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Innovation and Spatial Dynamics**

Tracing the Portland Athletic Shoe Industry. Innovation, Time & Space

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Abstract: The athletic shoe industry in Portland, Oregon is examined in this paper. We argue that Portland's athletic shoe industry is representative of an industry cluster, and go on to examine the roles of technology diffusion, innovation, local competition, local demand and local factor conditions in the growth of this industry in the Portland area. In addition, we consider the industry's integration of global commodity chains as a key innovation. We describe historical changes in the control of commodity chain nodes for two main firms in the Portland region, Nike and Adidas. We argue that new technologies and innovations have shifted commodity chain relationships for these firms and suggest that current and future shifts might lead to a lessening importance of some local factors which have previously contributed to the clustering of athletic shoe firms in the region.

Key words: Innovation, cluster, commodity chain, Nike, Adidas, Portland, Oregon, apparel, shoes

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1. Introduction

The Portland athletic shoe and sportswear industry is made up of a number of large multinational firms with their global or North American headquarters located in the Portland metropolitan area. Currently, two of the largest companies present in the region are Nike, which has its world headquarters in the Portland suburb of Beaverton, and Adidas America, which has its headquarters inside the City of Portland.

This study attempts to answer why Portland has a concentration of firms in this sector and examine whether past innovations in the industry have played a role in this concentration. It will analyze how this concentration in Portland has influenced the current pattern of innovation in the industry. Finally, the paper will examine what impact current macro-level technological innovations are having on the industry.

This paper will argue that a concentration of tacit knowledge related to athletic shoe design, production, marketing and advertising currently exists in the Portland metropolitan area. In addition, it will argue that specific knowledge related to the cultivation, management, training and oversight of contract footwear producers in Asia is currently concentrated in the Portland area. More precisely, this paper aims to show that in this specific case, the local concentration of firms emerged partly in order to aid the diffusion of innovative structures whose development can best be explained by global commodity chain perspective.

1.1 Chapter Overview

Chapter 1 will outline the main argument and the questions this paper seeks to answer. It will also include an overview of the delimitations of the study.

Chapter 2 will present the theories this study is concerned with while Chapter 3 introduces the methods and data employed in examining the industry.

After providing a brief history of the athletic shoe industry in Chapter 4, Chapter 5 will discuss the spatial and dynamics of the industry and will analyze the evidence of and reasons for the concentration of firms in the Portland region. This discussion will focus mainly on Nike & Adidas as key firms.

Following this discussion, Chapter 6 will show how mastery of the global commodity chain was the initial engine driving the growth of the industry in Portland. This chapter will explore the de-linking of manufacturing from garment and footwear design, sales and marketing as a function of the diffusion of the technology shift surrounding Fordist reorganizations of the means of production, and later, reorganizations linked to the early influence of information and communication technologies.

Finally, Chapter 7 will examine the likelihood that current developments connected to the integration of maturing information and communication technologies will lead to a hard-wiring of “soft-side” linkages between a widely dispersed consumer base and the marketing and design aspects of the business, and explore the possible further implications of these technologies for the spatial dynamics of those (currently) core marketing and design functions. Chapter 8 concludes the paper and summarizes its findings.

1.2 Delimitation

For the purposes of delimitation and clarity, it is important to constrain the scope of this paper in several respects. These constraints will be briefly considered here. First, and perhaps most importantly, the athletic shoe industry will be historically analyzed and projections will be made with the central assumption that the industry, as it is currently configured, is in fact based on a viable model of value added production. That is to say, that the model of capturing value through imbuing certain products with signifiers which are highly culturally relevant and which stimulate demand for such products has been relevant over the recent history of human consumption and will continue to be successful or at least tenable in the face of the current economic downturn, correction, or rationalization phase. While some theorists question the continuing applicability of this model (Benkler, 2006: p.300), such theorizing is outside the scope of this paper.

Secondly, the role of politics in the patterns of international trade, international commodity chains and the globalization of capital will not be discussed in any depth and is considered outside the central scope of this study's concern - despite the obvious fact that the importance of political decision making to the structure of international trade is considerable, and is broadly discussed in the works of Gereffi & Kozeniewicz (1994) as generally important to the structure of the global commodity chain, and more specifically in their work and in the works of Katz (1994), Locke (2003) and Strasser & Becklund (1991) as it relates to the history of the athletic shoe industry, its growth and its current position both domestically and internationally.¹

The characteristics of trade relationships and of backward and forward linkages through the commodity chain will be discussed with the assumption that the

¹ For more specifics on the influence of international trade politics on the firms in question (and their bottom-lines), firms' annual reports often describe such considerations in depth.

current policy climate surrounding trade and trade barriers will continue to shift somewhat predictably and at a measured pace, and that no radical political sea-changes will destabilize these linkages.

Finally, it should be acknowledged that some of the background material surveyed for this study is either firm- or industry-sourced and therefore, must be considered inherently biased in its presentation of innovative activities and practices which relate to athletic shoe design. The concept of “innovation” as it is commonly used in the field of athletic shoes poses some unique problems. Phil Knight categorized these problems succinctly in explaining that:

“For years, we thought of ourselves as a production oriented company, meaning we put all our emphasis on designing and manufacturing the product. We've come around to saying that Nike is a marketing-oriented company, and the product is our most important marketing tool. We used to think that everything started in the lab. Now we realize that everything spins off the consumer.”(Willigan, 1992)

The incorporation of a degree of novelty-for-novelty's-sake in modern shoe design serves to obscure the role of non-trivial design innovations. The view that novelty is itself a good promotional tool (Rothenburg, 1994, p.204) should be seen as a marketing innovation adopted by the shoe industry. New design features which result from the implementation of this marketing innovation should not themselves be considered anything more than trivial, as they do nothing to improve the long-term advantage of an athletic shoe firm, except, perhaps, in the marketing and brand-building arena.

Therefore, while informed by the aforementioned firm- and industry-sourced materials, this study's consideration of innovative activities will focus most of its attention on effects of non-design related innovations.

2. Theory

Temporally and at a macro level, this paper is based in neo-Schumpeterian theories of growth and economic evolution and the concept of long waves of technological change, as discussed by Van Duijn (1983), Jan Fagerberg (2002) and others. The further refinement of Schumpeterian constructs, as represented by the concepts surrounding general purpose technologies (GPTs) and development blocks, as developed by Lennart Schön, informs the analysis of current and past innovations in the athletic shoe and sportswear market vis-à-vis the technological diffusion of these technologies. These constructs will also be employed to suggest possible future developments in the athletic shoe and sportswear industry dependent on the successful integration of currently ascendant GPTs, as those technologies are seen to direct the focus of innovative activity and adoption of external innovations at the firm level (Lundquist et al., 2008).

Michael Porter's theories on the role of geographic concentration in creating competitive advantage – in particular the roles of local demand, employee movements and inter-firm rivalry – will be utilized in an attempt to explain the concentration of these firms in the Portland area. Specifically, we are concerned with Porter's so-called "diamond of competitive advantage" (Porter, 2000) as it relates to industry clusters. Porter's theories largely rest on the agglomeration-related concepts of Alfred Marshall, but have been developed into an entire body of work describing local clusters, value chains and the reasons for differences in regional and national economic performance. His theories have proven extremely popular with regional economists and local and regional government agencies (Cortright, 2006).

Several studies have examined the representativeness of the cluster concept. In perhaps the most comprehensive treatment the article "(How) Do (Firms in) Clusters Create Knowledge?" sees Anders Malmberg and Dominic Power perform a meta-analysis of a number of studies using the cluster concept, and find that some

of the elements Porter emphasizes in the concept, most notably firm rivalry and employee movement, do appear to have descriptive power (Malmberg & Power, 2005). The economic geographer Peter Dicken, while recognizing the value of Porter's exploration of phenomena related to value chains and clustering, sees the primary thrust of Porter's theory as "prescriptive rather than analytical" (Dicken, 2001). In their 2007 article, "Knowledge Collaboration and Proximity", Moodysson and Jonsson examine problems with the notion of "proximity" as its commonly employed in cluster studies, elaborating on the idea that there is far more to proximity than simple geographic distance (Moodysson and Jonsson, 2007).

Bjørn Asheim has emphasized the role of tacit knowledge in geographic regions. In his paper "Differentiated Knowledge Bases and Varieties of Regional Innovation Systems" he emphasizes that the tacit knowledge of "habits and norms and 'everyday culture' of specific social groups" is core to creation and innovation in the practice of design and the imbuing of products with "sign-value" (Asheim, 2007), essentially arguing that the requirement for this tacit knowledge is connected to place; suggesting that a deep knowledge of local culture is necessary to develop products which prove aesthetically and symbolically valuable in that culture. This paper will argue that this need for tacit knowledge, as it relates to outdoor sporting culture, is one of the reasons for the current concentration of athletic shoe and sportswear firms in the Portland area.

In addition, the "global commodity chain" approach developed by world systems theorists Gary Gereffi and Miguel Korzeniewicz (1994), provide analytical tools essential to the understanding of the modern Athletic shoe and sportswear industry as it exists internationally and also help us to better understand the innovations that have driven growth in the industry and led to its concentration in Portland. In the book *Commodity Chains and Global Capital*, they present their theories regarding the development of global commodity chains (1994). In his chapter discussing the athletic footwear industry, Korzeniewicz emphasizes the current importance of

non-production activities in “buyer-driven” commodity Chains (Gereffi & Korzeniewicz, 1994: pp. 248-65).

While Fordist production methods were the initial innovation that allowed standardized control over the temporal elements of production (Ibid. p.53), and later, over the spatial elements (Ibid. p.56), these production methods required relatively standardized products.

A new round of innovations in the era of post-Fordist production allowed coordinating firms connected with certain types of commodity chain to capture a significant part of the chain’s value, although they were not involved directly in production.

In order to examine the ways in which non-production activities have shifted the innovative core of the value chain away from production in certain sectors, Gereffi suggests that it is essential to distinguish between buyer-driven and producer-driven value chains (Ibid. p.99).

Producer driven commodity chains are described as those in which producers coordinate the industry, often due to the technologically complex nature of the product and associated technology- and capital-intensive inputs. Firms producing this type of product centrally direct complex networks of production, sourcing components from hundreds or thousands of international suppliers (Ibid. p.97). Buyer driven commodity chains, on the other hand, are characterized by directing companies who do no actual production. These firms - such as Nike, Reebok and the other major athletic shoe manufactures - design and market products and manage the commodity chain, but have outsourced various other parts of the value chain to firms around the world.

Gereffi & Korzeniewicz tell us that in order to “analyze processes of competition and innovation within a commodity chain”, it is important to understand the role of

directing companies in buyer-driven commodity chains (ibid. p.10). These companies have introduced innovations tied to changes in marketing, design and advertising. As Gereffi writes:

“Profits in buyer-driven chains thus derive not from scale economies and technological advances as in producer-driven chains, but rather from unique combinations of high-value research, design, sales, marketing and financial services that allow the buyers... to act as strategic brokers in linking overseas factories... with evolving product niches in their main consumer markets” (Gereffi & Korzeniewicz, 1994: p. 99)

Finally, this paper will consider the structure of post-modern consumption and explore the idea of a post-Fordist consumer as concepts which inform a re-assessment of the importance of the consumer and consumer culture through models of social production (Benkler, 2006), crowd-sourcing (Howe, 2006) or the “hard-wiring” of what Jeremy Howells calls “soft-side feedback” (Howells, 2005) and which might also suggest a shift in the importance of certain spatial relationships. Much of this new consumer culture, it is suggested, has been facilitated by the increasing utility of online social networks (Cachia et al., 2007).

3. Data & Methods

This study will draw on data accumulated from a variety of sources. It will combine exploratory and descriptive research in an inductive analysis of the industry. Data sourced from the labor surveys of local and regional governments will be a main quantitative source for this study. In order to illustrate the current state of the industry in Portland, data sourced from Portland Development Commission (PDC) reports will be referred to and compared with data collected from the State of Oregon’s Labor Market Information System (OLMIS); the US Census Bureau and The US Department of Labor.

Secondary analysis will be carried out on this labor market data and additional data presented in economic development studies commissioned by the agencies of various local and regional governments.

This study will consider firms located in the Portland metropolitan region using the same geographic definition of the region as the US Census Bureau, which includes the five Oregon counties of Multnomah, Clackamas, Columbia, Washington and Yamhill as well as Clark County in Washington State.

Issues with data availability, relevance and lack of access to pertinent sources must be considered. A few of these issues are perhaps specific to the industry in question, but most are widespread issues that would seem to be present when trying to gather information on any firm in the US using governmental databases.

OLMIS and the US Census Bureau use industry employment categories as defined by the North American Industry Classification System (NAICS), which may not directly correspond to the labor groupings that are of interest in this study (Porter, 2000; Cortright, 2006: p29). The US department of labor has recently begun using the NAICS system as well, but their implementation is not complete and some data is not available when using this classification scheme.

Other studies have suggested that using NAICS classifications to analyze Portland's sportswear design and marketing sector can result in a significant under-estimation of the total sectoral employment (PDC, 2006: p7).

In addition, when considering employment growth in the apparel design and marketing sector over time, it is necessary to account for the fact that the employment categories used by OLMIS and the US Bureau of Labor Statistics (BLS) have changed over the years. Due to these changes, employment measured in categories before 2001 is not comparable with categories after 2001. Joe Cortright

outlines a number of these changes and the problems they pose to researchers in his paper “Making Sense of Clusters” (Cortright, 2006: p.30).

Further problems with gathering firm-level quantitative data for the study arise due to the nature of the firms studied. Heike Mayer suggests in her cluster analysis guide that it is vital to partner with firms in order to access proprietary data which may be key to deep and thorough analysis, and unavailable from public sources (Mayer, 2003: p11).

However, it has proven especially difficult to reach agreements with firms in this field, or even to make useful contact with their employees. Several requests for information and interviews by the author of this report were ignored or denied. The lack of openness to academic access can be seen as part of a larger industry-wide reluctance to provide any data that might be seen as proprietary or too helpful to competitors².

Despite the lack of qualitative feedback from corporate sources, this paper does include the perspectives of several individuals considered to have expert knowledge of the industry, but who are working outside the corporate sphere. These individuals were contacted via email correspondence, arranged through associates of the author who work in the industry. Individuals were chosen based on their past corporate experience, current involvement in the industry and the overall duration of their employment in the industry. While their perspectives have provided some valuable guidance to the author, and their answers to specific questions have been included as sources where appropriate, this paper is based largely on qualitative textual analysis and limited quantitative analysis, and not interviews with primary sources.

² Regarding lack of access, Nike’s website specifically states that they do not speak with academics. Both Nike and Adidas employees are typically under non-disclosure agreements (See Nike 2008 SEC form 10-K; Adidas annual report, 2001)

While it appears possible to identify the degree of industry cluster activity and shifting commodity chain relationships using only secondary analysis, public records, and required financial disclosure documents, the level of detail provided by those sources may not allow the researcher to explore the type of cluster-specific or commodity-chain-specific causal relationships that more detailed firm-level data or extensive interviewing or surveys would allow for (Cortright, 2006: p35).

Without direct access to detailed firm-level data, this study would either have to develop a novel approach to the construction of firm-level data, or, as is the case, rely on more qualitative methods to explore possibly related variables.

Primary material sourced from the companies and entities in question will be considered alongside secondary material from academic literature and the business press. In order to better understand the commodity chain relationships of the main firms in question, their annual reports will be analyzed and data gleaned from those reports will be presented alongside findings from articles concerned with the innovations, spatial relationships and commodity chains of these firms.

Nike and Adidas will be the firms that receive the most thorough treatment in this study. This is owing to a few main factors. First and foremost, they are the industry's largest actors by all measures. Following recent acquisition activities by the two firms, many of the smaller companies that once competed with them are now their subsidiaries. Secondly, they are innovation leaders. In studying innovations in the athletic shoe industry, it quickly becomes apparent that these two firms have been driving the changes in the industry for more than fifty years. Finally, likely due to the two aforementioned qualities, and the fact that both firms are now publically traded companies, there are far more primary and secondary

information sources available concerning these two firms, which makes them much more suitable for an in-depth case study such as this one.

3.1 Quantitative Analysis

Studies which seek to define clusters should include analysis of location quotient (LQ) of the local sector, average wages in the sector, and employment growth in the sector over time to determine if the local sector is growing in absolute terms, and a shift-share analysis of job gains/losses to other regions to determine if the local sector is growing relative to other regions with concentrations of jobs in the sector. The importance of these quantitative measures is clearly described in the report “Cluster-Based Community Development Strategies” developed by scholars at Carnegie Mellon University (2002: pp.21-24)

Location Quotient measures the level of employment in a given sector for a region in a ratio with the national average (Mayer, 2003). It can be computed using the following basic formula:

$$LQ_x = (e_x/e)/(E_x/E)$$

Where “ e_x ” represents local employment for industry “ X ” and “ e ” represents total local employment in all sectors, “ E_x ” represents national employment for industry “ X ” and “ E ” represents total national employment in all sectors (Mayer, 2003: p15). A high location quotient (above 1.0 or 1.25 depending on other indicators) suggests the industry may meet the definition of a “cluster” (Cortright, 2006: p.38).

Average employee wage can be calculated or extracted from data sets for a given sector, and then compared with the same sector’s average wage nationally and in other metropolitan regions. In their 2006 target industry plan, the Portland

Development Commission (PDC) developed a method for comparing wages in the NAICS job classifications they have associated with the sportswear/apparel design and marketing sector between the west coast as a whole and the Portland metro area as a region (PDC, 2006: p10). High comparative wage levels in a sector that meets the definition of a cluster can be indicative of a high value-added component and innovative activity in the cluster (Mayer, 2003, p. 18). For the purpose of further analysis, the PDC method, while imperfect due to the aforementioned NAICS problems, has been deemed acceptable. Therefore, this study will utilize the same set of job classifications that PDC has identified as associated with this cluster.

Employment growth in a regional sector is also relatively easy to determine, once the sector has been defined using carefully selected NAICS classifications. As part of the same PDC report mentioned above, the agency demonstrated how employment growth in the Portland area's sportswear sector might be measured and compared with growth in other regions and the nation as a whole (PDC, 2006: p11). Similar methods will be employed by this study, using up-to-date employment data.

Shift-share analysis is another valuable tool for identifying local sectors that are outperforming national sectoral trends or similar sectors in other regions. This study will employ shift-share analysis as a further analytical tool with which to represent the relative health of the Portland area sportswear/apparel design and marketing industry. Heike Mayer carefully details the specifics of calculating shift-share data across regions in her "Cluster Monitor" study (2003: p22).

The basic approach to calculating shift-share figures employs four formulas to account for Total Employment Shift (**TS**), National Share (**NS_x**), Industry Mix (**IM_x**) and local factors (**LF_x**).

$$TS = NS_x + IM_x + LF_x$$

$$NS_x = e_x^{t-1} (E^t/E^{t-1})$$

$$IM_x = e_x^{t-1} ((E_x^t/E_x^{t-1}) - (E^t/E^{t-1}))$$

$$LF_x = e_x^{t-1} ((e_x^t/e_x^{t-1}) - (E_x^t/E_x^{t-1}))$$

where “ e_x ” is local and employment in industry “ x ” and “ E_x ” is national employment in industry “ x ”; “ e ” is local total employment for all industries and “ E ” is national total employment for all industries; $t-1$ and t are the beginning and end of the period of time being considered. (Mayer, 2003: p.22)

4. Background

Adolf “Adi” Dassler, a German shoemaker and inventor, founded Adidas. Dassler began making shoes prior to World War II. Initially in business with his brother Rudolf, the two fell out following the war, with Rudolph going on to found Puma, another athletic shoe company. Both firms were and are still headquartered in the town of Herzogaurach, in the German state of Bavaria (Strasser & Becklund, 1991: p.46).

Adi was a cobbler by trade, giving him a much more comprehensive understanding of traditional shoe construction and design than his eventual rival, Phil Knight. Due to the constant string of product innovations that Adi introduced, and the close relationships that the company built with major entities in the sporting world, Adidas grew into the dominant international force in athletic shoes (Strasser & Becklund, 1991: p.50).

Nike founder Phil Knight was a runner, and in 1964 founded his business in partnership with his former coach from the University of Oregon, Bill Bowerman. Bowerman was a nationally known figure in track and field and would go on to coach the US Olympic team (Willigan, 1992).

The initial incarnation of the company that would become Nike was called Blue Ribbon Sports (BRS). Knight formed the company to distribute Japanese running shoes purchased from the Onitsuka company based in Kobe, Japan. Apart from his accounting degree from Stanford Business School, Knight had little business experience and instead relied on his grassroots connections to the sport of running, selling shoes through Bowerman and from the trunk of his car at local track meets and running events (Strasser & Becklund, 1991: p.52).

The shoes represented a product of comparable quality to the dominant Adidas models. In addition to the marketing advantage Knight had through his understanding of American runners, he also had a price advantage, as his Japanese-sourced models were significantly cheaper than European-produced Adidas shoes (Locke, 2003).

Knight and Bowerman's first product innovations came through their adaptation of Onitsuka designs through the application of their personal knowledge of runners' needs. These crude inventions were often the result of cutting up and combining features from various models of Onitsuka shoes (Strasser & Becklund, 1991: p.63). One of Bowerman's most notable early inventions was the introduction of running shoes designed using a new "waffle sole", the prototypes of which were actually made by pouring latex into a waffle iron (Holmes & Bernstein, 2004).

Nike's most important early business innovation is related to its focus on individual amateur and recreational athletes, a market that Adidas hadn't directly targeted (Rothenburg, 1994: p.200). By focusing on technological innovations and marketing that appealed to and reflected the values of these non-professional athletes, Nike became a brand with something of a cult following among the growing recreational running community (Strasser & Becklund, 1991: p.227).

Introduced	Firm - Innovation (Type)	Diffused?
1892	Goodyear – Sells first rubber-sole “sneakers” under the Keds® brand (product)	Yes
1917	Converse – introduces the first basketball shoe (product)	Yes
1925	Adidas – Invents first track shoes with spikes (product)	Yes
1952-54	Adidas – Invents track & soccer shoes with removable spikes (product)	Yes
1960	Adidas – Begins its high-visibility association with the Olympics (marketing)	Yes
1966	Nike – pioneers US designed shoes produced in Japan (supply chain)	Yes
1967	Adidas – Launches apparel line to complement shoes (product)	Yes
1972	Nike – waffle sole designed for running shoes (product)	Yes
1975	Nike – introduces futures program for retail orders (supply chain)	Yes
1977	Nike – funds Athletics West training camp for track & field (research & marketing)	No
1981	Nike – Introduces first shoe with Air-sole (product)	Patented
1980s	Nike - Markets shoes using the personality of individual athletes (marketing)	Yes
1982	Nike – 86% of footwear produced in Korea or Taiwan (supply chain)	Yes
1982	Reebok – introduces first aerobics shoe, targets women (product / marketing)	Yes
1984	Reebok – buys Rockport, puts athletic shoe tech. in formal shoes (product)	Yes
1985	Nike – introduces Air Jordan® - first shoe tied to individual athlete (marketing)	Yes
1988	Adidas – Introduces Torsion® sole system (product)	Patented
1989	Reebok – Introduces the Pump® basketball shoe (product)	Patented
1990	Nike – Opens Nike Town retail store concept in Portland (marketing & sales)	Yes
1993	Adidas – introduces “classics” line of nostalgia-influenced products (marketing)	Yes
2000	Nike – under public pressure, implements anti-sweatshop initiative (corporate)	Yes
2001	Adidas – launches “miAdidas” shoe customization line (product)	Yes, NIKEiD
2002	Reebok – introduces first “signature shoe” for a musician – Jay-Z (marketing)	Yes
2002	Adidas – Introduces ClimaCool® Shoe technology for ventilation (product)	Patented
2004	Adidas – partners with famous fashion designers for shoe design (marketing)	Yes
2006	Adidas – w/ Polar - “project fusion” fuses shirt & heart-rate monitor (product)	Yes
2006	Nike – Nike+ shoe technology with online social network (product / marketing)	Yes, miCoach
2008	Nike – introduces Flywire® shoe technology using reinforced fabrics (product)	Patented

Figure 1 Timeline of Athletic Shoe Industry by Major Innovations³

³ Sources: Strasser & Becklund, 1991; Goldman & Papson, 1998; Adidas group; Nikebiz; Reebok; sneakerhead.com

From a geographic standpoint, Knight and Blue Ribbon Sports were fortunate to be located in a region that would be at the forefront of a growing public interest in recreational running & jogging. Much of the company's early growth can be attributed to their proximity to and tacit understanding of the growth in popularity of running and jogging amongst Americans during the early 1970s (Aaker & Joachimsthaler, 2000).

By the early 1970s, Blue Ribbon Sports and Onitsuka had both dramatically increased their operations in and ambitions for the American market. The two companies' ambitions, however, would prove mutually exclusive and lead to an acrimonious split, followed by years of lawsuits (Strasser & Becklund, 1991: p.203). Showing significant foresight, Blue Ribbon Sports had previously begun to make strategic arrangements with other Japanese firms who would produce American designed shoes for sale under the Nike brand name (Locke, 2003). Blue Ribbon Sports officially became Nike in 1981 (NikeBiz website, 2009). After some reorganization, The Onitsuka Company merged with several other Japanese firms and began selling running shoes under the Asics brand name (Asics.com).

From the outset, Knight realized that Blue Ribbon sports had a price advantage due to the low cost of Japanese production (Locke, 2003). However, Knight and Bowerman were not content to simply sell cheaper shoes. They wanted to design and market shoes that would make Nike an industry leader, to innovate past competitors like Adidas and to sell shoes that would appeal to "jocks" at all levels of sport (Aaker & Joachimsthaler, 2000).

Through the 1970s, Nike sustained high rates of growth in the running shoe market, and entered the tennis market. In 1971, they signed their first endorsement contract with a professional tennis player, Ilie Nastase (Nikebiz website, 2009). The firm rapidly expanded its product line and hired an experienced marketer, Dick Reinhardt, previously employed with Jantzen, a local swimwear producer

(Strasser & Becklund, 1991: p.260). By the late 1970s, increasingly weary of delivery delays and worried about having their designs stolen by Japanese firms, Nike opened two shoe factories in economically depressed areas of New England (Strasser & Becklund, 1991: p.347).

The 1980s saw Nike's first growth crisis, and was also their most innovative period in many respects. After introducing the Air-Sole in 1981, their products dominated the US running market. The Adidas brand had begun to lose power (Aaker & Joachimsthaler, 2000). However, with their intent focus on the "jocks" of tennis, basketball and running, Nike missed the growing interest in aerobics among women. Reebok, a British shoe company, noticed the trend early on, and by exploiting it with their "Freestyle" aerobics shoe, rapidly became a major force in the US athletic shoe market (Schwartz, 1993). Reebok would remain Nike's most serious competitor over the next twenty years.

Reebok's success highlighted the crisis at Nike. Sales weren't growing at the rates of the 1970s. The running market was saturated, and the company wasn't increasing sales in the large basketball and tennis categories (Willigan, 1992). Nike turned to a small advertising firm in Portland, Wieden & Kennedy. The firm, which represented a new approach to advertising, was an instrumental agent in connecting Nike to the aspirations of the average American consumer (Katz, 1994: p.83).

At the same time, rising production costs in the US and Japan led Nike to seek out new production partners in Asia. Through their established contacts in Japan, they made connections to firms in Korea and Taiwan, and by 1982, almost 90% of Nike's shoes were produced in those countries. Nike had already closed its short-lived US factories (Locke, 2003: p.46).

In 1984, Nike signed an endorsement contract with a promising basketball player named Michael Jordan. In 1985, backed by an unprecedented advertising budget, it introduced the Air Jordan basketball shoe (Katz, 1994: p.136). Nike grew increasingly reliant on its sponsored athletes and on Wieden & Kennedy to advertise its products and create perceived value for its increasingly expensive offerings (Goldman & Papson, 1998: p.58). The strategy worked, and Nike experienced rapid growth through the rest of the 1980s (Holmes & Bernstein, 2004).

By the early 90s, Nike was the industry leader, while Adidas faced serious difficulties. The company had been managed badly in the years following Adi Dassler's death in 1978 and the subsequent death of his son Horst in 1987. The company had failed to capitalize on either the growing jogging market or the aerobics movement (Aaker & Joachimsthaler, 2000: p.184). In addition, Adidas had failed to adapt many of the innovations rapidly moving through the athletic footwear industry. In 1989, a large percentage of its shoes were still being produced in Europe, while other major manufacturers were already experienced at outsourcing production to lower-cost regions. Nike had grown by rapidly innovating, while other firms such as Reebok and Fila had adopted the most effective of Nike's marketing and supply chain innovations and introduced some of their own (Katz, 1994: p.285)

Eventually, the Dassler family lost control of the company to a group of French banks. In 1993, these banks handed the company over to an investment group headed by the French-American businessman and real estate magnet Robert Louis-Dreyfus. Louis-Dreyfus promptly installed two former Nike executives, Rob Strasser and Peter Moore. Both had been key players at Nike and had wide ranging experience with and knowledge of Nike's core innovative practices (Aaker & Joachimsthaler, 2000: p.184).

Strasser and Moore had formed their own firm, Sports Incorporated, upon their departure from Nike. When that firm merged with Adidas' US subsidiary they formed a new company based in Beaverton, Oregon - Adidas America. Adidas' North American headquarters was now located in an office park located less than ten kilometers from the Nike World Campus (Eggers, 2007).

Adidas' longstanding history of local competition with Puma may have been one of the factors that saw the company take its battle for market share to its leading rival's own backyard. Another factor was more explicit - the chance to hire more top talent away from the leading firm.

From the late 1990s onwards, the maturing industry saw a number of consolidations and mergers. Nike pursued a strategy that saw it buying up rival Converse in 2003 for \$305 million. Nike also acquired surf-wear maker Hurley and several other small companies that occupied specific niches in the athletic and sportswear markets (Moody, 2003). In 2008, Nike purchased UK-based Umbro, a soccer shoe and uniform manufacturer (nikebiz.com). Adidas, on the other hand, went through a number of larger mergers and acquisitions over the same time period. In 1998, Adidas acquired Taylor-Made, a large US golf equipment and clothing company. In 2006 Adidas acquired former industry leader and major competitor Reebok for \$3.8 Billion (Esterl & Kang, 2006). Also during this period, Adidas sold the Salomon group, a leading maker of ski equipment and outdoor gear, to the Finnish Amer Sports (Measure, 2005). It had merged with the Salomon business in 1997 in a transaction valued at \$1.4 billion (NYT, 1997). In the increasingly consolidated industry, Nike has led in worldwide market share since the mid-1990s. In 2008, Nike controlled 36% of the worldwide athletic shoe market, compared with Adidas' 21.8% (Van Riper, 2008).

In 1999, after re-structuring and returning to a period of focused growth, Adidas decided to re-locate its North American headquarters, choosing a location which was formerly a hospital complex⁴ in Portland's urban core (Dulken, 1999). The complete redevelopment of the complex provided Adidas a custom-fit urban environment, and created a sports-ground and other facilities for the surrounding neighborhood, which was undergoing a rapid economic transformation at the time. Many Adidas employees subsequently purchased homes in the neighborhood (Eggers, 2007).

By 2002, Adidas had moved into its new headquarters. Employment in the local athletic shoe and sportswear sector would grow 8.5 percent from 2001 to 2006 (PDC, 2009). Dozens of new firms would start up, spin off, or move to the Portland area. In a move echoed by many other firms in the industry, Keen, a small athletic shoe firm from California, would move to Portland, and hire a former Nike executive as its president, saying "To start a footwear company, move to Portland" (PDC, 2007).

⁴ Not altogether relevant, but the author was born in this hospital in 1976

5. Cluster Dynamics

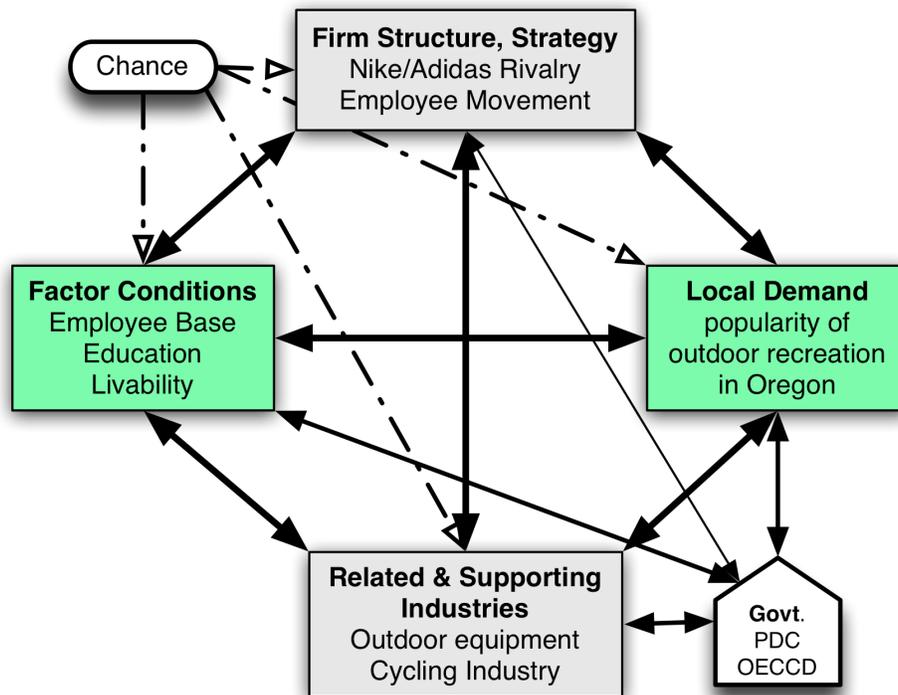


Figure 2 The Cluster Dynamics of Portland's Apparel industry⁵

The structure of the athletic shoe industry in Portland seems to closely fit Michael Porter's concept of a "diamond of competitive advantage" (Fig.2). In this theoretical construct, four factors interrelate in complementary ways to enhance the competitive advantage of firms clustered in a geographic region (Porter, 2000).

The Portland athletic shoe and sportswear industry has developed at an increasing rate over the past several years. While Nike's rapid growth and long-term presence in the Portland metropolitan area are certainly key factors in the concentration of resources in this region, the role of other firms and factors must be included in any analysis of the long-term growth of the "cluster's" economic significance.

⁵ Source: Porter (2000); Mayer (2003)

Other notable firms include Columbia Sportswear, which has been located in Portland since 1938; the more recent arrival Adidas USA; Bonfire, a snowboard equipment and apparel company; Lucy, a firm that specializes in sportswear for women; Keen, a company focusing on hiking and outdoor footwear; Lacrosse, a company that makes hiking, hunting and work boots and InSport, a company that makes hi-tech athletic apparel on contract and under its own brand. In the past, Pendleton (making woolen outerwear and blankets), Jantzen swimwear and White Stag (making ski apparel) were major firms located in the city, with Pendleton and Jantzen still in operation.

In the following sections, various aspects of the Portland economy will be discussed through the theoretical constructs of cluster theory.

5.1 Government

Agencies such as the Portland Development Commission (PDC), the Oregon Economic & Community Development Department (OECDD) and institutes such as the Portland State University Institute of Portland Metropolitan Studies (PSU IMS) have been active in trying to develop connections to and programs with local businesses in various cluster groups they have identified with the aim of increasing the efficiency of these clusters and promoting their dynamic potential to businesses who might wish to re-locate to the Portland area (PDC, 2006: p.151).

Although Nike, Columbia Sportswear and legacy sportswear firms such as Jantzen have long been relatively significant economic actors in the Portland area, and public records have captured data which clearly shows the presence of an athletic shoe and sportswear industry going back some years, the industry has received relatively little attention from local government in the past. The primary areas of interest for the aforementioned development agencies seem instead to be the high technology sector, typified by software developers and microchip manufacturers,

and the biotechnology field, which has seen a significant level of state and local government interest and investment in recent years (PDC, 2006).

Portland's local government leaders did not identify the potential of the athletic shoe and sportswear industry for growth until 2002, and failed to initiate any significant analysis of the structure of the industry until 2004 (PDC, 2006: p.6).

The Portland Development Commission acts as the city of Portland's economic and community development agency. In their 2006-2007 industry plan, PDC undertook a detailed analysis of the athletic shoe and sportswear sector in Portland. PDC compared sectoral employment growth, average wages and location concentration with other major cities in the western United States, with the West Coast as a region and with the entire US, choosing the years 2001 and 2005 for comparison. Their results indicated cluster-like growth and concentration patterns in the Portland metropolitan region. According to their analysis and developed standards, Portland's athletic shoe and sportswear sector does indeed constitute a cluster.

Despite local government's identification of the athletic shoe and sportswear cluster, few significant growth initiatives have been implemented at the local level. Partly due to the extent of the proprietary information the dominant firms rely on for competitive advantage, and partly as a result of the industry's highly secretive and competitive nature, there is little if any formal cooperation or communication between the established industry leaders, and there are no privately led industry associations in the Portland area (PDC web, 2009).

In conclusion, we can say that the role of local government in supporting or developing this cluster is not significant thus far. On one hand, large firms in the sector, most notably Nike, have shown little interest in engaging local government. On the other hand, while Porter points to the importance of government acting to

“remove obstacles” and “relax constraints” in the process of upgrading industry clusters (2000), the city government in Portland, and indeed, larger public sentiment in the city, has often been cited as antithetical to business development initiatives (PDC, 2002).

5.2 Rivalry & Employee Movement

The view that local rivalry and inter-firm employee movements can be a vital components of a structure which increases innovative activities is a core part of the cluster concept (Porter, 2000; Asheim, 2007). Through a further analysis of studies that examine the concept, Anders Malmberg and Dominic Power, while generally critical of the evidence concerning the benefits of clusters, have found evidence to support the importance of these two factors, and their findings are particularly useful in our application of the cluster concept to this specific case (Malmberg & Power, 2005).

The first point, that rivalry between firms does likely drive innovation, is clearly evidenced in Portland, where Adidas and Nike seem to be approaching the athletic shoe market as a worldwide chess game, adopting rapidly changing strategies and snatching up smaller rivals and even each-others employees as they innovate, sometimes along amazingly parallel lines, in an ongoing fight for market share (Lefton, 2008). Adidas’ sudden arrival in Nike’s “backyard” raised the intensity of their competition to blinding heights, lending evidence to the idea that proximity amplifies rivalry, as Porter suggests (2000).

Inter-firm linkages, both between cooperating and competing firms, are essential to both the cluster and regional innovation system concepts of innovation (Cortright, 2006: p12; Asheim, 2007: p 233). However, while Porter’s cluster model places more emphasis on the competition of rivals, the RIS concept does a better job of explaining the opportunities for learning and collaboration that agglomeration

provides. According to Bjørn Asheim “in a territorially embedded regional innovation system, the emphasis lies on the localized, path-dependent inter-firm learning processes that involve innovation based on synthetic knowledge.” (Asheim, 2007: p234). This is clearly another core component of the exchange of tacit knowledge that contributes to innovation in the Portland region.

The movement of employees is the second notable phenomenon that Malmberg & Power point to as possibly driving innovation in clusters. While there is some evidence (Turngate, 2007; Katz, 1994: p.101) that Nike and Adidas are not themselves enthusiastic about the prospect of their employees or even their advertising agencies employees “defecting”, the fact remains that there is evidence in the literature that suggests it is particularly this kind of firm-to-firm employee movement that can spur innovation (Malmberg & Power, 2005).

The departure of key Nike employees and their subsequent employment at competitors such as Reebok, LA gear and Converse was a common occurrence as early as the mid-1980s. By 1993 “Ex-Nike employees had seeded the entire athletic shoe industry” (Katz, 1994: p.101). The competition for talented and experienced professionals is a major feature of the industry. At one point in the early 1990s, Nike enlisted its star endorsee Michael Jordan to convince an Adidas shoe designer to move into the Nike camp (Katz, 1994: p.15). It worth noting that much of the employee movement prior to the early 1990s was not between companies in close geographic proximity, as Nike had few local competitors until Adidas arrived to the region. After Adidas hired Rob Strasser and Peter Moore and moved to Beaverton in the early 1990s, there is anecdotal evidence that suggests the amount of inter-firm employee movement increased markedly (Lefton, 1999; Eggers, 2007; Nike 2008 annual report).

In the conclusion of their article “(How) Do (Firms in) Clusters Create Knowledge?”, Malmberg and Powers seem to indicate that it is perhaps only employees who lead

to strong regional inter-firm linkages, which would seem to be a powerful argument for the emergence of “creative-industry” clusters, or of regional innovation systems that are highly dependant on creative/symbolic innovations (Asheim, 2007), as creative-led firms tend to be driven largely by employee talent (PDC, 2002). The recent clustering of athletic firms in Portland would clearly support this analysis, as competition and talent-base are the most apparent and tangible factors that have led firms such as Adidas to choose the city in recent years.

5.3 Spinoffs and startups

Cluster theory suggests that firms which spin-off or start up in a region already home to large companies involved in the same industry have an accelerating effect on innovation in the region (Porter, 2000). In recent years, firms such as Keen, Ryz Footwear, The S Group, Fontanarosa Design, Future Solutions, and Breitenbush Design, among others, have emerged as independent footwear brands, consultants and design firms. Most of these firms are headed or staffed by individuals who previously worked for Nike, Adidas or both. From an innovation standpoint, these firms not only standardize and disseminate the innovations pioneered by Nike and other firms in the industry but are also driven to develop innovative new products, methods or approaches in order to survive in a highly competitive environment (Porter, 2000).

Foremost among spin-offs, various consultancies and design groups can provide disaggregated services that encompass every part of the athletic shoe and sportswear value chain. One such firm, the S group, headed by Gary Peck, a veteran of both Nike & Adidas, offers its clients design, market research, engineering, supply logistics, production and distribution services “from ideation through delivery” with offices in Portland, China, Malaysia and Peru. For any brand that wishes to launch a line of athletic shoes or sports apparel, these consultants can provide a complete solution (Moody, 2008). As Michael Fontanarosa of Fontanarosa Design explains “there is a lot of talent and resources here so a brand could get whatever they wanted...” (2009).

Although these start-ups and spin-offs have clearly brought additional jobs and business activity to the Portland region, evidence of their innovative activities thus far is not easy to come by. Ryz Footwear is one possible exception, and their innovative approach to footwear design will be discussed in chapter 7.3.2.

5.4 Related Industries

Three industries that are significantly related to and have synergies with the Athletic shoe and sportswear sector are easily identifiable in the Portland area.

The first and best established is the closely related outdoor equipment sector. Portland has long been home to a number of outdoor equipment manufacturers, from manufacturers of guns and knives to makers of hiking and climbing gear. Gerber, Leatherman and Benchmade are three locally headquartered knife and outdoor-tool makers that lead the national industry (PDC, 2009). Solstice, Bonfire and Columbia Sportswear are three firms designing and manufacturing outdoor equipment.

The second related industry is the rapidly growing cycling equipment and frame building industry. While at first glance, this industry might be seen as simply a sub-set of the outdoor equipment industry, its rapid growth in Portland has more to do with cycling's increasing role as a popular mode of alternative transportation inside the city. Frame builders, importers of European utility bikes, traditional bicycle retail and repair stores along with custom clothing, accessory and part manufacturers represent a rapidly growing employment sector in recent years (PDC, 2008; 2009).

Finally, the creative sector, including advertising firms, graphic designers and other providers of design services, are seen as an essentially related industry. Wieden + Kennedy, as the largest independent advertising agency in the country, with its headquarters in Portland, can be seen as the anchor for this industry and as the firm most directly connected to the athletic shoe industry through its long-term and somewhat symbiotic relationship with Nike.

In considering how these related industries might develop synergies with the Athletic footwear sector, as suggested by the cluster model, several possible examples come to mind. First, with regard to the creative services field as it relates to the other three fields: Advertisers who have experience with and understand how to create campaigns which connect with the consumers of athletic shoes could represent a resource for firms selling other products related to sports and outdoor related activities. Secondly, with regard to the athletic shoe industry: Nike and the athletic shoe industry as a whole, with their significant expertise and experience of sourcing production in and working throughout Asia could provide significant spillover knowledge to local firms in the outdoor equipment and cycling accessory industry who wish to produce products using contract factories in China or elsewhere in the region. Finally, experienced employees leaving firms in the cycling equipment industry or outdoor equipment industry could represent a valuable resource for larger athletic shoe and sportswear companies who might wish to introduce new products targeted at cyclists, hikers, climbers or hunters.

5.5 Factor Conditions

Local factor conditions enhance the competitiveness of firms in the area and represent resources that all firms in the sector can draw on. These concentrations of specific factors of production can be natural resources, human resources, capital resources, or can be infrastructure related (Cortright, 2006).

The Portland area has several recognized strengths and weaknesses that should be discussed in a consideration of local factor conditions relevant to the Athletic Shoe industry.

Given the well documented importance of design, advertising and marketing in the creation of value in the athletic shoe industry (Goldman & Papson, 1998: p.11; (Greffo & Korzeniewicz, 1994; p.251), the local availability of highly trained commercial artists and designers would seem to be one primary factor condition that could benefit the industry.

While the Portland area has several well-established universities and liberal arts colleges, none have nationally recognized art or product design departments which could produce highly skilled candidates for employment with one of the major athletic shoe manufacturers. In addition, the quality of arts education in the high schools and primary schools, and public art funding in general, has often been described of as lacking (PDC, 2002; Coletta, 2006)

Perhaps in response to the city's aforementioned shortcomings, there are several resources that have developed in recent years that may serve to bridge the gap in supplying individuals with the kind of creative skills and expertise that these firms require. Pacific Northwest College of Arts (PNCA) is a school that has grown along with the city, and celebrates its centennial in 2009. While long considered of minor importance, rapid growth over the last ten years has seen the school take an increasingly central role in providing local education and leadership in the arts, and it now offers terminal degrees in several fields, including a MFA in applied craft and design which is aimed at entrepreneurial and product-oriented art students (PNCA Website).

Providing a more "trade school" approach to fashion and product design, the Art Institute Portland is a privately owned school that offers various programs to those who wish to upgrade their arts education or design skills.

Finally, more closely related to the management of global commodity chains, Portland State University's business school offers programs that are particularly well suited to producing graduates with a skill set useful to the athletic shoe industry. Most notable among these is the Masters of International Management program, which focuses on training managers who will work specifically in Asia. Nike has hired a large number of past graduates from this program and several of the program's current instructors have ties to the company.⁶

⁶ While the MIM program does not advertise the fact openly, they have had a long-standing relationship with Nike. The author was an employee of the MIM program in 2002-2003.

One factor condition related to infrastructure should be mentioned. As may be inferred by the city's name, Portland does in fact have a deepwater port with regular container-ship service to most major ports in Asia. Not a large port by international standards, it is nonetheless extensively utilized by local Athletic shoe companies (Port of Portland website, 2009).

While Portland Development Commission reports have pointed out a lack of resources related to factor conditions useful to the athletic shoe and sportswear industry, several of the large firms associated with the industry seem to understand the value of upgrading local arts education and funding for the arts in general. The role of Nike and Wieden + Kennedy in funding the arts can be said to go far beyond that of the stereotypical corporate arts sponsor. Wieden + Kennedy is a major donor to and partner in the local arts scene, and has been instrumental in the success of a number local community-based arts initiatives, such as the Portland Institute for Contemporary Arts. Nike founder Phil Knight recently acquired a major local animation studio and is working to return it to profitability (Brodesser-Akner, 2009). Nike has also hosted seminars focusing on the creative sector in the Oregon economy. Nike's relationship with the PSU School of Business is further evidence that the most important firms in the sector have recognized the importance of upgrading local factor conditions. In the case of the Portland area, it would certainly seem that these factors are being upgraded in response to local industry demand.

5.6 Demand Conditions

The role of consumer demand has been highlighted by Porter and others, as has the importance of place as a unique factor in the dynamics of innovation (Porter, 2000).

In Portland, the role of the local consumer has been cited as a reason for the success of firms in the sportswear design and marketing sector, with the Portland area often described as representing an ideal outdoor recreation environment

(PDC, 2006) which could be seen as a kind of Petri-dish which feeds the kind of backwards and forwards linkages between customers, designers and marketers for sportswear that might be said to represent a “chain-linked” model of research and development, insofar as it applies to this industry (Moodysson and Jonsson, 2007: p.117).

In his analysis of regional innovation policy, Howells examines both top-down and bottom-up perspectives on innovation. The emergence of Portland’s sportswear design & marketing cluster could be seen as an example of a broad bottom-up cluster, as local demand-driven consumption in an urban environment along with a unique customer base of urban dwellers who actually use the products in non-urban settings could lead to interactions between producers, marketers and consumers in the realm of a special kind of tacit knowledge about the products, leading to a feedback loop into what Howells calls the “soft side” of knowledge activities which are so essential to those in the creative and design fields (Howells, 2005). The importance of this “soft side” knowledge will be emphasized later in this paper.

Portland has developed a reputation as a city of residents that live and promote “outdoor lifestyles” (OECD, 2002). This is one of the more unique aspects of Portland as a sportswear design & marketing cluster. According to the 2006 PDC report “professionals in the Portland area offer a unique advantage of frequently being experienced users of the industry’s products”.

In his in-depth study of the Widen + Kennedy advertising firm, Randall Rothenburg provides some insights into the Portland-area’s unique history and culture. Primarily, Rothenburg feels that Portland is a city of people who want to be left alone. On Portland’s relationship to sport, Rothenburg posits “The sport of running fit perfectly with the character Portland: in this most insular of territories arose the most personal and isolating of activities.” (Rothenburg, 1994: p.198).

Indeed, the outdoor activities of cycling, running, hiking, rock-climbing and windsurfing which are often associated with Portland have this in common: they are not necessarily played or thought of as team sports. They emphasize individual effort and sacrifice. They all require self-discipline and often-solitary training regimens.

Joseph Cortright in his 2006 paper “Making sense of clusters” discusses the role of local demand in attracting and strengthening industry clusters, explaining that local consumers can demand product improvements and push firms to innovate. This pressures local pressure to innovate can give the firm a competitive advantage across all markets for its product.

Cortright then goes on to talk specifically about Portland’s demand for sporting goods. He states that it is in fact the local popularity of running and other sports that initially led firms to cluster in Portland, saying “Consumer data show that Oregonians are much more likely to engage in almost every form of outdoor recreational activity than are average Americans” (Cortright, 2006). Various survey data sourced from the US Centers for Disease control and Bureau of the Census (Fig. 3) add further evidence to these accounts of local demand conditions.

Level of Physical Activity, 2005				
		Recommended	Insufficient	Inactive
1	San Francisco	52.9%	30.6%	11.5%
2	Portland	51.9%	32.7%	8.4%
3	San Diego	51.9%	33.6%	10.0%
4	Seattle	50.8%	36.2%	8.1%
5	Denver	50.4%	35.9%	8.2%
No Leisure Time Physical Activity, 2006				
1	Portland	14.60%		
2	Seattle	15.00%		
3	San Francisco	15.60%		
4	Denver	16.80%		
5	Albuquerque	19.20%		

Gyms, Health Clubs and Yoga Studios Per 100K Residents	
1 San Diego	25
2 Austin	21
3 Denver	19
4 Seattle	19
5 Portland	17
2005 Portland Bicycle Commuting 3.50%	
2005 US Large City (85,000+) Average 0.40%	

Figure 3 Portland's Physical Activity Level Compared With Other Leading Cities.⁷

Other features of Portland's cultural and economic landscape have been pointed to as a significant reason firms consider the area a good place to relocate or grow their business. In a study of Portland's high tech industry, often referred to as a "silicon forest", Cortright and Heike Mayer suggest that firms like Intel (which is the largest private employer in the Portland area) have been attracted by Portland's quality of life, low housing prices, thriving urban core, proximity to nature and high average level of education (Cortright & Mayer 2000). In their estimation, these qualities keep workers in the Portland area even when other metrics, such as pay level or number of other suitable employers in the region, are quantifiably lower. The northwestern part of the United States in general, and Portland in particular might be said to have a unique regional culture that allows it to act as a demand center and perhaps even an "incubator" for entrepreneurs and companies to develop sportswear design & marketing innovations.

5.7 Caveats

When Nike opened its first Nike Town flagship store in Portland in 1990, the stated aim of the concept was to solidify Nike's image and re-enforce its branding message. The choice of Portland as the test market mainly reflected Nike's long-standing and deeply embedded connection to the city (Bedbury, 2006).

⁷ Sources: US Center For Disease Control Surveys; US Census Bureau, American Community Survey, 2005

However, two decades later, when the NIKEiD concept was introduced in its retail store format, Nike chose New York City. Now the focus was different. Nike was after a more sophisticated, worldly consumer. In his reflection on Nike's evolving strategy, Scott Bedbury, a former advertising executive at Nike, recalls how important it was that the caretakers of Nike's world-wide image "got out of Beaverton, Oregon as much as possible" to be sure that their message stayed relevant to the "real world" (Bedbury, 2006).

In the early 1990s, Adidas recognized the benefits of Portland as a center of tacit knowledge useful to the athletic shoe and sportswear industry. They also realized the value of proximity to Nike. In recent years, however, both Nike and Adidas have increasingly emphasized the benefits of proximity to the consumer.

In the recent history of the athletic shoe industry in the US market, one word that represents a quality Portland is said to possess, and that many companies are trying to capture or project is "authenticity" (Aaker & Joachimsthaler, 2000: p.188; Golman & Papsen, 1998: p.58; Katz, 1994: p.136; Willigan, 1992). Portland currently benefits from its image as an authentic focal point for outdoor sports enthusiasts. Other places, such as the vastly more remote Ogden, Utah have also managed to attract clusters of sportswear and sporting goods companies based on their geographic proximity to outdoor sporting communities and their "authentic" reputation. Some of those firms, such as Salomon, have left Portland for Ogden (Ski Racing, 2006).

The Portland area is Nike's historic and current home, and the figures presented in this paper and elsewhere lend evidence to the argument that the athletic shoe and sports apparel industry in Portland has been growing - in large part due to the local talent base, partly due to the role of local competition, and partly due to geography. However, the continued dynamic growth of the Portland cluster is not a foregone conclusion.

5.8 Quantitative Measures

In order to verify the general findings of PDC Target Industry Report (2006), which formally identified the cluster-like qualities of the Portland athletic shoe and sportswear sector, and to gain further insights into the development of the athletic shoe industry in Portland, basic calculations were performed on employment and wage data from 2002 and 2006. The figures and results are presented and discussed below.

Athletic Shoe / Sportswear Employment Figures 2002, 2006				
	2002		2006	
NAICS Industry Code	Portland Jobs	US Jobs	Portland Jobs	US Jobs
315 - Apparel Mfg.	1,159	343,450	951	216,238
33992 – Sport / Athletic Mfg.	810	62,166	598	52,463
42391 – Sports Wholesalers	648	51,794	634	52,485
42434 – Apparel Wholesalers	4,268	26,965	5,822	24,788
54149 – Spec. Design Svc.	7	6,213	14	7,561
54142 – Design Services	71	9,702	229	13,009
Industry Employment	6,963	500,290	8,248	366,544
TOTAL Employment	925,080	127,523,760	990,560	132,604,980

NAICS Industry Code	Portland Average Wage	US Average	Portland Average Wage	US Average
315 - Apparel Mfg.	\$24,512	\$21,704	\$24,179	\$24,715
33992 – Sport / Athletic Mfg.	\$30,943	\$33,386	\$38,009	\$37,477
42391 – Sports Wholesalers	\$44,207	\$36,929	\$56,372	\$43,715
42434 – Apparel Wholesalers	\$93,661	\$51,789	\$122,864	\$72,011
54149 – Spec. Design Svc.	\$40,176	\$39,785	\$31,189	\$48,929
54142 – Design Services	\$55,440	\$52,898	\$69,910	\$56,881
Average Industry Wage	\$69,809	\$27,183	\$98,597	\$34,102
Wage Growth:			41.24%	25.45%
SHIFT SHARE				
National Share	227			
Industry Mix	-2139			
Local Factors	3146			
LQ 2002	1.92			
LQ 2006	3.01			

Figure 4 Employment Figures and analysis.⁸

⁸ Source: Oregon Employment Department; US Census Bureau; US Bureau of Labor

From the table (Fig. 4), we can clearly see a marked decline in nationwide employment in a number of job categories associated with this industry, especially in the areas of manufacturing and wholesale. However, Portland clearly shows a significant growth in some of the same categories - specifically in wholesaler positions. The role of manufacturing jobs in the sector, as might be predicted from historical trends, has declined both nationally and locally.

The high average wage level of the sector in Portland, and the wage growth of 41% over the period 2002-2006 is due, in part, to the number of highly paid positions at Nike and Adidas, and strongly suggests that the value-added in this sector is much higher in Portland than the national average (Porter, 2003). This period of measurement coincides with Adidas' growth in the region, and it can be assumed that some of the growth in wages is the result of Adidas increasing the concentration of highly skilled positions in the Portland area. Another clear factor in the aggregate wage level growth is the shedding of a large number of low-paid manufacturing jobs, both nationally and in the Portland area.

Location Quotient (LQ) is a basic indicator of the strength of the concentration of an industry locally. Numbers over 1.25 are deemed indicative of a significant industry concentration (Mayer, 2003). Both in 2002 and 2006, LQ for the entire sector was significantly higher. The increase in LQ from 1.92 in 2002 to 3.01 reflects both the growth of the sector locally and its relative decline nationally.

Shift share analysis provides further insight into the growth effects of the local cluster, as it allows us to account for national trends in both the sector and the economy as a whole. In this analysis, we can see that even with no local industry growth, 227 jobs could have been created in the industry over this time period due to macro-economic growth patterns in the US economy on the whole. The "Industry Mix" figure of -2139 reflects the nationwide decline in employment in job categories associated with the industry, while the "Local Factors" figure shows

that the local sector not only grew, but grew despite the losses the sector faced nationwide.

6. Commodity Chain Theory

While the clustering of athletic shoe firms in the Portland area is a relatively recent phenomenon, it has been profoundly influenced by the earlier disaggregation of shoe production into global networks and the related growth and acceleration of competitive and innovative activities in the industry. This section will examine these relationships.

In order to explain the structure and history of global production networks in the athletic shoe industry, Miguel Korzeniewicz has applied the concept of the global commodity chain to Nike's early innovations and subsequent growth (Gereffi & Korzeniewicz, 1994: pp.247-265).

6.1 Nike's Early Commodity Chain Innovations

Korzeniewicz argues that Nike's growth is largely due to its ability to capture additional links in the value chain and to "increase control over the nodes involved in material production" (Ibid. p.251). In his analysis, Nike progressed through three distinct structural phases⁹ (Fig. 5).

First, as Blue Ribbon Sports, Nike controlled import and distribution for the shoes produced by The Onitsuka Corporation. It had an advantage in marketing, due to its grass roots understanding of running community, but it had yet to exploit that advantage to its full potential. In the early days, it was also a direct retailer.

Secondly, from the early 1970s, Nike exerted additional control over the marketing part of the commodity chain and began to emphasize the importance of design. Its

⁹ An additional node has been added to Korzeniewicz' conception of the commodity chain in order to represent the retailer, now seen to be part of the production process through their role in brand management (discussed further in chapter 7.1.3)

ability to increase control over the value chain was tied to specific innovations it introduced such as its “futures” system of ordering for retailers, discussed earlier, and its increasing use of highly identifiable athletes with unique personalities to endorse its products (Ibid. p.258). In addition, Nike continued to foster close ties with both professional and amateur athletes in order to better understand its growing customer base.

Third, from 1985, Nike consolidated control over its marketing activities and came to fully integrate design into its business as a core element. Part of this consolidation in marketing came through its successful marketing innovation around the Air Jordan brand, which saw Nike’s use of an athlete shift from a product endorsement role to that of a signifier and carrier of value, which connected to the consumer in an unprecedented way (Goldman & Papson, 1998: p.58). Nike also shifted the focus of its marketing and market research. It still considered athletes its core market, but began to pay more attention to the needs of non-athletic consumers of its products (Willigan, 1992).

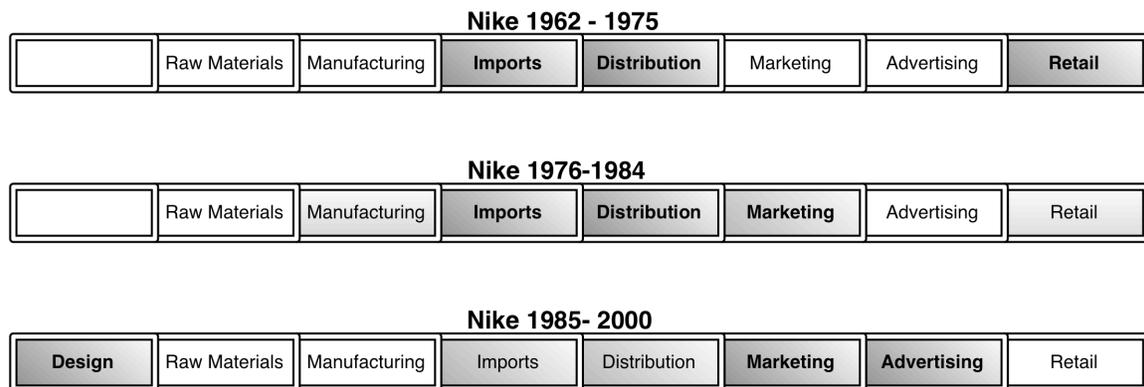


Figure 5 Nike’s Shifting Nodes of Control, 1962-2000¹⁰

¹⁰ Adapted from Gereffi & Korzeniewicz (1994). Shaded area represents nodes currently controlled by Nike. Bold type represents nodes at the center of strategic focus during a given period.

Controlling the branding/marketing and advertising is has come to be seen as the key to controlling the bulk of value in buyer-driven industries such as athletic footwear. Phil Knight himself has attested to the importance of this shift in thinking in increasing Nike's share of value (Willigan, 1992).

Except for a few years of limited domestic manufacturing during the late 1970s and early 1980s, Nike has not had any significant direct control over manufacturing or the supply of raw materials (Locke, 2003: p.46). However, lack of direct control does not indicate that Nike did not innovate in its ability to coordinate these parts of the value chain.

Korzeniewicz outlines one key innovation in this area related to Nikes "complex system of stratification" by which it maintained and grew its network of suppliers. Nike used three categories of suppliers: developed partners, which represented the producers with the most technical ability and highest level of manufacturing sophistication; volume producers, who were responsible for the bulk of mass production and developing sources, whom Nike cultivated a relationship with due to their ability to supply low cost labor. Typically, these developing sources were managed by or received training from higher-placed producers (Gereffi & Korzeniewicz, 1994: p.10).

In order to extend Korzeniewicz' analysis and develop a more complete understanding of the commodity chains currently and historically present in the athletic footwear industry, and the way they link to firm-level and industry-wide innovations, various primary and secondary sources related to the industry have been carefully reviewed and commodity chain relationships have been diagrammed based on the structures described.

Data quantitatively describing these relationships is not available for the firms in question during all periods this paper is concerned with. Specifically, very little data is available for either Nike or Adidas during the periods in which these firms were privately held companies. Limited specific and aggregate data is available for

both Nike and Adidas from the time they became publicly traded companies until now, and this data has been considered in the following analysis.

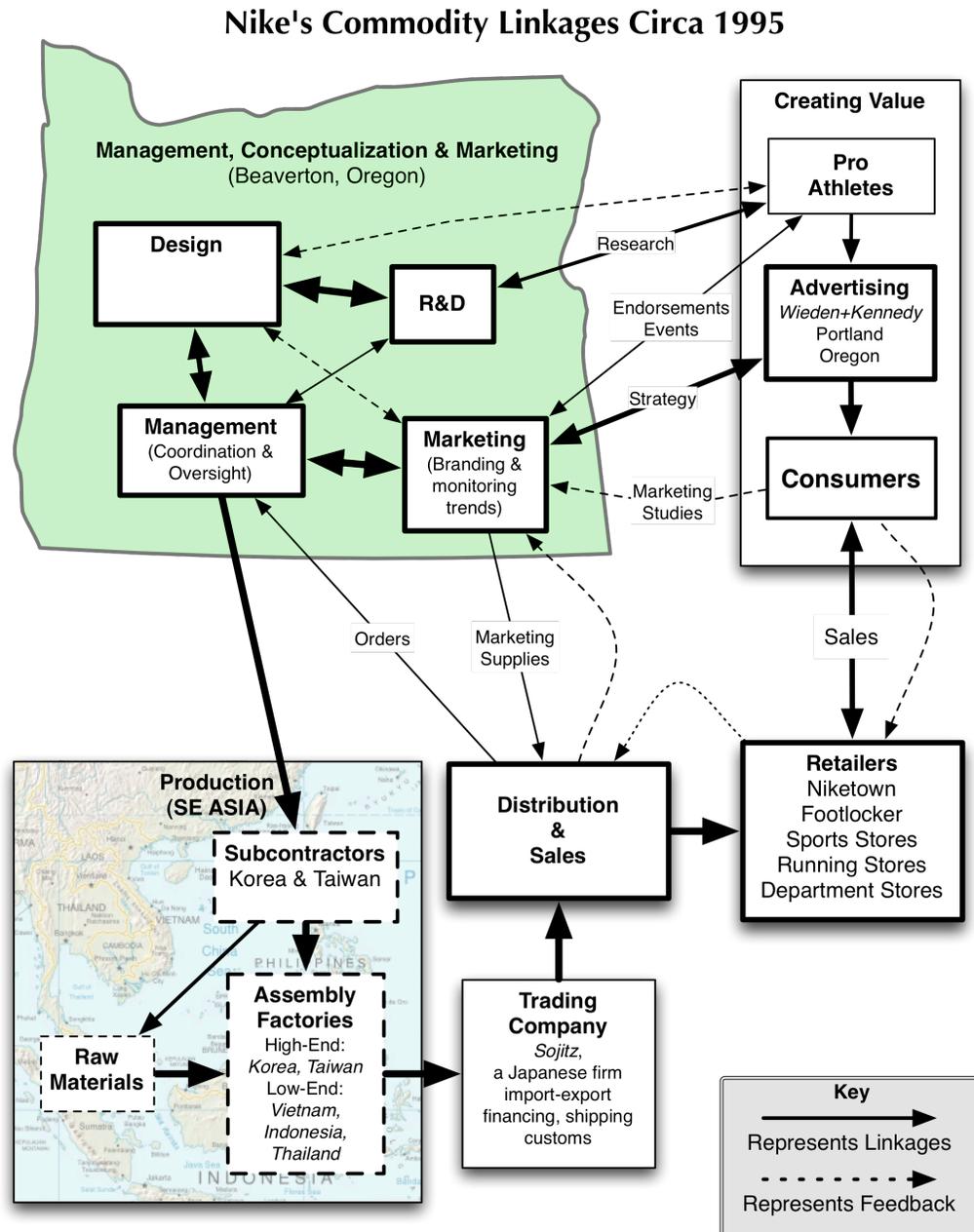


Figure 6: Nike's Complete Commodity Linkages Circa 1995¹¹

¹¹ Source: Goldman & Papson (1998)

6.2 Nike's Global Commodity Chain in Recent Years

Nike became a publicly traded company in 1980 and is listed on the New York Stock Exchange. In an analysis of Nike's current value chain, its Security and Exchange Commission (SEC) filings provide valuable insight into the structure and strategies of the company.

An analysis of Nike SEC filing from 2000 to 2008 reveal some of its recent strategic shifts and allows for the visualization of Nike's current and projected future commodity chain structure.

A fact that emerges from the literature is that Nike is an extremely lean company with regards to its fixed assets. In their 2008 SEC filings, Nike details it's ownership of the Nike World Campus in Beaverton, small production centers for air-sole materials in Beaverton and St. Charles, Missouri and distribution centers in Tomisatomachi, Japan, and Laakdal, Belgium. Most of it's other facilities, including its European headquarters in the Netherlands, are leased (Nike, 2007).

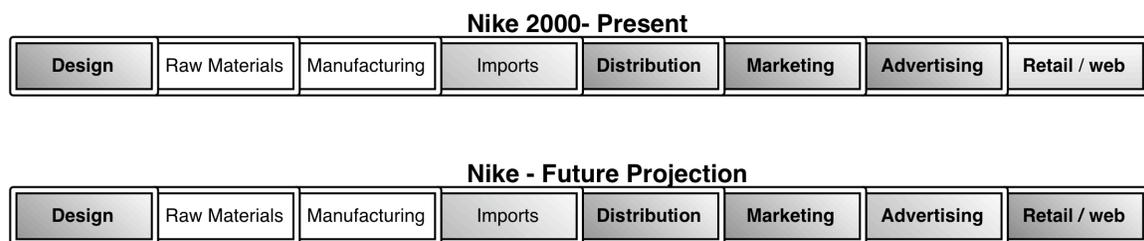


Figure 7 Nike's Shifting Nodes of Control, 2000 - Future¹²

One way in which Nike's commodity chain is unique is related to advertising. Nike has a long history of using Wieden + Kennedy as its advertising agency in major markets throughout the world. This unified advertising approach has only

¹² Sources: Gereffi & Korzeniewicz (1994); Nike Annual Reports. Shaded area represents nodes currently controlled by Nike. Bold type represents nodes at the center of strategic focus during a given period.

recently been adopted by Adidas. It is for this reason that figures 5 and 7 show advertising as a main strategic focus for Nike from the mid 1980s until today.

In the early part of the decade, Nike was stagnating in some areas. The clearest change they made in their commodity chain structure was in taking complete ownership of a number of their foreign distribution operations, thereby further consolidating their distribution and marketing centered operations in foreign markets (Fig. 7).

One of the major challenges the company faced during these years was finding Phil Knight's successor. Knight, who is now semi-retired, owns the vast majority of the voting stock of Nike. The decision was essentially his. After the company ran for a few years under an awkward joint leadership arrangement, and after one year of being led by a consumer-products industry executive hired from SC Johnson Wax, Knight installed a long-time employee and former shoe designer, Mark Parker as president in 2006 (NikeBiz Website).

Since then, the company has shifted its strategy toward web-based and technology driven solutions (Fig. 7) to controlling the nodes in its commodity chain. Another possible influence related to Nike's increased interest in the potential of ICT could be the presence of Apple Computer's chief operating officer, Tim Cook, on Nike's board of directors since 2005. This shift towards ICT based solutions is further detailed in chapter 7 of this paper.

6.2 Adidas' Global Commodity Chain Over Time

Adidas circa 1960 was already a large actor in the international athletic shoe and sportswear market. Adidas' approach to sports marketing during this period was described as a top-down or "Pyramid of Influence" model, which targeted professional athletes, formed relationships with top sporting officials and was deeply involved with the business and governmental side of sporting leagues and various governing bodies (Katz, p.24). Another key part of Adidas' business model was research and development. The success of the company was directly tied to its

early innovations. Adi Dassler himself was the driving force behind product innovation, earning at least 700 patents for Adidas (Aaker & Joachimsthaler, p.167). However, Adidas' traditional manufacturing structure (Fig. 8) gave rise to path dependencies, which led to the company's decline by the late 1980s.



Figure 8 Adidas' Shifting Nodes of Control, 1960 - 2000¹³

From 1990, new directors moved to modernize Adidas' commodity chain structure (Fig.8), bringing it more in line with other firms in the sector. Adidas was a privately held company in Europe until the mid-nineties. Since its initial public offering in 1995, the company is publicly listed on the Frankfurt Stock Exchange.

An analysis of annual reports since 1997 show that Adidas' commodity chain was growing more geographically dispersed in the late 1990s. The re-structuring of the company in the early 1990s saw major divisions aligned vertically by sport, and the day-to-day management of some those divisions geographically shifted to its North American office. The soccer division was managed in Herzogaurach, while the Basketball division moved to Portland. Employees were assigned to divisions based on their affinity to and understanding of specific sports (Aaker & Joachimsthaler, p.188).

¹³ Sources: Gereffi & Korzeniewicz (1994); Adidas Annual Reports. Shaded area represents nodes currently controlled by Adidas. Bold type represents nodes at the center of strategic focus during a given period.

By this point, Adidas had adopted several marketing and management innovations from Nike. Paying for the endorsement of star athletes was common across the industry (Katz, 1994: p.285). Adidas' early focus on constant innovation was less evident as the firm restructured.

In 2000, there was another significant management shift at Adidas, which also saw a realignment of corporate strategy. This shift is reflected in their global commodity chain structure.



Figure 9 Adidas' Shifting Nodes of Control, 2001 - Future¹⁴

Through an in-depth year-on-year analysis of the Adidas Group's annual reports since 2000, we can see a clearly emerging shift in the nodes that Adidas is seeking to control. Much like Nike, Adidas sought to gain control over its foreign distribution network, especially in the developing world. During the first part of the decade, they bought out a number of their distributors. However, Adidas did not stop with distribution. From early 2000 until now, there has been a shift in emphasis regarding the importance of the retail store in Adidas' corporate strategy. References to Adidas' "own-retail" store profits and the role of the brand-controlled retail store as part of Adidas' strategy have increased beginning in 2001, as has their revenue from these stores.¹⁵ This is the most notable difference between Nike

¹⁴ Sources: Gereffi & Korzeniewicz (1994); Adidas Annual Reports. Shaded area represents nodes currently controlled by Adidas. Bold type represents nodes at the center of strategic focus during a given period.

¹⁵ This strategic shift towards Adidas-run retail stores is quantified in chapter 7.1.3 "Nike / Adidas Retail Stores".

and Adidas' recent strategic focus, and represents a significant departure in the paths of the two firms.

In addition, related its increased control over its worldwide distribution, it is only recently that Adidas has unified its advertising strategy, introducing its first worldwide advertising campaign "Impossible is Nothing" in 2001.

It is also clear that Adidas is once again more focused on performance design, with growing R&D budgets and an increase in new shoe technologies being introduced since roughly the end of 2000.

One notable recent trend in Adidas' annual reports bears mentioning as it points not only to Adidas' shifting focus of control vis-à-vis its commodity chain, but also highlights the shifting relevance of the terms "core" and "periphery" as defined by world systems theorists. There is a distinct change in the language of the report every year between 2000 and 2005. The earlier reports mainly refer to China as a growing location for low-cost production. By 2005, under a section in the annual report called "Macro-Economic Opportunities" Adidas details their \$2 billion dollar sales projection for China in 2008 and their projected sales growth opportunities all around Asia (Adidas Annual report, 2005: p.111). This coincides with efforts it has taken to consolidate control over its worldwide branding.

6.3 Comparing Current Commodity Chain Developments

In subsequent annual reports since 2000, both Nike and Adidas have detailed investments in completely new ICT based distribution systems. At the same time, both firms have acquired former distributors in emerging markets throughout the world. The ability of both Nike and Adidas to not only directly manage merged distribution networks but to see a benefit from bringing those nodes under corporate control is linked to their investments in ICT-based distribution platforms. Nike has largely stopped at the distributor level, while Adidas has notably extended its control through its rapidly increasing network of retail stores. Nike has instead

chosen to focus on its web-based retail operations. The innovations surrounding both approaches are aimed at increasing the value and quality of linkages between the consumer and the companies in question and will be examined in the next section.

7. Emerging Trends

In the previous chapters, we explored the relationship between innovations in the athletic shoe and sportswear industry and that industry's global commodity chain configurations. We have also seen how growing competition in the industry and the desire to gain competitive advantage has led to a clustering of firms in the Portland area. In this section, we will consider current and potential future innovations that are emerging from the industry and examine how these innovations might impact the spatial dependencies of and dynamics in the industry.

From an evolutionary perspective, it has been suggested that business sectors, and especially demand-driven industries, will only remain relevant if they are able to successfully adapt to technological change and use emerging technologies to increase the value of their products (Lundquist et al., 2008). Nike was able to successfully pioneer the adaptation of the global commodity chain to the structure of the athletic shoe industry. The company continued to grow by leading the industry with innovations in the areas of marketing and distribution.

Currently, information and communication technologies are transforming the way we live, work and consume. Many of these technologies have already been successfully applied to certain links in the athletic shoe industry commodity chain, in areas such as distribution (Holmes & Bernstein, 2004).

Current evidence suggests that the athletic shoe industry, from its home in Portland, and led by Nike and Adidas, is continuing to lead the apparel sector with its innovations related to the integration of maturing ICT technologies into its marketing, retail and design nodes.

Several of these technologies are related to innovations which first found widespread usage in the software and web development sectors. It will be argued that these technologies represent the potential to once again shift the relationship between consumer and producer, and between the factors of production themselves.

The aim of this section is to describe innovations currently being diffused into the industry. It will be argued that these innovative technologies are supporting two specific trends. The first, which this paper describes as “the hard-wiring of soft-side linkages”, is the main trend at this time, and will be discussed via specific examples. Evidence pointing at the possible emergence of an additional trend, concerning the increased potential for the outsourcing of formerly-core functions, will be briefly discussed.

7.1 Soft-Side Linkages

Upon the maturation, standardization and diffusion of technologies related to the outsourcing of manufacturing, managing manufacturing networks, brand management, and delivery logistics, a leading challenge becomes innovation in the field of marketing and customer research. Numerous accounts (Schwartz, 1993; Bedbury, 2006; Willigan, 1992; Harris 2001) of traditional, time-consuming, and expensive market research techniques employed by athletic shoe companies serve to highlight both the importance of this kind of research, and the currently rudimentary and often unsuitable nature of data collection methods employed in marketing studies.

Firms in the industry rely on long term planning, which is undertaken by decision makers acting on markedly imperfect knowledge. Product development cycles in the athletic shoe industry have grown shorter, but are still around 6 months from concept to shelf (Adidas Annual Report, 2008). Firms are forced to rely on

distributor feedback, focus groups, and surveys for data suitable for analysis and utilization in planning, product design and marketing activities.

Evidence of Nike & Adidas' dedication to emerging communication technologies and the potential they represent can be seen in the two firms' rapidly increasing investments in interactive web-based technologies that go beyond simple advertising or web-site design. In 2009, the International Academy of Digital Arts and Sciences recognized both firms for their excellence in interactive web development, through its annual Webby awards. The awards, which are given in 129 categories, represent the most prestigious recognition of web design & development work (IADAS website).

Nike was nominated in 16 separate categories and won in five categories, winning People's Voice awards in four additional categories. They were nominated in traditional advertising categories, but also in such categories as "best mobile social networking" site for their "Baller's network" site which is designed to connect street basket-ball players looking for pick-up games, "best navigation / structure" for their Nike ACG website and "best retail site" for their NIKEiD custom shoe design site.

Adidas was nominated in five separate categories and won in two categories, taking both the webby award and the people's voice award for "best home page". Their other win was in the somewhat unlikely mobile category of "best use of GPS or location technology" for their mobile web application that allowed spectators to follow their favorite London Marathon runner using GPS via their web-enabled mobile phone. These applications, campaigns and sites represent a small fraction of the concepts Nike & Adidas are employing as they move to decrease the distance between their companies and the consumer.

7.1.1 Recent History of the Soft Side

Many of Nike's early innovations emerged from Phil Knight and Bill Bowerman's expert knowledge of the sport of running. In an interview with the Harvard Business Review, Knight details the nature of the ties to their early customers:

"In the early days, when we were just a running shoe company and almost all our employees were runners, we understood the consumer very well. We and the consumer were one and the same... When we started making shoes for basketball, tennis, and football, we did essentially the same thing we had done in running. We got to know the players at the top of the game and did everything we could to understand what they needed." (Willigan, 1992)

However, the consumer base of serious sportsmen and women is limited. Even given the increase in popularity of specific sports, a specialized company making high performance products is, by definition, operating in a niche market.

"We used to say we don't care what the color [of a shoe] is. If a top player like Michael Jordan liked some kind of yellow and orange jobbie, that's what we made- even if nobody else really wanted yellow and orange." (Willigan, 1992).

Over time, Knight came to recognize the role that marketing and market research could play for Nike as they continued to chase market share among the casual user of their products. In this shift, it could be argued that Nike lost some of their focus on the performance user. However, Nike has always had an atypical approach to marketing research, and this approach is evident in the firm's current embrace of technologies that allow all types of end-product users to communicate directly with the company, using ICT-based technologies that Nike has made its own.

In the 2006 article "Rethinking every rule of reinvention" Scott Bedbury traces some of the history of Nike's approach to the end-user. He details the company's

reluctance to trust data about consumer preferences unless that data came from the consumers themselves, saying:

“We listened to what the corporate footwear buyers told us, but we relied much more heavily on listening to and watching consumers... If [corporate buyers said] red would again be the hot color for the upcoming selling season, we were pretty sure it would be anything but red for the early adopters we were after.” (Bedbury, 2006).

Today, through the NIKEiD website and at some Nike stores, and through miAdidas concept stores, casual and performance-oriented “early adopters” can employ modern mass customization platforms to order customized shoes, changing many elements of the shoe’s design to suit their individual preferences. This is one of many emerging technologies employed by Nike and Adidas that are aimed at bringing the companies closer to the consumer, and in so doing, providing a value-added product to the consumer and valuable user-generated data to the firms.

7.1.2 NIKEiD / miAdidas

NIKEiD and miAdidas are examples of mass customization in the athletic shoe industry (Thomaselli & Cuneo, 2007). Such mass customization in non-durable consumer products is a relatively recent development and results from the increasingly flexible supply chain structures that have developed in recent years, largely made possible through the adoption of advanced information technology systems (Sultan & Rohm, 2004). Available originally only through flagship retail stores in major metropolises, the miAdidas line features customer-selected colors for miAdidas shoes. Material, fit and usage customizations are available for some specific models. While the aesthetic elements of the miAdidas program are similar to those available through the NIKEiD program, miAdidas apparently features more in-depth custom fitment choices through its in-store process, while NIKEiD focuses much more on color, material and visual personalization options, and has a much

more comprehensive web retail presence. As of 2009, custom shoes can be ordered online in the US and Netherlands from Adidas. US, UK and European customers can purchase shoes from the NIKEiD website.

While the shoes are not actually “designed” from the ground up by the consumer, the consumer is allowed to pick the color scheme and choose several design characteristics of the shoe. In commodity chain analysis, buying shoes in this way would seem to marginalize the importance of the marketing node and remove the traditional retailer from the decision making process completely.

Historically, retail stores are responsible for ordering various shoe models in the colors and quantities they expect to sell them (Bedbury, 2006). Using the miAdidas or NIKEiD process, the shoe is not produced until the customer orders it. This process, if it were to become widespread, has the potential to significantly reduce the need for finished shoe inventory, and reduce the effect of the retailer’s imperfect knowledge of the consumer. Even in the mixed system that exists now, where only a small fraction of Nike and Adidas shoes are sold via these mechanisms, the customer’s personalized order serves as “hard-wired” feedback, which is directly and immediately available for analysis and can be used by the firm to make predictions and track trends, without relying on separate market research or retailer feedback.

7.1.3 Nike / Adidas Retail Stores

A recent visit to Niketown in Portland, Oregon provides some perspective regarding how Nike envisions its flagship stores and their role in the company’s branding. At the entrance to the store, a Nike Running poster features prominently. Once past the entry hall, the shopper is engulfed in a cave-like space, seemingly disconnected from the outside world. A massive, steel, Michael Jordan “Jumpman”

silhouette hangs overhead¹⁶. Numerous alcoves ring the cavernous main room, linked together – each featuring one complete line of a sport-specific product displayed in isolation.

Like Nike, Adidas also runs its own chain of retail outlets in major metropolitan cities. However, unlike the flagship NikeTown stores, Adidas' far more numerous retail outlets are significantly smaller and feature bright showrooms with floor-to-ceiling windows, which remove the barriers between the store and the surrounding street scene. Shoppers inside the store are never removed from the urban surroundings while those outside the store have a full, unobstructed view of the products and displays inside.

Despite their qualitatively and quantifiably (see Fig. 9) different approaches to the retail store concept, both brands' stores appear to play the same three-part role in their current strategies: to define the brand, capture profits, and increase the quality of consumer-level data through hard-wiring point-of-sale feedback. The aim of solidifying branding messages was an early part of the "own-store" concept that was introduced in the athletic shoe industry with the first Nike Town in 1990 (Fitzgerald, 1992). From a commodity chain perspective, this retail-level brand management would suggest that the production of a product, as far as these firms are concerned, is not completed until the product is purchased in a carefully controlled retail environment. For firms like Nike and Adidas, who increasingly rely on the developing world for sales growth, the importance of actively managing the brand in the retail space has become an ever-greater priority (Adidas annual reports, 2000-2007).

¹⁶ "Jumpman" is the name used to refer to the iconic logo used in the branding of the Air Jordan product line (Goldman & Papson, 1998)

In acting as a conduit for consumer feedback, these stores also serve to improve the connection between the company and the consumer from a market research standpoint (Adidas annual report, 2006). Although less “hard wired” than internet-based data gathering has the potential to be, these stores can connect to the consumer without the loss of information associated with traditional retailers (see Fig. 10), in much the same way as the miAdidas and NIKEiD websites and in-store terminals.

While Nike has denied it in the past (Fitzgerald, 1992), Adidas openly states that the ability to directly capture profits in a saturated industry with small margins is a key part of the brand-owned or “own-store” retail store strategy. In recent annual reports Adidas has prominently referred to the effect of its heavy investment in retail stores on increased profit-margins (Adidas annual reports, 2003; 2004). It is also worth noting that the retail store strategy, while representing significant potential value, brings an important new dimension of strategic thinking to companies like Nike and Adidas, as they must increasingly consider the importance of the physical location of their stores in the retail sphere (Adidas annual report, 2005: p.109).

Retail Stores	2002	2003	2004	2005	2006	2007
Nike	322	336	330	374	418	486
Adidas	335	374	435	534	861	1182
Adidas + Reebok (post-merger)	X	X	X	X	1403	1829

Figure 9 Worldwide “Own-Retail” Store Growth in the Athletic shoe industry 2002-2007¹⁷

¹⁷ Sources: Nike Annual Reports; Adidas Annual Reports.

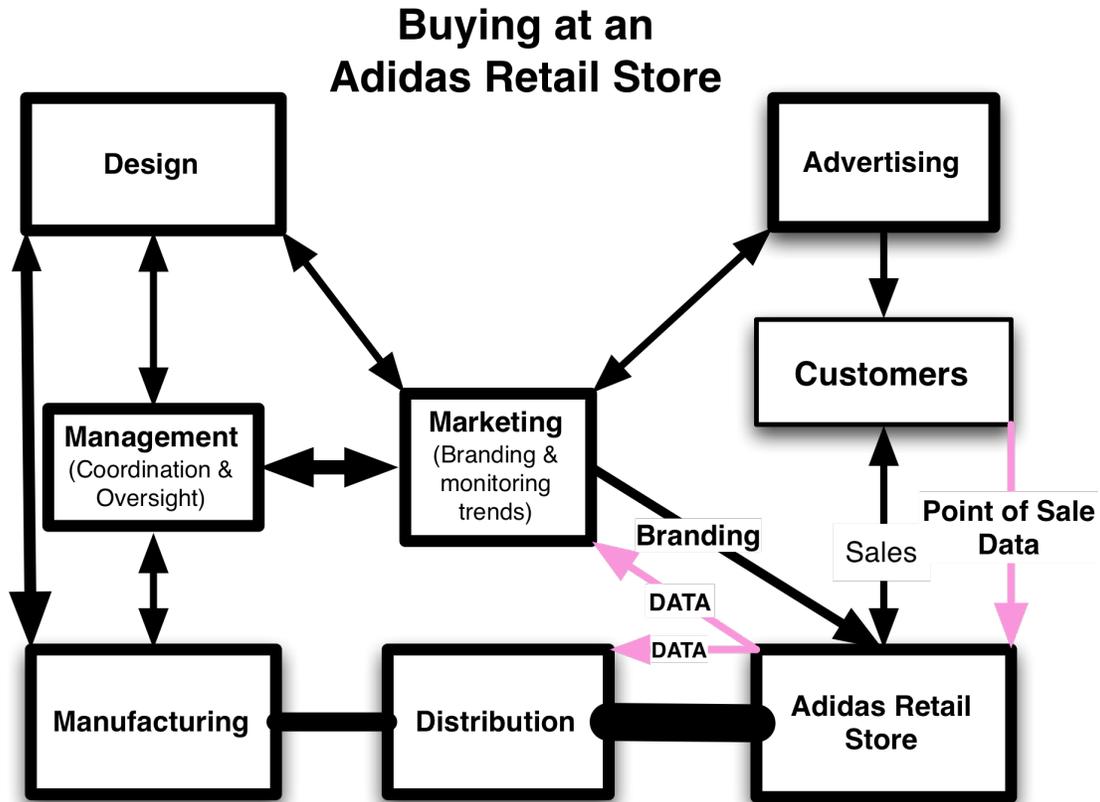


Figure 10 Adidas Commodity / Feedback Linkages Circa 2009

7.1.4 Online Social Networks

Romina Cachia, Ramón Compañó and Olivier Da Costa in their 2007 paper “Grasping the Potential of Online Social Networks for Foresight” explore the possible uses of online social networks (OSNs). The article points out that OSNs are currently being used by industry to “detect new commercial trends and establish marketing strategies” and goes on to explore ways in which OSNs could be designed or analyzed in order to “detect emerging changes in social behavior” (Cachia et al., 2007).

In addition, the authors consider the suitability of OSNs for creative and collaborative effort, and find their usefulness as a “tool to enhance creativity” and as a “means of... fostering collective or ‘collaborative’ intelligence”.

The relatively low cost of entry into these networks, the spatially-independent nature of the networks and the “multimodal channels” the networks offer represent a high-utility communication tool with myriad possible uses. Indeed, the unforeseen uses that end-users have often found for such OSNs have, in the authors’ words “enabled new social processes to take place.” (Ibid.)

The use of online social networks as a technology with which to gather market data exploits the power of networks, but is subject to typical network effect considerations. A company like Nike, with a large world-wide customer base, must weigh the costs of establishing and administering such a network relative to the expected size of any network they are able to foster and the value of the information they are able to extract from that network.

Considering the number of online social networks that are currently being run as hobbies by unpaid administrators, one could assume that the costs of setting up and running an online social network are currently fairly low. On the other hand, the costs of communication bandwidth, and of moderating and extracting useful information from such networks would seem to grow along with the size of the network.

One important caveat in considering the OSN phenomena is that of quality. While different OSNs operate under different sets of rules, attract different kinds of users and are used in entirely different ways, it is widely accepted that the online environment and the anonymity it affords leads to a higher degree of inaccurate

information being propagated in the network (Cachia et al., 2007).¹⁸ Given this issue and given what most people would consider lower-quality of communication (when compared to face-to-face interaction) in an OSN, it is important to ask whether the increased quantity of communication that can take place and be aggregated in an OSN makes up for the decreased quality.

Despite these considerations, the value of the online social network in “hardwiring” not only sales and marketing data, but also user feedback related to performance, design and real world usage would seem to be significant. In their recent innovative activities, there are clear signals that Nike, and to a lesser extent Adidas, are trying leverage these online social networks in their attempts to increase the quantity and quality of soft-side feedback and further reduce the effective “distance” between the company and the consumer.

7.1.5 Nike+iPod / miCoach

Much as software developers rely on a combination of beta testers, user forums and automated electronic transmissions from deployed software in the field for direct feedback regarding product usage, identification of design flaws and ideas for future product development, the Nike+ technology along with the Nike+ OSN could be seen as an data-rich holistic system which Nike could leverage to improve its R&D, product development and marketing functions.

In its simplest form, Nike+ is an electronic in-shoe sensor that fits inside most Nike running shoes. The sensor measures basic motion. The measurements are transmitted in real-time to several models of Apple iPod, where they are recorded and can be used to control the iPod’s music player function in a variety of novel

¹⁸ Hosts of OSNs can try to limit the misuse of their network by defining terms of use. With regards to the Nike+ OSN, see https://nikerunning.custhelp.com/cgi-bin/nikerunning.cfg/php/enduser/std_adp.php?p_faqid=3402 for an example.

ways. Data can also be recorded on one of several Nike produced products. In either case, the data is processed in the recorder to yield speed, distance run, calories burned and other more advanced metrics. In order for the Nike+ product to be useful, an in-shoe sensor and an Apple or Nike produced device for recording and processing data must be used in tandem.

The innovative nature of the product, however, is not in the measurement, recording or initial processing of the data, but rather in the fact that the data can be uploaded to a computer, and then to the Nike+ website, where it can be further processed, compared in time-series and published to a personal profile page a user creates in the Nike+ online social network. Data uploaded is immediately available to users of the site, and to Nike.

One of the most interesting aspects of the system as it currently exists is its “open-source” underpinnings, meaning, in this case, that Nike does not put significant restrictions on the kinds of software that can interface with the equipment or the OSN, leading a number of users to develop software or hardware “hacks” which provide them with additional control and customization potential¹⁹.

In addition to data processing, and community functions, the Nike+ OSN offers its own training function, free from the spatial constraints of a traditional training environment. This function is tightly integrated with the other parts of the Nike+ website and allows runners to receive personalized training advice and schedules tailored to the type of running they do and specific events they are preparing for, such as 10k runs, marathons, etc.

In its early high-growth years in the late 1970s and early 1980s, Nike extended its relationship with amateur track and field athletes to include a training camp it ran

¹⁹ Some examples of these “hacks” can be seen at sites like www.orbona.com/nikeplus/; <http://twiike.com/> and <http://neki.sourceforge.net/>

called “Athletics West” based in Eugene, Oregon (Katz, 1994: p.24). It funded the camp to prepare athletes to compete on an international level, and to develop new product innovations using direct feedback from the Eugene-based athletes themselves. In 2007, using an OSN, Nike was able to reconnect to amateur runners – this time, across the globe. According to industry analysts, the Nike+ user base was somewhere between one and two million members as of November, 2008 (Greene, 2008).

Adidas’ answer to the Nike+ innovation, miCoach, is a collaboration between Adidas and Samsung. Also limited to running, the site has similar features to the Nike+ site, and features PC software which syncs with one specific model of Samsung mobile telephone, and a sensor which attaches to the shoe laces of any running shoe in order to track runs and deliver customized training schedules and “coaching”. In addition, a heart-rate monitor is available which is worn around the chest, like a belt, and also transmits information to the telephone.

While the system is in many ways comparable to the Nike+ concept, Nike’s broad collaboration with Apple, and their superior execution with regards to advertising and implementing the OSN have meant that Nike+ currently has a much larger “installed base” and is therefore represents a OSN with significantly more utility for both the customer and the company.

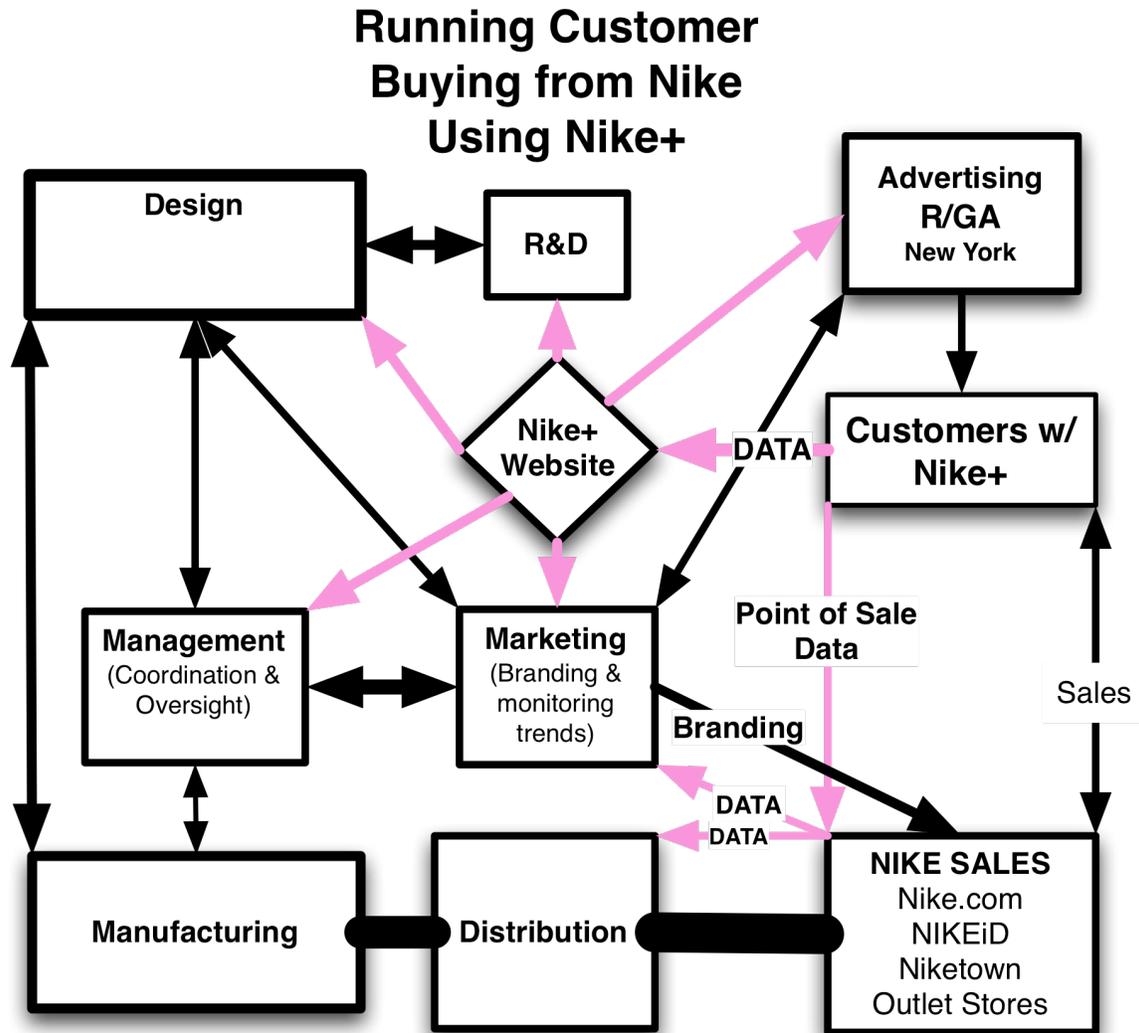


Figure 11 Nike Commodity / Feedback Linkages Circa 2009

Debating whether consumer-focused ICT technologies represent simply a new form of promotional novelty or a fundamental shift in the consumer/producer relationship has been a popular pastime for a number of years (Porter, 2001).

There is increasing evidence in the literature that suggests a range of new technologies will allow the firms that are prepared to adapt and integrate them into their business model to see significant benefits in most core areas of business, from identifying new product development opportunities to predicting demand for current products, managing distribution networks, providing customer support and handling repair and maintenance issues (Ramaswamy & Prahalad, 2004)

Athletic shoe firms are not supply-driven companies. Nike and Adidas are not developing the products and technologies that will fundamentally change the way we live our lives. But, by positioning themselves close to those technologies, by being “early-adopter” firms, and by innovating in the application of those technologies to their specific industry, Nike and Adidas can maintain their relevance among demand-driven companies by anticipating the demands consumers will make as they themselves adopt new technologies and adapt to larger patterns of economic and cultural change.

7.2 Further Disaggregation Potential

Nike has long been held up as an example of an early “disaggregated enterprise” (Katz, 1994: p.10) with extremely low capital expenditures (Goldman & Papson, 1998: p.13). Various types of disaggregation and outsourcing are now common in many sectors of the global economy. Given that Nike was founded with a business plan that relied on disaggregation – and that all the major firms in the industry are more-or-less disaggregated – it is useful to consider to what degree these companies will continue to explore the potential advantages of further disaggregation, given the growing ability of ICT to enable such disaggregation.

7.2.1 Advertising & Marketing

While the management of advertising and marketing has, in the past, has been considered a part of the core corporate strategy (Aaker & Joachimsthaler, 2000), and these nodes are considered core to value creation in the buyer-driven commodity chain (Gereffi & Korzeniewicz, 1994: p. 99), there are signs that this control could be shifting, given the steep learning curve associated with new implementations of ICT technologies in business.

In researching Nike's digital strategy, what becomes notable is that increasingly, it is the new media firms and other collaborators who have introduced marketing and advertising innovations to Nike. According to one Nike executive:

"When we start going to meetings with Apple Computer, or the guys that did the Nike ID site [R/GA Media Group Inc.], it's not that they're pitching our advertising business, but they're directly or indirectly solving our advertising needs with their ideas." (Thomaselli & Cuneo, 2007).

Our earlier review of Nike and Adidas' consumer-focused ICT and OSN initiatives reveal the scope of their dedication to strategically engaging the consumer using new media technologies. What is less clear, however, is who is actually developing and deploying these technologies – and associated ones such as the sensor and software used in the Nike+ and miCoach systems. R/GA, a leading multi-media advertising firm based in New York, has developed many of the software and web applications central to Nike's online presence.

What's notable here is not that this "advertising" firm is based in New York, but that they are actually performing functions for Nike that would seem to go far beyond advertising, such as developing an online retail presence and developing and maintaining a number of online social networks which feed data back into Nike's corporate structure. Other ICT technologies, related to logistics, production, and marketing are increasingly valuable to the competitiveness of firms in this field, and are being provided largely by outside contractors (Nike annual report, 2007).

7.2.2 Design

Ryz Wear is a shoe firm "founded by a group of ex-industry sneaker geeks" and based in Portland. Rather than using in-house designers, and paying a per-shoe commission to athletes or musicians for endorsements, they pay a commission to designers who upload fashion-oriented designs to their website as part of a

continuous contest cycle. The best designs win inclusion in the Ryz product lines, and a per-shoe commission for each pair of shoes sold (Ryz Website).

Another industry development that suggests that some design aspects of the business are shifting is the growing number of small athletic shoe companies who are directly sub-contracting the design of entire shoe lines or specific shoe models to independent design firms. Columbia Sportswear, Keen and Merrill are three firms who currently outsource some or all of their shoe design jobs to independent design firms (Fontanarosa, 2009).

In addition, the development of relationships between several athletic shoe firms and well-known fashion designers has created a differentiated category of high fashion niche products that command premium prices. The Adidas relationships with Japanese fashion designer Yohji Yamamoto and British designer Stella McCartney are a prototypical example of this practice (Adidas annual reports).

The move towards increasingly flexible production already has a long history at this point. Gereffi, writing in 1994, presents it as a foregone conclusion (Gereffi & Korzeniewicz, 1994: p.106). Just how far that movement has come can be seen in the mass customization model of the Mi Adidas and NIKEiD product offerings, and in the business models of companies like RYZ footwear.

The customer as active designer or the company as conduit for design are two ways in which design, one of the areas most directly controlled by the corporate core in buyer-driven commodity chains (Grefffi & Korzeniewicz, 1994: p.7; p.260) is being externalized by certain firms who choose to focus increasingly on fashion, marketing and branding.

According to industry experts, the core shoe design functions of the largest and most performance-oriented companies, like Nike and Adidas, generate significant intellectual property for these companies, which they rely on in their competition to gain market share amongst serious athletes. Due to the value of this intellectual

property, these firms' core design functions are not likely to be outsourced, and could be considered an integral node that must be directly controlled (Johnson, 2009).

However, if the integration of electronics and ICT, such as the Nike+ system, become the dominant form of innovation driving the shoe industry, it would represent a paradigm shift that could see the control over what could potentially be the most value-added part of the commodity chain shift to the outside companies who can develop those new technologies.

8. Conclusion

This paper has argued that recent Nike innovations in designing, producing, marketing and distributing athletic shoes have made it an industry leader and led other firms to Portland, a region which is highly supportive of the industry due to a unique local demand profile. The study has showed how the presence of Nike and other industries closely related to the athletic shoe industry then resulted in a concentration of highly skilled employees with specific tacit knowledge who represented a valuable resource to other firms, which also drew them to the region.

This paper has forwarded the view that Nike's innovations grew out of a necessary response to and interaction with economic changes related to the globalization of production, and has explained this pattern of changes and innovations using global commodity chain theory. It has examined how, in the Fordist era, the main emphasis for the directors of commodity chains was on increasing control over all aspects of the production process, starting with time, moving on to a mastery of geographically dispersed production and then returning to refine the temporal relationships with the application of early information and communication technologies. It has supported evidence that suggests the post-Fordist period is defined by an increasing move towards product specialization. Finally, it has argued that increasingly sophisticated information and communication

technologies are being leveraged by firms in order to better predict and take advantage of the soft-side feedback that they receive from their increasingly dispersed – but increasingly hard-wired – post-Fordist consumer base.

Lennart Schön has suggested that we are currently entering a new phase in the latest ICT-driven technology shift. This paper has taken that perspective, and supported the idea that firms that are prepared to successfully integrate maturing ICT technologies will, according to convincing historical analysis (Schön, 1998), be those that survive during the period of intense competition inherent to economic contraction. At present, it may be premature to think that we can predict which technologies and configurations will prove the most valuable. However, in consideration of demand-driven firms most open to employing new ICT technologies, Nike and Adidas both stand out as early-adopters. Perhaps it is their history of fierce competition that drives them, perhaps it is their extensive previous experience with the rapidly shifting economic terrain that today's corporations must navigate through.

In the late 1970s, Adidas stumbled just as Nike was exploiting the rise in popularity of jogging. In the early 1980s, both firms missed the emergence of aerobics as a major new category of athletic activity. While some wonder how leading firms could have missed such huge phenomena, business history is rife with these kinds of gross tactical oversights. In this paper, it has been argued that, given the potential for the “hard-wiring” of customer feedback mechanisms and market research routines that online social networks represent, a well-positioned firm could avoid such oversights in the future by utilizing a body of unprecedented real-time consumer and market data. This paper has suggested that Nike, given its continued dedication to and excellence in innovation, and current focus on integrating and adapting maturing ICT technologies, is better positioned than Adidas in this regard.

Forty years after Nike was founded, it continues to innovate in new directions, maintaining its relevance in an increasingly digital age. With its strength, the strength of the industry cluster has continued to grow in Portland. Perhaps Nike will falter or another firm will emerge elsewhere, shifting the locus of innovation and the weakening the dynamics of the Portland cluster. Perhaps new information and communication technologies will lessen the importance of some elements of Michael Porter's "diamond of competitive advantage" and cause firms to realign according to different spatial dynamics. The increasing ability of well-positioned firms to interact and form close relationships with leading consumers wherever they happen to be is one development that will be central to whatever shifts emerge.

8.1 Further Research Potential

On the micro level within the Portland region, there is a great potential for further analysis of the Portland-area athletic shoe and sportswear sector from a cluster perspective. This research and supporting literature suggest that inter-firm employee movement plays a strong role in the innovative process in this cluster, as does inter-firm competition. A study quantitatively analyzing the history of inter-firm employee movements and the subsequent supposed diffusion of innovation those movements bring would provide valuable insights into the industry, the cluster, and into the representativeness of cluster theory as a lens through which to view innovative processes in this sector.

More directly concerned with the larger questions of innovation and from a value chain / commodity chain perspective, an analysis of patent data and a comparison of the influence of patents compared with the development of non-patented proprietary innovations in the industry as to their influence on firm growth would seem to be valuable. For instance, specific shoe technology, such as the Nike Air-Sole, is usually patented, and those patents are then readily available for

competitors to analyze and possibly to “invent around”. However, much of the competitive advantage of certain firms in the sector (and from a value chain perspective, their ability to capture value) would seem to originate in non-patented innovations in management, distribution, and marketing. Attempting to analyze the value of patents vis-à-vis the value of proprietary non-design related innovations - and further, an analysis of the level of transmissibility or diffusion of these two different categories of innovation, would increase our understanding of the relative importance of different types of innovation in the larger non-durable consumer goods market.

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