Chapter 9
The Cultural Landscape of Three-Dimensional Imaging

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ABSTRACT

This chapter explores the cultural contexts in which three-dimensional imaging has been developed, disseminated, and employed. It surveys the diverse technologies and intellectual domains that have contributed to spatial imaging and argues that it is an important example of an interdisciplinary field. Over the past century-and-a-half, specialists from distinct fields have devised explanations and systems for the experience of 3-D imagery. Successive audiences have found these visual experiences compelling, adapting quickly to new technical possibilities and seeking new ones. These complementary interests, and their distinct perspectives, have co-evolved in lock-step. A driver for this evolution is visual culture, which has grown to value and demand the spectacular. As a result, professional and popular engagements with 3-D have had periods of both popularity and indifference, and cultural consensus has proven to be ephemeral.

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INTRODUCTION

As the preceding chapters illustrate, the field of 3-D imaging is one that has encouraged a diversity of approaches. Physicists and optical engineers have focused on the properties of light to understand how three-dimensionality can be modelled and reproduced optically. Physiologists have studied binocular vision to reveal how the eyes and brain achieve the miracle of stereopsis. Artists have been intrigued by this curious dimension of imaging that falls between sculpture and painting. And, historical accounts provide a further axis – time – that solidifies these discrete perspectives, placing them in a temporal order that hints at causes and effects.

Each of these perspectives frames the field uniquely, but linking them are the threads of culture. It is generally appreciated that artists and their works flourish or fade in particular cultural environments, but we often overlook the cultural dimensions of science and technology. While scientific attention, for example, may occasionally be prompted by a ‘breakthrough’ – a sudden revelation triggered by a newly discovered fact – more often than not is inspired by a pre-existing influences. Scientific networks, current topics of discussion and intellectual fashions all play a role in determining where attention is focused and how problems are pursued. Similarly, engineering development may be motivated by identification of a market need, available resources or a particular constellation of skill-sets. The successful marshalling of these factors often requires a particular cultural context. The attitudes and understandings of peers and competitors, purchasers and critics, shape the trajectory of technologies and their social uses.

As this hints, any one of these perspectives – scientific, technological, artistic, economic – may restrict vision, too, in just the way that the Victorian stereoscope provides a sense of reality that is nevertheless unable to view the parts of the scene masked by others.

There are other disciplines, too, that have engaged periodically with the attractions of light and vision. Some of them have had disputed intellectual borders. The link between the eye and brain has both brought together and divided physiologists and psychologists since the turn of the twentieth century (Johnston 2001). The mid-century origins of holography forced together optical specialists and radar engineers, merging the fields of physical optics and communication theory in the process (Johnston, 2006). And the technical subject of imaging has been partitioned through the past century first by the technologies of photographic film and electronic sensors, and later by equally deep analogue-versus-digital divides.

Such collisions of intellectual worlds are at the heart of three-dimensional imaging. The field straddles disciplines, and this uncomfortable position helps explain why it has periodically inhabited a hinterland. Which experts can provide an authoritative voice, guide its path and predict its future? In practice, 3-D imaging has required a melding of expertise, drawing together knowledge, innovation and forecasting. The field is interdisciplinary: more than the sum of its parts, its successful branches have merged disciplinary insights.
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