any single still in a computer animation strives for smoothness, the most general aesthetic standard of the entire animation is complexity. It is related to the fact that animation, by default, involves a sequence of images in which some changes take place. The standard of complexity means that the more changes take place from frame to frame, the higher an animation is valued.

As with smoothness, to understand the function of complexity, we should ask what it signifies for the designers and the patrons of computer animation. The smoothness of an image points to the cost of equipment since expensive equipment automatically produces smoother images. Therefore, a sleek image signifies both designer's professionalism (since the designer who owns expensive equipment is automatically a pro) and the prestige of a client who can afford to pay for the use of this expensive equipment. With complexity, the difference between hardware and software is not that important. To make the animation more complex requires more labor; thus, the visual complexity of a 3D animation is directly related to its cost to the client, and functions as a sign of client's wealth.

The quest for complexity is reflected in numerous design strategies adopted by designers of 3D computer animations. These strategies can be grouped in two categories: increasing the amount of all kinds of movement and complicating the geometry of the scene.

In a sophisticated animation, all objects in the scene move, changing their positions, shapes, or colors. The complex motion of an object or the complicated camera move is preferred over simple ones; changing background (for instance, moving clouds) is favored over a static one. But movement is not limited to the physical motion of objects. It is desirable to have moving lights and/or use reflection maps, so that in the course of an animation highlights on the object and its colors constantly change. Recently, it has also become trendy to use "stretch" and "squash" of traditional Disney animation, making all objects change their shapes as they move. While the aesthetics of anthropomorphism of classical Disney code deserves a special analysis, one reason for its comeback in computer animation is that it makes possible more complex animations [9], separating top companies which, through the use of custom software, can incorporate "stretch" and "squash" effects, from the users of turnkey systems, limited to rigid objects.

Adding all kinds of motion makes a final animation more complex. Alternatively, visual complexity of an animation can be increased by complicating the geometry of the scene itself. Individual objects should have as much detail as possible. This is achieved by making objects more detailed geometrically, but also by choosing one shading algorithm over another. Simple algorithms shade surfaces flat, while more complex ones turn them into continuous gradations, resulting in "rich" looking objects. Indeed, such objects are literally richer, since more complex algorithms take more time to execute, thus costing a client more.

Apart from the degree of detail in single objects, the design of the scene as a whole should point to the amount of labor which went into it. This works in an interesting

way in the animations of logos, which are the bread and butter of the commercial 3D animation field. The default (and least expensive) animation involves bringing the logo into its final position on the screen in some way. Typically, a logo as a whole flies in, or its pieces assemble into the whole. But in top-of-the-line animations, the designer builds a whole architectonic construction, involving many pieces, with the logo being just one of them. Such designs can be explained through the competitive pressure to increase the complexity of an animation, since there is just so much one can do with a logo itself.

Computer look

The aesthetic standards of smoothness and complexity, discussed so far, function to signify the professionalism of computer animation designers and the prestige of their clients. A client distinguishes himself by commissioning the state-of-the-art computer animation, complex and sleek. Similarly, the choice of computer animation over other media is already significant, already prestigious in itself. Currently, a 3D animation is still the most expensive video effect. Besides signifying monetary investment, computer-generated visuals readily function as signs of high-tech and scientific progress — something every company wants to be identified with. The use of computer animation signifies that the client is rich enough to pay for it and modern enough to use it. Thus, the use of computer animation is already a message — but only if the appearance of the images clearly reveals their computer origin.

3D animation, in principle, can be quite photo-realistic and hardly distinguishable from a real scene recorded on film. But if designed in this fashion, its main symbolic value is gone. Accordingly, commercial 3D pieces incorporate various strategies that obviate their artificiality, even though separate elements can be quite illusionistic. These design strategies include the choice of very wide lenses, rollercoaster-like camera moves, the placement of objects in neutral space rather than in a familiar environment, the use of abstract design elements, exaggerated reflections, and so on. The overall geometric look in even top-of-the-line animations, which professional discourses blame on the hardware/software limitations, also can be seen as quite intentional: actually downplaying the current technical possibilities and using newer technology to simulate the old, familiar "computer look."

Conclusion

In considering the mechanisms of professional distinction in the field of computer animation, I established that the aesthetic standards function like the technical standards. The conjunction "like" implies both similarity and difference, and we now may be in a better position to see what these similarities and differences are.

Both aesthetic and technical standards establish the requirement for a considerable investment needed to compete in the professional market. But while they have the same function, aesthetic standards appear to be the more effective mechanism to legitimate the status of design professionals.

As Bourdieu proposed, it is the proclaimed disinterestedness and universality of the aesthetic that makes it the most powerful mechanism to legitimate social distinctions. As with other aesthetic judgments and tastes, the aesthetic standards are justified with the reference to the universal aesthetic experiences of beauty and pleasure and thought to be divorced from the pragmatic interests of social life. In contrast, the technical standards are explicitly formulated by the industry organizations and enforced by government regulations. Accordingly, while the connection between technical standards and the interests of professional agencies is obvious, the aesthetic standards are thought to be unrelated to the interests of any agency. Thus, the standards of smoothness and complexity in 3D computer animation are so effective in protecting the status of the professionals because they figure in the realm of the aesthetic.

References

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