

Cotton Fiber in the Era of the Domination of Polyester Fiber: The New Consumer Generation and the Market Race

Dr. Yehia Elmogahzy

President & Founder of EIMOGAHZY® LEARNING LLC, New Jersey, USA

1. Introduction

In contrast with the subject of my article in the 2016 Catgo Report, which was about the declining status of the Egyptian Textile Industry and ways of recovery, this article is strictly about cotton fiber and the challenges it is facing in today's global market, which is likely to continue in the next few years unless major efforts are made to return the crown to its deserving place, to cotton fiber.

In today's global market, the white gold of textiles is facing what is perhaps the ultimate challenge since the onset of its commercialization after the invention of cotton gin by Eli Whitney in 1807. Judging by many surveys over the last 20 years of consumer's preference, cotton has been the most favorable fiber in virtually all kinds of wearable textiles, and people preferred the touch and the feel of cotton against any other fiber manufactured by human. However, the global market today does not reflect this historic human's interest in cotton. Indeed, after about 200 years of steady increase in consumer's demand of cotton products, the fiber King is now giving up its crown to its classic rival, the polyester fiber. Cotton is still the most used fiber among all natural fibers. However, cotton has faced a significant challenge from polyester fibers even in textile products that have traditionally been solely dominated by cotton, including denim and underwear. In 2002, polyester demand passed that of cotton for the first time in history, and has continued to grow at a significantly faster rate than all other fiber types (Figure 1). Looking back at recent history, polyester demand was only 5.2 million tons globally in 1980 (against 15 million tons cotton), and by 2000, it had reached 19.2 million tons (against 20 million tons cotton). In 2014, the demand reached 46.1 million tons (against 22 million tons cotton). Looking over the period from 1980 to 2014, the total fiber demand growth has been about 55.7 million tons, 73.4 % of which is down to polyester (Textile World Demand Report, 2015). Globally, the largest areas of growth in polyester are China, India, and Southeast Asia, with China accounting for nearly 70% of polyester production in the world.

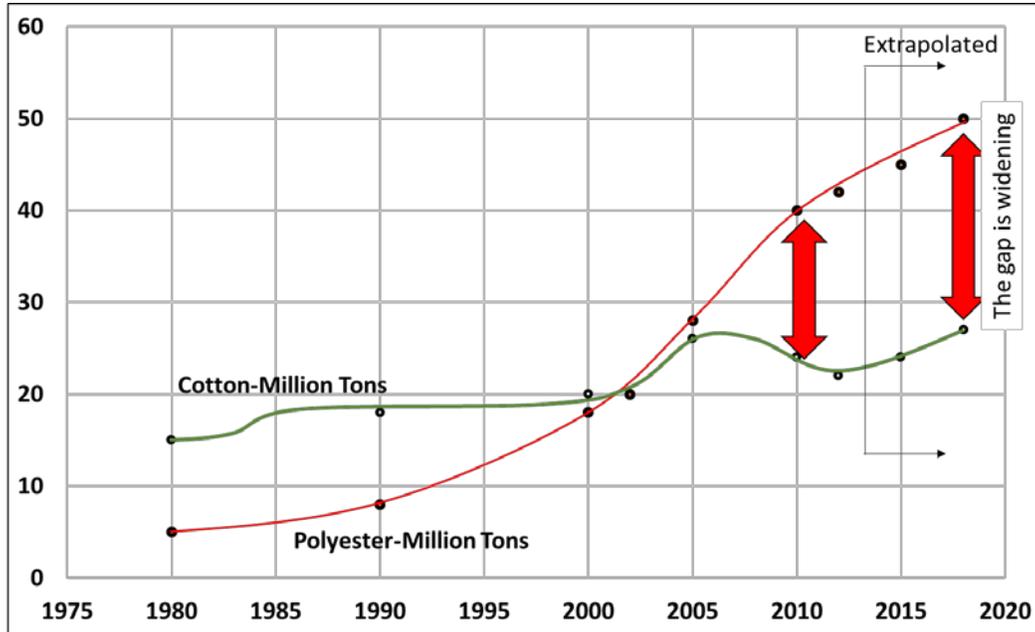


Figure 1. Total Fiber Demand (Million Tons)-Modified from Textile World Data, 2015
<http://www.textileworld.com/textile-world/fiber-world/2015/02/man-made-fibers-continue-to-grow/>

The problem with the high production and consumption of polyester fiber versus cotton fiber is certainly not a result of shortage in cotton production but rather due to the increasing interest by the consumers around the world in polyester products. Indeed, the largest cotton producers around the world such as the U.S.A. or China have the capacity to double their cotton production in a matter of 2 to 3 years, restricted only by the environmental factors. However, these countries have the intellectual economical capacity not to do that, as an increase in production must be accompanied by an increase in consumption and consumer interest in cotton products. All of us still remember what happened in 2011 when cotton price jumped to a record high of an average price per pound reaching \$2.27 (a 300% increase over the previous year). This was the first time in history since the American Civil War when the cotton price jumped in 1860 from 9 cents to \$1.90 per pound due to political reasons. In 2011, it was the freeze of the Chinese cotton and the flood in Pakistan that led to the price hike. This was a huge opportunity for the cotton producers to change their market strategies, but it did not happen. Instead, and as usual, cotton production was increased in the following year reaching over 120 million bales in 2011/2012, and the price went back to below normal.

When we add the polyester market to the situation in 2011, we can then see the fundamental difference between cotton producers being cotton-to-cotton market oriented relying totally on supply and demand, and the polyester producers being strategically sound with the goal being to ultimately displace cotton from the global competitive picture of fibers. As can be seen in Figure 2, polyester producers always aim at keeping the polyester price comparable to cotton price, they did that in the 10 years prior to the cotton price hike in 2011, and even through this hike, the increase was only a slight one. We also have to keep in mind that even at the same average price of cotton and polyester, the latter will still have a substantial advantage by virtue of the fact that

up to 40% of the cotton will be sold under the average price due to poor quality, while less than 10% of polyester will be sold under the average price as a result of the consistent quality of polyester. For this reason, I have always called for using the median price and not the average price to compare between different types of fibers. Polyester producers do not think randomly when it comes to comparison with cotton since the ultimate goal is to virtually control the fiber market. What happened in 2011 was a huge opportunity for polyester producers not to increase the price, but rather to boost the production of polyester, particularly for use in cotton/polyester blends. Figure 3 clearly illustrates this point. In 2011, the polyester production was about 40 million tons, which was double the cotton production. Now, we can see the substantial difference in production illustrated in Figure 3.

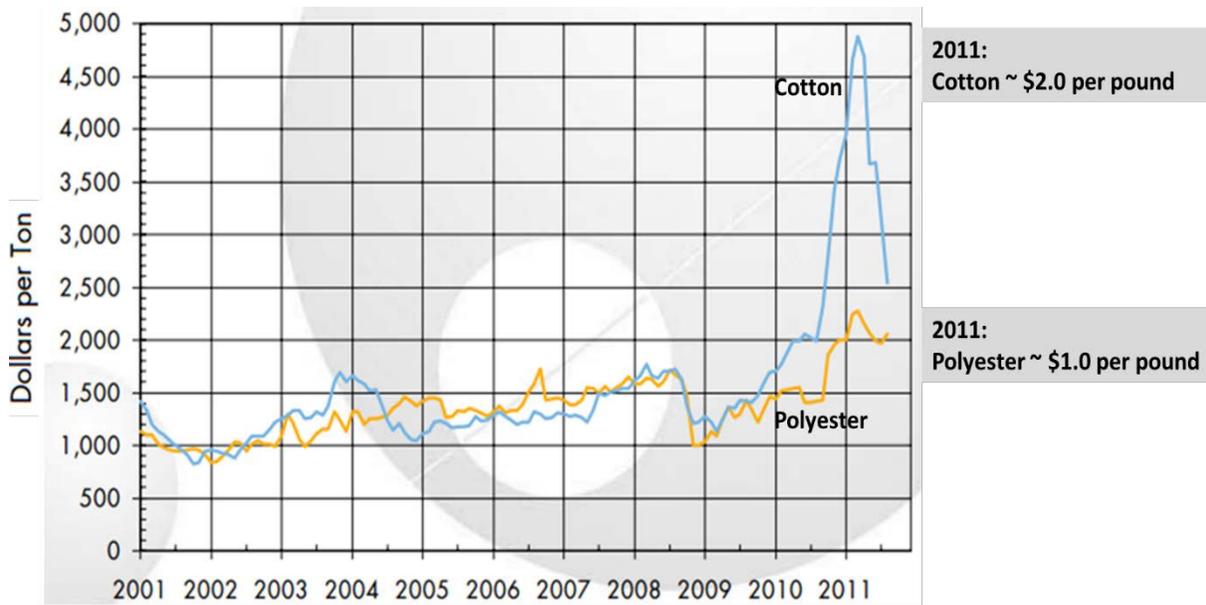


Figure 2. Cotton vs. Polyester Staple Price up to 2011

<http://www.coton-acp.org/modules/docpool/files/atelierspolyester-coton.pdf>

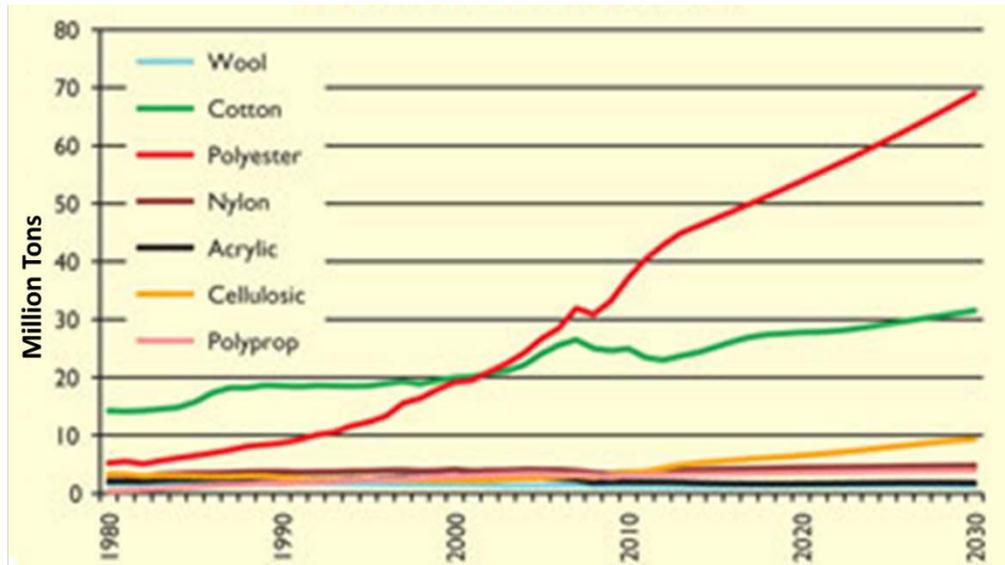


Figure 3. Cotton and Polyester Production since 1980
Textile World, February, 2015

In view of the above introduction, the logical question should not be about “*what is new about polyester*” but rather “*what happened to cotton*”? what happened to the fiber that can be traced back over 7000 years ago, as a fiber, and over 3000 years ago, in cloth fragments in the Indus Valley of India; a natural fiber created by God to match the human nature in every aspect of life. How could an artificial fiber like polyester, made from unfriendly chemicals including recycled plastic bottles, take over the market from cotton, the fabric of our life? The answer to this critical question stems from what the makers of synthetic fibers have been able to do over the last 40 years in promoting polyester products versus what the cotton textile industry has not been able to accomplish. Because of the very length nature of this subject, I will divide this article to two parts: Part I- about some of the consumer and market factors leading to the domination of polyester over cotton in today’s global market, and Part II- Comparison between cotton and polyester fiber with respect to sustainability and functional attributes of end products. Key topics in this article are as follows:

1. Understanding generation gap in terms of consumer’s preference
2. The Price Structure of Cotton Fiber versus Polyester Fiber
3. The Price Game Between Cotton Fiber and Polyester Fiber

Before proceeding with the discussion in this article, I should point out that this was a difficult article to write as I am a cotton researcher in the first place, and I cannot avoid my bias to cotton fiber against any other fiber. However, as an old researcher with a long and consistent reputation in the field, I cannot violate research honesty and I cannot deviate from well-established facts. Therefore, and as difficult as it was, I tried my best to be as fair as I can possibly be in making the comparative analysis between cotton and polyester fiber. After all, the ultimate reader of this article

should be the ultimate consumer of textile products and in today's information era, no one can mislead the consumer no matter his/her extent of cleverness and skills.

Understanding the Generation Gap in terms of Consumer's Preference

According to the demographic distribution of the world's population today, more than half of the world today are younger than 25 years of age. In over 40 countries around the world, this young generation amounts to more than 60%, and in more than 80 countries (including Egypt), this percent exceeds 50% of the population. This is a huge young generation of nearly 4 billion people who were born after 1992, the first year of the worldwide web (WWW) and the onset of the internet revolution. The significance of these statistics is that this is the generation that will shape and reshape the textile market for the next 40 years. It is a generation that has unlimited information access via their smart phones and computer tablets. However, whether this massive information is necessarily translated into true knowledge is an issue that is highly debatable among numerous experts. The hypothesis that more information yield more knowledge has not yet been accepted by many education experts including myself. This is due to the fact that the education system around the world has not changed significantly to keep pace with the current flood of information. However, the one issue that is not up for debate is that this new generation is striving for true knowledge and authentic information. It is also true that this generation is more willing than any previous generation to change opinion and seek alternative approaches in making decisions; and in the strive for more information, this generation is willing to change its tastes, choices, and preferences at a much faster pace than any previous generation in the history of human being. It is a generation that has a compulsive interest in "switching and changing"; always moving to new technologies, new fashions, and new ideas. This attribute makes today's market an absolute challenge by virtue of the fact that most products will typically become obsolete before they will reach half of their service lifecycle.

In 2016, my company conducted a survey sponsored by the Global Sustainability Group® of Washington, DC. This survey aimed at evaluating the interest of different age groups of U.S. consumers in textile products, primarily apparels. In this survey, it was found that about 80% of the people in the age group from 18 to 25 years old, place design and brand first as their top priority in purchasing apparels, followed by the price. When we drew their attention to environmental and sustainability factors such as the use of nonrenewable resources, and CO₂ emission, etc., we found that the majority of participants couldn't link between these factors and the interest in purchasing apparels. We then asked whether the raw material used (natural or artificial fibers) would make a difference in their choice, the surprise was that most of the participants were under the impression that most apparels are made from cotton fibers. This was a surprise since 60% of the participants were actually wearing apparels made from either 100% polyester or polyester/cotton blends. Finally, when participants in this age group were asked whether they prefer apparels made from natural fibers or man-made fibers, most of them had to Google the comparison before answering the question, and depending on their first reading, some were more inclined toward polyester fiber due to durability and wrinkle-free attributes and other were more inclined toward cotton fiber for comfort reasons. The point here is that this

generation has different set of priorities from previous generations. In addition, they are highly influenced by what they see in terms of available information, and they are willing to take decisions based on the first piece of information they read.

It follows from the above discussion that the promotion for cotton fiber products should be revived to accommodate different age groups. This will require a new style of promotion of cotton fiber and cotton garments that goes beyond the traditional approaches that provide a ‘feel-good’ advertising, yet empty of information and true merits. It is well known that most of the older generations understand the value of cotton products, particularly with respect to nature and comfort as a result of their long experience with these products. The new generation, on the other hand, is not an experience-oriented generation, it is an information-oriented generation. In addition, this new generation is always in changing mode, switching from one fashion to another, and from one style or brand to another. Indeed, in the same survey described above, only 36% of the age group 18 to 25 years, indicated that they would wear the same winter fashion apparel up to three years in the roll, and the majority clearly indicated the use of the same fashion only one or two years; meaning, they are likely to switch from one style to another annually, which makes last year style obsolete by this year choice. Accordingly, this is a generation that does not give experience a chance, and designers and retailers operate on the basis of this common trend all the time.

On the positive side, the 74th Plenary of the International Cotton Advisory Committee (ICAC) Report (Mumbai, December 2015) indicated that textile brands receive many questions from their customers about the type of cotton used (origin and unique attributes). Ironically, similar questions were not received about polyester fibers. Leading brands including H&M, Gap, Michael Kors, Polo, and Ikea confirmed that consumers were increasingly seeking to know more about the origin of their cotton, and brands were keen not only to be able to source “sustainable” or “responsible” cotton, but wished to be able to “tell its story”. This fact alone provides a very strong evidence of the importance of different promotional approaches of cotton fiber. This issue is the subject of a major project that I am currently leading for the U.S. Cotton Council International (CCI) regarding the advantages of using U.S. cotton fiber.

The Price Structure of Cotton Fiber versus Polyester Fiber

Despite the fact that both cotton and polyester fiber can be considered as commodity products (from natural resources); the cotton is an agricultural commodity, and the polyester is a petroleum commodity, the market structures and the market values of these two fibers are completely different. The price of cotton, domestically and internationally, depends primarily on a number of key factors including: the annual crop production, the changing environmental conditions, the amount sold and the amount stored in the previous year, and the cost of production. In other words, the value of cotton in the marketplace is typically a mirror image of the performance of the cotton crop. If we shift our attention to polyester fiber, and despite the fact that it is a petroleum commodity, we find that it represents a very tiny percent of the annual oil production around the world; almost a drop in the oil ocean. As a result, its sensitivity to the price of oil barrel can be considered insignificant. This puts cotton fiber in a very unfair

competitive situation in comparison with cotton. In addition, cotton fiber being totally natural, exhibit characteristics that are highly influenced by many conditions such as soil quality, water resources, and environmental conditions. These conditions are likely to vary from one region to another, from one year to another, and even during the harvesting of a cotton crop. This means that the underlying principle of cotton value will be based on the concept of “what you see is what you get.” By comparison, polyester fiber value is based on the concept of “what you need is what you get.” As we all know, polyester fiber can be purchased at any required set of characteristics including length, fineness and strength. To make matters additionally uncompetitive, and incomparable, cotton fibers are purchased with trash and foreign matter that can reach more than 15%, while polyester is only associated with less than 0.5% contaminants.

In most countries around the world, the price of cotton is determined through a classing system that divides cotton fibers into a number of grades in accordance to a number of common attributes. Typically, the governments in most cotton producing countries get involved in classing cotton to assure reliable evaluation of cotton quality and provide guidelines for producing better cottons in future crops. In the U.S.A., there is a premium/discount system that provides positive or negative points according to a set of key cotton characteristics.

The history of cotton classing in the U.S.A. goes back to 1907, at a time where ring spinning was the only spinning system available and when polyester fiber was not in existence. Since the mid-1980s, instrumental cotton classing was initiated in the USA with the introduction of High-Volume Instrument (HVI). After that, many cotton producing countries followed this approach of cotton classing. Instrumental classing has resulted in a revolutionary change in the process of cotton grading and classing evaluation. Obviously, the classic cotton classer couldn't compete with an instrument that can measure more than eight cotton fiber properties in a matter of seconds including: fiber length, short-fiber content, fineness (Micronaire), strength, color (Rd and +b), and visible trash content. I should point out that this major development came at the expense of the subjective classing, which was able to evaluate the “nature of cotton” and its propensity to process smoothly. This phenomenon can't be measured using any of the current available instruments. A great deal of research, including many of my projects, focused on finding ways to measure this phenomenon using complex indexes of inter-fiber friction and fiber-machine interaction. However, the work came to a halt as a result of the lack of funding. This is a critical research issue that I would encourage young researchers to pursue.

The benefits of a cotton classing systems in different countries primarily stem from the fact that cotton fibers can vary in all properties from one region to another and certainly from one cotton bale to another. In addition, at the purchasing point, cotton fibers are not alone and they are not pure; they are accompanied by many non-cotton matter such as visible trash and leaf, seedcoat fragments, invisible fine trash, possible excess moisture, and contaminants (synthetic bale wraps, field residuals, etc.). If the cotton market is left without a classing system, the market would lose its stability and numerous legal disputes will occur. ***Does a cotton classed as a high-grade cotton will necessary yield the best yarn and fabric?*** The answer is simply “***no, or not necessarily.***” This question has been addressed in many previous studies, and it was discussed in great detail in my book titled “Cotton Fiber-to-Yarn Manufacturing” published by Cotton Incorporated in 2002

(Co-authored with Charles Chewning, Vice President of Cotton Incorporated). The fact is that the spinner and the textile manufacturer at large should understand the difference between the price premium/discount scale of cotton and the technological premium/discount scale. Only few companies around the world have realized this fact and have taken full advantage of the differences between the two scales.

In the price premium/discount scale, the focus is primarily on the color and trash of cotton (cotton grade) with discounts that can reach more than 2000 points from the base price. In the US classing system, the base price used for establishing the premium/discount scale is that for White-Strict-Low Middling Cotton at a staple length of 34 mm and a leaf grade of 4. If the fiber length is reduced at this grade down to 26-31 mm, a discount of up -595 is applied, yet an increase in fiber length of more than 38 mm will result in a premium of +230. Examples of premium/discount points associated with other fiber properties are shown in the oversimplified scale of Figure 4. As can be seen in this Figure, there is a great deal of emphasis on discounts in key fiber properties such as Micronaire, fiber strength, and length uniformity. This is a positive and appropriate trend due to the critical importance of these characteristics in producing a high-quality yarn. In this regard, I should mention that the American cotton is the only cotton around the world that is 100% tested. Indeed, the buyer of American cotton can obtain all HVI properties of every cotton bale at a price of 5 cents per bale.

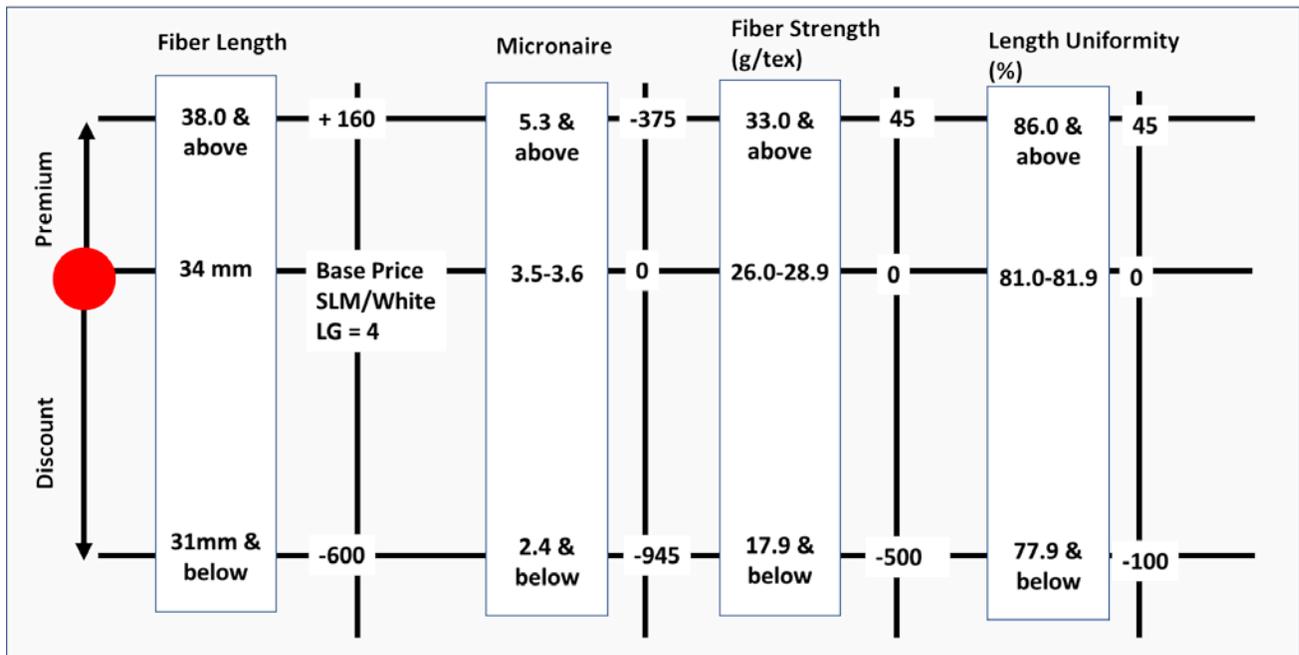


Figure 4. A Simplified Premium/Discount Scale of US Upland-Cotton Price

As I mentioned earlier, the cotton classing system focuses on the color and the trash grade of cotton grade. This is a positive approach due to the fact that cotton buyers should be able to buy cotton at minimum level of foreign matter. The problem associated with this approach, however, stems from the traditional practice to over clean the cotton fibers during the ginning process, using one stage of seed cotton cleaning and two to three stages of lint cleaning after ginning. In addition, the production rate of the ginning and lint-cleaning process is substantially higher than the rates of the opening and cleaning equipment in the spinning process. As a result, a great deal of visible trash is removed due to ginning and lint cleaning. However, a significant percent of the large trash particles is crushed into very tiny trash particles, which are very difficult to remove during opening and cleaning in the spinning process. In addition, excessive lint cleaning results in high percent of short fiber content and high levels of fiber neps. These problems often call for a revisit of the current approach of cotton classing and the development of new classing systems that are more suitable for evaluating cotton quality in view of the new technologies and the new demands for higher yarn quality.

As I indicated earlier, the history of cotton classing in the U.S.A. goes back to 1907, at a time where ring spinning was the only spinning system available. This provides another reason of revisiting the cotton classing system in view of the new technological developments in spinning and weaving. Table 1 illustrates the important cotton fiber characteristics influencing spinning performance for different spinning systems ranked by their level of importance. This table is a summary of an extensive research project that I led in 2001 sponsored by Uster Technologies and the USDA in which extensive analyses were performed to develop fiber-to-yarn regression equations for exploring the relative contributions of different fiber properties and predicting yarn quality. The study covered different spinning systems, different yarn counts and twist, and it was divided by the fabric forming system, namely: knitting and weaving. As one can see in Table 1, different spinning systems require different ranking of cotton fiber properties. In the same project, we conducted a cost analysis in which spinning endsdown (or production per spinning per hour) was evaluated with respect to different fiber properties and for the three major spinning systems. A summary of this analysis is illustrated in Table 2.

The important point derived from Tables 1 and 2 is that it is important that the value of cotton fiber reflects the value of the products made from the fibers. Obviously, there are few obstacles to establish a classing system that follows this pattern, however, I believe it is a matter of time before a new classing system dictates itself to achieve more technological and quality values of cotton fibers.

Table 1. The Relative Contributions of Cotton Fiber Properties with respect to the Performance of Different Spinning Systems and Yarn Quality

Spinning Type	Ranking of Important Fiber Properties
<p style="text-align: center;">الغزل الحلقي</p> <p>Ring & Compact Spinning</p>	<ol style="list-style-type: none"> 1. Staple Length 2. Length Uniformity 3. Fineness, Micronaire 4. Short Fiber Content 5. Fiber Tenacity 6. Breaking Elongation 7. Trash Content 8. Color Rd and +b
<p style="text-align: center;">غزل الطرف المفتوح</p> <p>Open-End Spinning</p>	<ol style="list-style-type: none"> 1. Fineness, Micronaire 2. Short-Fiber Content 3. Dust Content 4. Fiber Tenacity 5. Breaking Elongation 6. Staple Length 7. Length Uniformity 8. Trash Content 9. Color Rd and +b
<p style="text-align: center;">غزل القناة الهوائي</p> <p>Air-Jet Spinning</p>	<ol style="list-style-type: none"> 1. Mean Fiber Length 2. Length Uniformity 3. Short Fiber Content 4. Dust Content 5. Fineness, Micronaire 6. Fiber Tenacity 7. Breaking Elongation 8. Flexural Rigidity 9. Trash Content 10. Color Rd and +b

Table 2. The Relative Contributions of Cotton Fiber Properties w.r.t. Spinning Endsdown

Spinning Type	Fiber-Related Causes of Endsdown
Ring Spinning	<ol style="list-style-type: none"> 1. Variation in fiber Length & short Fiber Content 2. Variation in fiber fineness due to poor blending 3. Variation in Fiber Elongation 4. The Presence of fine trash particles 5. Fiber Neps
Open-End Spinning	<ol style="list-style-type: none"> 1. The presence of fine trash particles that found their way to the rotor 2. Variation in fiber Length & short Fiber Content 3. Variation in Fiber Fineness 4. Seedcoat fragments & Contaminants 5. Fiber Neps
Air-Jet Spinning	<ol style="list-style-type: none"> 1. Dust Content 2. Variation in fiber length (short fiber content) 3. Flexural Rigidity 4. Fiber Neps

Before I leave the subject of cotton price structure, I should briefly describe the common indexes used to price cotton. The first index is the so-called “A-Index” which has been published by the trade group Cotlook since the 1960s and is considered to be representative of a “world cotton price.” This price index is based on daily surveys of cotton merchants and describes an average of export prices offered by international cotton merchants for shipment to spinning mills in the Far East, where the majority of the world’s cotton is spun into yarn. Only “medium grade” cotton fiber can be included in the average of the A-Index, and there are currently 16 different cotton varieties from around the world that are eligible. However, with certain restrictions, only the five least expensive eligible varieties are used to derive the A-Index. The rationale behind the use of the cheapest values in the average is that the cheaper options could be expected to be more heavily traded. Therefore, an average of the cheaper varieties prices could be more reflective of transactions in the global market. The A-index tends to be higher than the New York Nearby (another price-trade system) for two reasons: (1) the quality of the cotton represented by the A-Index is slightly higher than the quality represented by New York futures, and (2) the A-Index prices include shipments to the Far East.

The second index is the so-called “China Cotton (CC) Index.” It only refers to prices for cotton within China. It is a simple average of prices of Chinese cotton offered by Chinese merchants for

cotton delivered to Chinese spinning mills. There are several different CC Indices, with different prices reflective of values for different cotton qualities. The most commonly quoted CC Index is for the quality code 328. The CC Index (328) has been used as a trigger for purchases made by the Chinese government's reserve system and is the one tracked in the Monthly Economic Letter.

The third index deals primarily with spot prices and is called the "Indian & Pakistani Spot Markets." Spot prices refer to values for the immediate exchange of cotton for cash. Average daily prices in these markets are reported by cotton organizations in each of these countries. As opposed to the A-Index and CC Index, which respectively describe prices inclusive of delivery to the Far East and to Chinese spinning mills, these values do not include any delivery costs.

If we move to the price structure of polyester, we will find that although polyester fiber is also considered a commodity product being petroleum-based, its price is directly specification-differential, and not a supply-demand differential. The principle ingredient used in the manufacture of polyester is ethylene, which is derived from petroleum. This will obviously mean that the price of oil is a key factor in determining the price of polyester and all petroleum-based fibers. However, in 2016, the world produced nearly 94 million barrels of oil every day (about 12 million tons/day), yet the world fiber market consumption was about 96 million tons in the entire year of 2016, with oil-based synthetic fibers representing the biggest market share of 62%. This means that polyester fibers consume a very tiny fraction of oil. For this reason, the source-based vulnerability of polyester fiber price is far less than that of cotton fibers. When we add to this point the decline in oil price by more than 40% from 2014 to 2016 (going from over \$100 per barrel down to less than \$60 per barrel), we can realize that polyester fiber is enjoying a huge lead in price adjustment in comparison with cotton fiber.

As I indicated above, the polyester fiber price is largely specification-differential. It is well-known that polyester fiber can be produced at different levels of fiber characteristics, limited only by its inherent chemical compound. Polyester fiber is virtually trash free, and it can be made in bright white color. As a melt-spun fiber, polyester can be cut into different staple lengths and can be made in various fineness levels from coarse denier to micro-denier, depending on the spinning requirement and the yarn produced. It can also be made of high tenacity or medium or low tenacity. Furthermore, the fiber cross-section can be round or of different shapes (square, oval, bean-shaped). Hollow polyester fibers are also common. Polyester fiber is also naturally bright, but it can be made of dull or semi-dull colors by the addition of TiO_2 . The color of polyester fiber may also be designed during the melt spinning process by adding dye stuffs. All these factors will obviously result in different prices, not by a premium/discount scale, but by a specification scale.

The Price Game Between Cotton Fiber and Polyester Fiber

Judging by the above discussion, one may assume that since the price structure of cotton fiber is substantially different from that of polyester, the two fibers should be competing in independent markets and for independent fiber users. This is what I describe as "half-true" as you will never hear any mention of polyester fiber in establishing cotton prices as described earlier in the A-index and the C-index. On the other side of the market, polyester producers have always kept their eyes

on the cotton market and the cotton price. Therefore, it had come as no surprise that those producers are now enjoying a substantial advantage in the marketplace.

In an article in the Wall-Street Journal in May 2014, titled “Cotton’s shrinking share of the clothing market is troubling for the merchants that buy and sell the fiber,” the reporter stated:

“apparel makers are weaving more synthetic fibers into clothing that was once 100% natural, a trend that being perpetuated by high prices for cotton.”

At that time, the upland-like cotton was above 94 cents a pound and the polyester was only about 65 cents a pound in China (the largest polyester producer in the world of over 65% of the world production). In the early 2017, the price of upland-like cotton was about 86 cents per pound (A-Index), yet the price of polyester fiber was under 70 cents per pound.

In the introduction of this article, I pointed out the increase in demand for polyester fiber market share, which has reached 46.1 million tons in 2014. By 2017, the demand for polyester fibers reached over 50% and it is expected to reach 60% before 2025. Most of this demand is a shift from cotton products to polyester or cotton/polyester products. Indeed, unless major efforts are made to slow down the decline of cotton fiber demand, it is expected to reach a record low of 20% by 2025. This is truly disturbing given the fact that in 1998, cotton demand exceeded 40%. The polyester top makers around the world (China, India, and Southeast Asia) have been aiming at this increase in demand for many years both technologically and promotionally. The diverse attributes of polyester naturally allow the invasion of many markets. For this reason, we now witness a decline in demand for wool and acrylic fibers (both lost share from 3% and 5.6% down to 1.4% and 1.9%, respectively over the period from 1998 to early 2017). In my recent visit to India in October 2016, I attended a meeting of top textile industry representatives and the general speculation in that meeting was that before 2020, the current Indian market share of polyester of about 40% will rise to nearly 50% by 2025, and the current market share of cotton, which is about 50% will decline to less than 40% by 2025.

The increase in consumer’s interest in polyester fiber has led to new market strategies that are mostly rooted in China, the leading player in the polyester-cotton price game. Many of the foreign textile companies in China, including US companies, are still running in the hopeless race for lower labor cost by moving to other regions in the world of cheaper labor; a race that will eventually send them back to their own countries as the labor cost advantage becomes irrelevant. As a result, many of the first-generation companies in China are being phased out, and China does not mind; indeed, it encourages this move so that China can build its 100% Chinese’s version of the textile industry. Therefore, many new plants are being built as more closures are anticipated.

It is no secret that China would prefer to increase its production of polyester fibers, limited only by a slowing growth in China’s polyester market. This trend is already anticipated through observing the capacity and the production patterns of two key polyester components by the Chinese petrochemical industry. The first component is the PTA, Purified Terephthalic Acid, consumed entirely in polyester fiber making, and the second one is the MEG, or mono-ethylene glycol. As a result, China currently produces about 38 million tons of polyester fiber, with more than 11 million tons of polyester staple fiber.

China will also prefer to produce and export polyester garments. According to the report of the International Cotton Advisory Committee (ICAC), 2015, the average polyester garment manufactured in China and imported into the USA costed \$2.18 in 2014, while a cotton garment costed \$3.38 a ratio of 1.55. In the rest of the world the average polyester garment manufactured and imported into the USA costed \$3.18 while a cotton garment costed \$3.49 a ratio of 1.1. These ratios have been consistent over the last 10 years as shown in Figure 5. This provides China with much higher competitive leverage in the US market that will contribute largely to a significant reduction in US cotton export to China, and a further decline in the domestic cotton textile industry.

In light of the above discussion, it follows that the price game between cotton fiber and polyester fiber is virtually a one-sided game in which the stronger side over the last 20 years has been the polyester fiber. This game is not about which fiber will sell at a higher price, but which fiber industry has the capacity of being in control of the fiber market against all volatility factors. The cotton fiber industry relies entirely on the role of supply and demand in determining cotton fiber price. A short supply and low stock in one year will typically result in an increase in production in the following year; and a low demand and mill-use in one year will result in a decrease in production in the following year, and so on. In the midst of accommodating these annual changes, the cotton industry seems to overlook the global changes in the fiber market and the consistent global trend of a declining demand for cotton fiber. This is evident by the fact that when polyester fiber demand surpassed that of cotton for the first time in history in 2002, this turning point went totally unnoticed by the cotton industry, ignoring the absolute fact that an increase in demand for polyester fiber is automatically at the expense of a declining demand for cotton fiber.

In view of the above discussions, cotton fiber is now facing a significant uphill battle to recover its historical status as the king of fibers, and the true threat comes from polyester fiber. Undoubtedly, the global market is governed by numerous factors interacting in a complex manner, and what has started in 2002 of a surpassing demand of polyester fiber over cotton fiber may be difficult to stop without major promotional and marketing efforts of cotton fiber. However, I truly believe that when consumers realize the benefits of using cotton fiber over any other fiber, they will certainly go back to demanding cotton textiles.

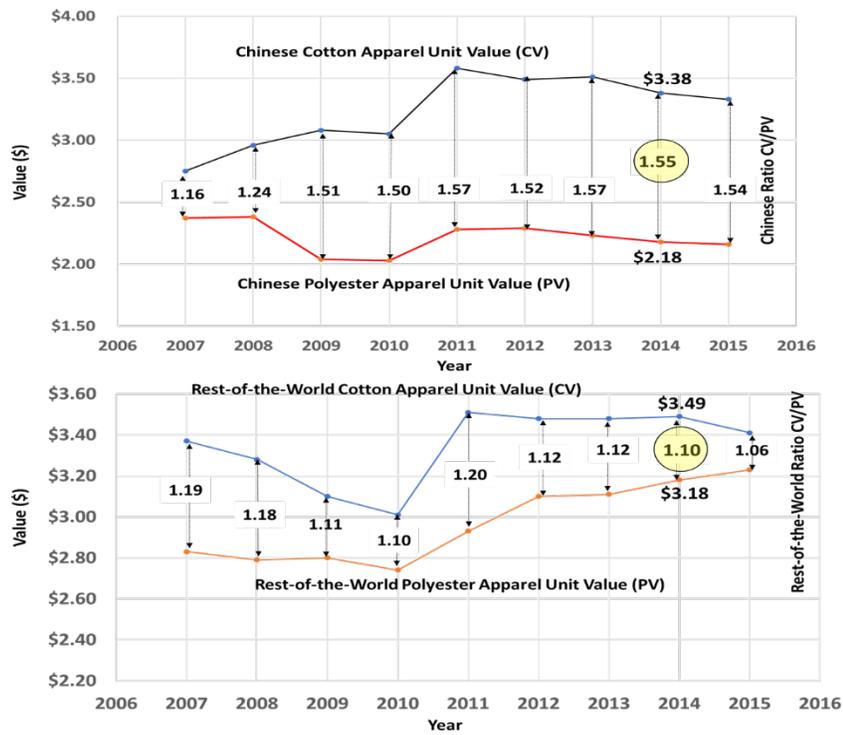


Figure 5. Comparison of the price per unit of cotton and polyester garment made in China and the rest of the world