


# Chapter 12

## The Popular Culture of 3D Printing: When the Digital Gets Physical

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### ABSTRACT

*As 3D printing technology achieves mainstream adoption, people are forming new relationships with products as they shift from passive consumers to “prosumers” capable of both producing and consuming objects on demand. This is fueled by expanding online 3D printing communities, with new data within this chapter suggesting that prosumers are challenging existing understandings of popular culture as they bypass traditional mass manufacturing. With 3D digital files rapidly distributed through online platforms, this chapter argues that a new trend for “viral objects” is emerging, alongside the “3D selfie,” as digital bits spread via the internet are given physical form through 3D printing in ever increasing quantities. Analysis of these trends will provide academics, educators, and prosumers with a new perspective of 3D printing’s socio-cultural impact, and further research directions are suggested to build a broader discourse around the opportunities and challenges of a cyberphysical future.*

### INTRODUCTION

Futuristic visions within popular culture have often portrayed the ability for a machine to materialize any desired object on-demand. According to *Star Trek: The Next Generation Technical Manual*’s description of a device on board the starship Enterprise:

*Recent advances in transporter-based molecular synthesis have resulted in a number of significant spinoff technologies. Chief among these are transporter-based replicators. These devices permit repli-*

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*cation of virtually any inanimate object with incredible fidelity and relatively low energy cost. (Okuda & Sternbach, 1991, p. 90)*

This vision of a replicator system may have appeared futuristic several decades ago; however, the technology today known popularly as 3D printing has evolved over a relatively short period of time from being a specialist prototyping tool used by designers and engineers, to one of mainstream adoption within a society hungry for new and more personalized products and experiences. As a result, many of the technical aspects of replicator-inspired 3D printing systems are now widely disseminated through both academic and popular media sources, and 3D printers have even made their debut on board a real starship in the form of the International Space Station. Science fiction has become science. Despite the technical aspects of this technology being well investigated through engineering discourse, literature examining the popular cultural context of the technology has received little attention; this chapter will address the shortfall in knowledge by analyzing how the popular culture trends from the digital world are now migrating to the physical world through 3D printing.

Through this analysis it will be argued that consumers are empowered through 3D printing to both produce and consume their own products, no longer reliant on mass manufacturing to determine their choices. The rise of the so-called ‘prosumer’ is tightly coupled with broader shifts described by the fourth industrial revolution and a hyperconnected society that increasingly allows individuals to shape their personal experience of both the digital and physical worlds. With numerous facets of popular culture increasingly intertwined with 3D printing, this chapter will present new data to demonstrate the significance of growing online communities and appearance of ‘viral objects’ which spread through the physical world in similar fashion to digital viral media campaigns and videos. Digital bits allow the spread of viral objects, while 3D printers turn the bits into atoms, spreading them through the physical world in increasing numbers and permutations. Similarly, the selfie has also begun to leave the constraints of the digital world, benefiting from the growth of 3D scanning and facial recognition technology and shifting this phenomenon into the physical world. The ‘3D selfie’ raises new questions about user privacy and the emotional effects on individuals whose narcissistic tendencies may be reinforced by a 3D selfie culture.

This chapter will help researchers of popular culture, as well as academics, educators and prosumers utilizing 3D printing, to identify the relationships between 3D printing and broader socio-cultural factors that are transforming the way people consume products. Through this knowledge, emergent opportunities and challenges that will appear during the coming years, as 3D printing becomes increasingly ubiquitous, will be more readily examined with objectivity. This will be used to inform future research directions in academic, commercial and educational contexts. The chapter is a catalyst for a new research focus on 3D printing within popular culture, and is necessary to prepare for a future where the boundaries between the digital and physical worlds are increasingly blurred.

## **Background**

Prior to the first industrial revolution, the ‘consumer’ was closely linked with the producer; local artisans and craftspeople produced and sold products directly to their community, and many items were custom made or repaired dependant on individual needs. The notion of product *consumption* did not exist; people bought or made items they needed to survive and make a living, and products were rarely identical, with skill and availability of materials defining the characteristics of the final product. Following the first and second industrial revolutions and rise of mass production, artisans and craftspeople gave way to

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