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**Models and Methods of  
University Technology  
Transfer**

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# Models and Methods of University Technology Transfer

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## Models and Methods of University Technology Transfer

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### Abstract

This monograph argues that a linear model of technology transfer is no longer sufficient, or perhaps even no longer relevant, to account for the nuances and complexities of the technology transfer process that characterizes the ongoing commercialization activities of universities. Shortcomings of the traditional linear model of technology transfer include inaccuracies — such as its strict linearity and oversimplification of the process, composition, a one-size-fits-all approach, and an overemphasis on patents — and inadequacies — such as failing to account for informal mechanisms of technology transfer, failing to acknowledge the impact of organizational culture, and failing to represent university reward systems within the model. As such, alternative views of technology

transfer that better capture the progression of the university toward an entrepreneurial and dynamic institution are presented here, and that advance the body of knowledge about this important academic endeavor.

*Keywords:* Technology transfer; entrepreneurial university; intellectual property; patents; innovation; commercialization.

*JEL Codes:* L26, O31, O34

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# 1

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## Introduction

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Since passage of the Bayh-Dole Act in 1980, universities have increasingly been engaged in technology transfer. Commercialization of university-discovered technologies is a driver of economic growth and universities have played a major role in bringing innovative ideas and inventions to market. Technology transfer activities, which were once practiced mainly by such elite universities as MIT, Stanford University, and the University of California system, are now nationwide. Technology transfer can potentially generate revenues for universities, create research connections between academia and industry, and enhance regional economic growth and development.

There is a large body of literature regarding university technology transfer, mostly focused on institutions that facilitate commercialization such as technology transfer offices (TTOs) or offices of innovation and commercialization (OICs),<sup>1</sup> and mechanisms that facilitate commercialization such as patents, licensing, and spinoffs or startups. However, the process of technology transfer from invention

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<sup>1</sup>There is a burgeoning trend for universities to rename the Technology Transfer Office using terms like *commercialization*, *innovation*, or *outreach*. Herein, we retain the traditional descriptor of TTO.

## 2 *Introduction*

to commercialization is often assumed to be something of a black box. A generalizable model of technology transfer is difficult to find, and one that accurately depicts the subtleties of how knowledge and technology are transferred in practice is arguably nonexistent. The extant literature is replete with depictions of traditional models of the technology transfer process, but for the most part these are oversimplified and restricted by the assumption of a linear knowledge flow. As universities become more entrepreneurial and look toward technology transfer into nontraditional fields, there is a need for alternative conceptualizations of technology transfer that are more accurate and realistic than the traditional linear model and that are generalizable to the nuances of the university to which they are applied.

This monograph is organized as follows. Section 2 presents a schematic of the traditional model of the technology transfer process based on the existing academic and professional literature. The traditional model is characterized by its linearity and formality. The process begins with a discovery by a university scientist and follows a linear path from disclosure to the TTO to the invention being patented, marketed, and licensed to an existing firm for further development and commercialization or to a spinoff or startup company being established around the invention.

Section 3 offers a review of the extant literature on university technology transfer, and it maps this body of literature according to each process within the traditional linear model. The literature review emphasizes the mechanisms that are used to proceed from one process in the traditional model to the next. However, the traditional linear model has numerous weaknesses and misrepresentations, which need to be addressed and remedied.

Section 4 addresses the limitations of the traditional model, specifically focusing on its inaccuracies and inadequacies.

After taking these limitations into account, Section 5 offers alternative methods and models of university technology transfer. These alternative conceptualizations are intended to represent more accurately technology transfer in practice and to emphasize concepts of academic entrepreneurship and open innovation.

Finally, in Section 6, we draw conclusions and discuss the avenues that universities can follow to improve the efficiency and effectiveness of their technology transfer activities. And, we discuss future implications for the institution of university technology transfer.

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