Exploring thinking from antiquity in managing logistics, supply and resources: Chinese Sun Tzu, Indian Kautilya and supply chain management

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Abstract: In this article, the author first reviews briefly and selectively the literature on supply chain management. He then explores the roots of strategic thinking on supply strategy. From China, he focuses on Sun Tzu’s the Art of War (Bing-fa in pinyin) and from India, the work of Arthashastra by Kautilya (also known as Chanakya and Vishnugupta). What is found is that whilst there is a very extensive literature on supply chain management, both the works by Sun Tzu and Kautilya are rarely mentioned as part of it. Yet as this article will document, these very ancient works Art of War and Arthashastra besides being deeply enmeshed in Chinese and Indian cultures, respectively, contain insights relevant for supply strategy.

Keywords: Arthashastra; Art of War; Arthashastra; Kautilya; Strategy Art of War; supply; Sun Tzu; strategy.


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1 Introduction

The article in introducing relevant supply concepts, takes a comparative approach. Firstly, a hermeneutic, interpretative study (Ricoeur, 1981) is undertaken simultaneously of both the Art of War and Arthashastra. Secondly, extractions are then made of words, sentences or passages that are relevant to managing of supplies in competitive environment (or wars). Thirdly, the insights from these excerpts on supply strategy are then discussed beginning with the Art of War and followed by Arthashastra. In-depth analyses are made on excerpts from both texts that dealt with the role of supply as part of strategy.

The goal enables the reader to grasp differences and similarities in Chinese and Indian strategic thinking. Sun Tzu’s writing style is terse and a character may more than one meaning. In contrast, Kautilya wrote in the style of a manual, rather straightforward. Yet most surprisingly for author is how Kautilya’s work reflected a more devious approach in thinking. The continuing rise of Chinese and Indian economies on the global scene should lead to a transformation of the curriculum of the typical MBA.

The USA despite its sole superpower status is a young country. Not surprisingly US-originated MBAs tend to be devoid of any cultural orientation. In contrast, however, India and China are ancient civilisations with more than 5,000 years or more of recorded history. Thus, in the future, when Chinese and Indian homegrown multinational corporations (MNCs) begin to dominate in global marketplaces, MBA or business education in general, will accordingly have to be changed. Both Chinese and Indian cultures ought to be re-emerging in growing importance world-wide.

With US in sharp decline, within say a decade or two, Chinese and/or Indian MNCs are likely to become dominant players. As such it is timely now for scholars to research deeply into the ancient roots of thinking (as in here, supply-related, strategic thinking) from both these civilisations. They may then relate them to modern managerial practices. Currently, scholars in strategy had almost altogether ignored the deeply historical roots to strategic thinking. Far less are there scholars who contemplate on taking a cross-cultural study of ancient strategic thinking. Thus, this is a highly original piece of historically grounded research of relevance to management.

Some 45 years ago, Peter Drucker remarked about logistics (before ‘supply chain’ enters the vocabulary) as being the ‘a dark continent’ (Drucker, 1962). The first person to use the terminology of ‘dark continent’ is probably Henry Stanley. In his Through the...
Dark Continent, Stanley was described his 1878 account of the vast hinterland of Africa. The continent then was very largely unknown and mysterious. The clear implication is, as far as logistics for management as a discipline is concerned, it remains somehow a mystery. Yet, the organising of logistics had much deeper roots—as this article will illustrate—if you extend the search for concepts, ideas and techniques beyond to military history. As for recent massive logistics and supply campaigns, read for example Waddell’s account (Waddell, 1994) of the logistical aspects of the 1944 Normandy campaign.

The situation now is so vastly different. Logistics and supply chain management (SCM) now have become increasingly the very focus of executive MBA programs that are delivered on a global basis. For the contents of the SCM program as planned for 2009/10, see that of Swiss Federal Institute of Technology. SCM is defined as follows:

“Optimized flow of goods, information and funds from the raw material producer to the end customer”

It is instructive to break the definition into three key components. The first is in the concept of optimising the flow of the supply chain. Next, the focuses being on goods, information as well as funds, and thirdly, the chain being all the way from raw, unprocessed materials right to the end customer. Extending beyond the definition, we next look at what the contents of what the program on SCM (see Figure 1) actually cover in order to realise the goal of optimal flow.

Figure 1  MBA SCM curriculum

### MBA SCM Block Curriculum

- Fundamentals of supply chain design
- Key drivers for setting up a supply chain
- Discussion of real supply chain setups with representatives of different industries
- Strategic decisions and fundamental concepts in supply chain management
- General management and forecasting techniques
- The MRP/ERP concept - overview of resource planning
- The lean-just-in-time concept
- Current challenges in purchasing and supply management
- Development and implementation of purchasing strategies
- Management of supplier portfolios and differentiated supplier relationships
- Role and stumbling blocks of production planning and control within the SCM framework
- Impact models of logistical behavior in production systems and storage
- Targets, variables, functions and performance measures of production systems
- Analysis and improvement of the MAPE, process, selected control methods
- Transport techniques (road, rail, water, air) and management
- Transport networks, transport points & innovative concepts and trends
- Logistics and warehouse processes, in house transport, basics and definition
- Retail concepts and processes
- Background on the life-cycle-orientation of Supply Chain Management (life-cycle thinking within SCM)
- Basics of return, re-use, recycling, recovery and examples from practical implementations
- Methods and tools for Supply Chain Optimisation and best practice examples
- Current basic concepts and elements of SC tools
- Potential conflict areas in processes and organizations
- General case study covering the main aspects of Supply Chain Management tools
- Real cases on SC-Design and special industry concepts

(Source: 2009/10 MBA International Supply Chain Management, Swiss Federal Institute of Technology, page 8)
Some of the interesting concepts, theories, processes and techniques including ‘key drivers’, ‘strategic decisions’, ‘managing demand’, ‘forecasting’, ‘MRPII and ERP’, ‘lean or just-in-time’, ‘portfolios’, ‘relationships’, ‘production planning and control’, ‘logistical behaviour’, ‘transportation’, ‘warehousing’, ‘life-cycle’, ‘retail’ and other concepts. It will be intriguing to ask what the curriculum may look in say, 10 years later in 2019. Some may be de-emphasised yet concepts that are ‘fundamental’ to supply chain ‘design’ are likely to remain critical. Strategic aspects of supply are more than likely to stay. For supply chains—goods, information and funds—in modern contexts are what Sun Tzu (see above) will say are integral to the Tao of Survival for a corporation.

2 Literature review

Having seen the menu of an MBA in SCM, we now review briefly what the literature has to offer. One focus appears to be on how supply chain may not only be best optimised but aligned. Cousins (2005) explored alignment with the firm. The term, ‘alignment’ is defined in Collins dictionary as ‘…support for a particular group…’ or alternatively as ‘…its position in relation to something else or to its correct position…’ The argument is such alignment is critical for the firm to be competitively more advantageously positioned relative to others in the industry. Fisher (1997) argues for right alignment of the supply chain with a narrower focus of the product instead of the firm. Implicitly, a proper alignment with either firm or product will presumably lead to enhanced corporate performances by being more competitively advantageous (Li et al., 2006).

Intriguingly, Godsell and his team (Godsell et al., 2006) in a recent work asked if indeed it is ‘unnatural’ to configure supply chain simply to be more responsive to customers. And what appears to be a research trend into the future, the investigation of supply chains as networks (Harland et al., 2001). Besides the technology, technique and methodology papers, some scholars emphasised the human dimension of SCM (van Hoek, Chathman and Wilding, 2002). Rubery and his colleagues (Rubery et al., 2004) also emphasizing the people dimension but from the perspective of the yet another promising future research area: organising for corporate permeability.

These works as cited and the many more to come ought to illuminate the darkness Peter Drucker’s logistic continent (see Figure 2). Given this situation, it will be interesting to ask as far back as it is possible, what are the kinds of insights are there to effective management of logistics and supplies of resources? Since logistics (now supply chain) in our modern contexts have their roots in the military studies, the search ought to be made for within the earliest known texts on Art of War. Since China and India are the two fastest developing globalising economies, we turn to look at Sun Tzu’s Art of War (Foo, forthcoming) and Kautilya’s Arthashastra (Rangarajan, 1992). For some aspects of competition are likely to be timeless as in the role of time (Stalk and Hout, 1990). As there is little in the SCM literature on supply and Art of War by Sun Tzu, the next section introduces the ancient text.
3 The Art of War

What is the Art of War (translation by Lionel Giles) all about? As far as the author, Sun Tzu was concerned it is the Tao of Survival (see above quotation). Indeed one of the key insights of Sun Tzu is identical with the dominant logic arising out of and from the studies of Charles Darwin as documented in the *Origin of the Species*: adaptation for the survival of the fittest. Darwin emphasised the concept of adaptability. The Art of War is truly about the mastery of the way that leads to one’s survival in the context of intensely competitive environment, such as during a war. You may read as ultimately a text to guide you through its concepts (156 as mapped out by this author) to compete successfully. One of the most unique qualities of Art of War by Sun Tzu in contrast to other Western works is the use of powerful metaphors. For example, out of the 5,000 Chinese characters within the text, originally crafted in bamboo, the most evocative of the Tao is in the Chinese character of water (pinyin *shui*) depicted below in Figure 3.

*Why?* For in the mind of Sun Tzu, nothing is physically as adaptive as water. Pour water into a glass, it takes the shape of the glass. Toss it into any bowl water follows the contours of the bowl. For this reason, you find in the Art of War, Sun Tzu had advocated for the general to train the army to adapt like water. The example of water is cited here for the main reason of emphasising one of the major linguistic contrasts between the written Chinese, which are of pictorial origins and the alphabetically based, ancient Indian *Pali*. Whilst Sun Tzu wrote in Chinese of the *Spring and Autumn* period, Kautilya used *Pali*. It is therefore possible when looking at a Chinese character, for the reader to perceive of deeper, implicit meanings. *How?* For example, by the strategist reflecting upon the imagery of Chinese character. For the purpose of exposition on Art of War, the author will be utilising the Art of War as rendered neatly into 156 concepts. By doing so, it becomes very convenient for anyone to map the Art of War thinking upon any event. Or as in the case here, that the author may by mapping, compare the thinking of Sun Tzu.
with another great strategic thinker. To begin with, we explore the thinking of Sun Tzu on resources.

Figure 3  Water in Chinese

4  Thinking of Sun Tzu on resources

Figure 4 provides a holistic if not more integrative perspective of the thinking of Sun Tzu as evidenced in his chapter 2 of the Art of War on 'Resources'. Clearly Sun Tzu emphasised strongly the taking of a deeply strategic perspective to resources and supplies. In particular, he preferred if at all possible a ‘no-war’ approach on the rationale wars are very costly, risky ventures. Next, he valued very highly any strategic thinking emphasising the takeover and employment of other peoples’ (especially the enemy’s) resources. In his scheme of valuation, one of the enemy’s resources is worth 20 times of his own. By the same line of thinking, he stressed the critical importance of speed in war from a resource perspective for he gave the reason that otherwise, the treasury empties. Then, in his system of rewards, it was too tied down to seizing of enemy’s key vehicle of war: enemy’s chariots.

Since war burns up resources, Sun Tzu made it clear who he regarded as ‘Adepts at War’ inter alia, those who are ‘not hasty to fight a war’ and even more clearly as one who had himself ‘equipped and food aplenty’.

Next, we turn to the thinking of Sun Tzu on the general and resources.

Now, some insights into the mind of Sun Tzu may be seen in how he evaluates the General (see Figure 5). Thus, for those skilled in war—the good Generals—are those who are able to ‘make hungry, the well-fed enemy’. Moreover, a highly skilled General is one who ‘plunders the enemy, so feed his men’. And in addition, as discussed earlier, Sun Tzu put as supreme the General who ‘prevailed [more] by stratagem’ rather than through ‘prolonged operations’.

Then, for such highly skilled General, he is likely to be committed to ‘gaining states yet not [via or through] prolonged operations’. From these extracts of the Art of War, we can clearly see that Sun Tzu would highly rate the skills of a General who is constantly resource or in today’s context, SCM minded. If you draw a parallel to modern, highly competitive business, it is crucial for CEOs as Generals then to be equally resource, supply minded. Next, we shall consider the thinking of Sun Tzu on supply chain per se.
Exploring thinking from antiquity

Figure 4  A holistic view of Sun Tzu on resources (Chapter 2)

Figure 5  The general and resources

**6 Strengths & Weaknesses**

The Skilled
- He who rushes, is wearied.
- He who waits, is at ease.
- Thus, the Skilled,

The Unskilled
- He is brought by the enemy.
- The Skilled,
- Tires the enemy,
- Then at ease,
- Makes hungry,
- The well-fed enemy.
- Rushes, enemy at rest.

Supreme is the General
- who prevails by stratagem

A General captures cities,
- gaining states yet not,
- prolonged operations.

1. **2 Resources**
   - **Costly, all wars**
     - Chariots, soldiers, materials.
     - Transporting 1000 miles.
     - Entertainment, glue, loop, armor, thousands of gold pieces.
     - Only then... 100,000 soldiers move.

2. **Be speedy, in war**
   - Too long: Spears blunt,
   - Morale sinks,
   - Strength depilates,
   - Treasury empties,
   - State is at risk.

3. **Adepts at War**
   - Not hasty to fight a war.
   - No second levy or conscription.
   - Equipped and food aplenty.
   - Forage for provisors.
   - M cent enemy's chariots after every battle.

4. **Rewards**
   - Stir them to bravery,
   - Reward top 10%.
   - For every 10 chariots, First to take, is rewarded.
One of the more relevant, exciting quotes that anyone may make about the 21st Century SCM out of the pages of the Art of War has to be the above line (see Figure 6). The key concept is in the word, ‘inexhaustibility’. That is, for the resources to be supplied like the flow of river. Such a metaphor for supplies as an imagery is most pertinent as it is powerful. Rivers say the most famous and the holiest of all Indian rivers, is the Ganges (or in most Indian languages, Ganga) had been praised by Jawaharlal Nehru in even more elaborate, grand terms as in his book of the *Discovery of India*:

“…The story of the Ganges, from her source to the sea, from old times to new, is the story of India’s civilization and culture…”

And even more ominously,

“[also, the story]…of the rise and fall of empires…”

Sun Tzu in citing the river as a metaphor was emphasising the very cyclic nature in the flow of water along the riverbed. Supplies within any logistics industry too are subject to cycles. Thus, executives ought to be very familiar with such a pattern as described:

“…existing they do, in cycles, fading [depleting of resources; for logistics, utilization of supplies] then returning [replenishing of resources; in business terms, re-ordering]…”

Next, we will turn to exploring the thinking of Sun Tzu on observing resource use.

Of all the chapters of the Art of War by Sun Tzu, the last is probably his most powerful and enduring. *Why?* We are now living in an age of explosion of information. Unlike in the past, our human mind/brain is more likely to be overburdened with too much data rather than just too little. Yet no major business can afford to ignore what possible insights that the massively available data may provide. However, such data to be useful, had to be mined for gems of useful information. According to a very recent of *The Economist* (September 15th–21st, 2007), there is an article on ‘Using algorithms in business’. Indeed, it is an irony that we have such a divide in the world today when in the past there had been cross-cultural transmission of knowledge. The word ‘algorithm’ is a classic example; it originates from Al-Khuwarismi, name of 8th century Arab mathematician. The concluding line makes a forecast of what is come: ‘…they [meaning algorithms] are bound to take over the world…’

Modern strategists now rely upon the intensive applications of algorithms for gaining insights on supply strategy. Indeed in the future, corporate strategists may need to get a grasp of how algorithms are designed (Kleinberg and Tardos, 2005). Algorithms are critical for developing the tools for data mining of massive information available on the internet. Through data mining, useful ‘signs’ or nuggets of information may then be
extracted. Whilst during the period of Sun Tzu, there is but a paucity of written information, the situation is not altogether so different.

For the principles of extracting insights from externally available data are rather similar. The idea is to extract information out of whatever ‘data’ that are available externally. Thus, the parallels during the time of Sun Tzu must be in his extracting the right ‘signs’ (Figure 7) that are deeply embedded in the ‘situations’. Just to illustrate, when through ‘data mining’ say through using a network of secret agents as spies (computing terms, ‘agents’) that it was discovered as follows.

The soldiers are seen:

“…sipping water away from camp…”

From this, he drew the insight that the enemy is already tired out. Another example, say later on, Sun Tzu was told of another this piece of information as extracted from his network of agents (In cutting edge, computing language: the role played by computing-based agents in interactions with other agents).

“…Grains fed horses…”

Now from such a ‘data mined’ insight, Sun Tzu then deduced the state or condition that enemy was in:

“…desperate…”

Upon which Sun Tzu may act immediately to launch a surprise attack. One that so overwhelmed the enemy forces and seizing the general. Clearly, Sun Tzu emphasised the role of information in enacting strategy. For here, he advocated that military actions be dependent on ‘signs’ or in modern business context, insight be extracted through data mining. In order to provide another perspective, we now turn to review the strategic thinking of Kautilya on supply and resources.

**Figure 7**  Informational insights from the use of resources
5 Thinking of Kautilya on resource use

Kautilya³ like Sun Tzu was not inclined to be superstitious. Both of them firmly believed that the destiny of any leader or general is in the hands of the man himself. Now this may be seen in Figure 8 (see his ArthaShastra as rendered into English by Rangarajan).

Kautilya put such a rather weighty emphasis on having a deeply resource perspective to winning wars. Here, in his major, if not voluminous (relative to the Art of War by Sun Tzu) work, he emphasised one of the root causes of success. That it really lies upon how one is able to utilise resources for gain. It is all the more remarkable if we consider that he was expressing his thinking at least 2,000 years ago. We may even say his thinking is grounded on pure financial logic: “…success lies…in using one’s resources to gain more…”

This is an insight that will go down well with Wall Street strategists. Perhaps, this is one of the earliest conceptual roots to thinking behind now widely applied financial ratios like return on investment (ROI) or return on assets (ROA). To further reinforce this deeply financial resources-oriented thinking of Kautilya, we can look at another of his statements. Kautilya had formulated a payback ‘algorithm’ (see Figure 9). His payback formula is this: what ought to be gained later should be a double of what is originally supplied for any war effort. Also if an item is lost, the Chief of Ordnance had to pay back double the value—not simply replacement cost!

Figure 8   Success from resource use

Kautilya: Success from Resource Use

“…It is not in the stars that success lies, but in using one’s resources to gain more…”

p. 626

Figure 9   Kautilya’s payback formula

Kautilya’s Payback Formula

“Double the resources, supplied before the War”

“Chief of Ordnance be fined double the value of whatever is lost…”

p. 626, p. 633, 697
In ArthaShastra, there is an interesting passage (see Figure 10) where Kautilya utilised an imaginary but a possible real world scenario: the condition or context under which a king should act as follows:

“...conquer and take what is easily re-conquered...”

Here again is an illustration of Kautilya’s thinking taking a resource-oriented approach towards strategy. Specifically, he mentioned that attack should be undertaken where it led to these outcomes:

1. weaken enemy stores
2. exploit wealth of the enemy
3. [destroy] productive forests
4. [destroy] elephant forests
5. [destroy] waterworks
6. [disrupt] trade routes.

Like Sun Tzu, Kautilya believed in the use of deception (rendered as ‘tricks’) in order to win the war. In particular, he suggested the use of tricks by the ‘weaker king’. Sun Tzu too emphasised the role of deception in winning wars. His formulation of such an explicit ‘weaker’ concept suggests that like Sun Tzu, Kautilya too readily analysed strengths and weaknesses (S–W). For Kautilya, he prescribed trickery (see Figure 11) so as to obtain:

“...stores...”

Or a “...massacre his [enemy’s] troops...”

**Figure 10** Kautilya on attacking resources

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Under what condition should a King conquer and take what is easily re-conquered back by enemy?</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Kautilya’s Part-Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>“...weaken enemy’s stores...”</td>
</tr>
<tr>
<td>“...exploit all wealth of the enemy’s... productive forests, elephant forests, waterworks or trade routes...”</td>
</tr>
</tbody>
</table>

p. 636

**Figure 11** Kautilya’s advice to weaker king

<table>
<thead>
<tr>
<th>Kautilya’s Advice to the “Weaker” King</th>
</tr>
</thead>
<tbody>
<tr>
<td>“...Tricks may be played on the aggressor in order to obtain his stores or massacre his troops...”</td>
</tr>
</tbody>
</table>

p. 663
Kauutilya even went one step further in his deliberation on trick (Figure 12). He explained how to use supplies as part of a trick. His advice was firstly to apply poison to the supplies. Next, it is for the good strategist to set up a trap for the enemy to seize these poisoned supplies. Indeed, he emphasised there to be much wider possibilities for applying poison as part of trapping the enemy. Perhaps, on the basis of this evidence, some readers who are already familiar with the Art of War may reasonably infer Kauutilya to be more devious than Sun Tzu.

It is very difficult, however, to draw any such inferences in the absence of further and deeper research. What is required is to understand deeply the Indian warring situations vis-à-vis the Chinese. The fact that Kauutilya highlighted the use of poisoned supplies may simply that is more prevalent then in India to be employ poisons as part of battle strategy.

It is interesting to ask what Kauutilya would have had advised if the supply chain had been cut? Now this can happen anytime even in the modern world when disaster may strike, say a major contract manufacturer. For example, if the region where the contract manufacturer was sited had been hit say by an earthquake. Or the factory was submerged under a tidal wave, say another Tsunami. In Kauutilya’s thinking, the fight must not simply be abandoned. It ought to be continued on (see Figure 13):

“...can still fight...”

There is, however, a proviso of ‘if’ --- that is:

“...if supplies are brought in from elsewhere...”

In other words, in his thinking, alternative possibilities of supplies are equally important, critical considerations. Thus, very likely Kauutilya will seek to intensify efforts to bringing in supplies from other places. Clearly, in today’s context of organising supply chain, Kauutilya if he was the Chief Executive Officer would probably have had taken up appropriate contingent measures to prepare for any eventuality.

**Figure 12** Kauutilya on ‘how to trick’

![Kauutilya on How to Trick?](image)

“...poisoned supplies...enemy invited to seize...Similar tactics can be employed...all types of supplies...”

p. 673

**Figure 13** What if supplies are cut?

![Kauutilya on What if supplies are cut?](image)

“...can still fight if supplies brought in from elsewhere...”

p.682
Next, it will be interesting to ask what are the roles that ought to be assigned to the Chief Officer of SCM? That is, the top executive responsible for logistics and supplies. Here, Kautilya was specific and he emphasised (see Figure 14) he had to have a detailed knowledge—and at all times—all the items necessary for battle. It must be remembered this work was written in ancient times. Indeed long before the advent of any concept of book keeping or accounting systems. With availability of sophisticated software, such demands put on any Chief Supply Chain Officer are no longer a major hurdle. Conceptually, Kautilya specified ‘cost’ to be the key driver for making decisions as to replenishments. This is certainly consistent with his resource-based strategy for waging and winning wars. With advanced technology, it is now effortless track down the flow of items out of warehouse through the supply chain. Yet even without any technology, Kautilya had already seen through the significance for such a tight monitoring and control of the items as supplied.

Now, even more intriguing is to grasp the working of the mind of Kautilya on strategy for en-route supply of resources (see Figure 15). Say, when the army had to...
march from the base camp to the site of battle. Here, he took a rather modern ‘modelling’ approach. For he identified the variables that had to be factored in a model:

“…the rate of march…”

As well as the “…length of the stay…”

Then he had asked if there are already available sources of supplies en-route. Resources may be drawn from villages and forests that are situated en-route. He even used a factor of two as the yardstick of how much of the equipment and food to be carried. Presumably, in India, there are labourers available to carry such goods over long distances. Then, he suggested a system that reflects systems wise, the interestingly, modern concept of feed-forward. Even now this idea of ‘feeding forward’ is very relevant in the design of complex computing systems.

The key role that resources may play in the Art of War of Kautilya can be seen in his prescriptions on when it was timely for a general to be storming a fort. Due to the very high costs involved in scaling cities, Sun Tzu was clearly against any such premature attacks. For Kautilya, one justifiable situation (see Figure 16) for implementing such a costly strategy is:

1. when the fortifications of the enemy were ‘incomplete’
2. stores had been ‘depleted’
3. reinforcements are ‘unavailable’.

In other words, it should be at a time when the enemy is at the most vulnerable. Such that externally (fortifications) and internally (stores), for the attacking General, there are no possible risks of a revival through reinforcements.

What is equally intriguing of Kautilya’s thinking on strategy is his specific reference on the role of women as part of his preparations for war (see Figure 17). He seemed to be fully aware of the psychological state of the minds of the soldiers battling in the war frontiers. For these soldiers who had to brave high risks of being killed and getting seriously injured, he prescribed for the presence of:

“...physicians with surgical instruments...”

Thus, the soldiers could fight assured of the fact that if they were injured, there would be immediate medical care. Since soldiers engaged in fighting in the battlefields are likely to be hungry and thirsty, he required for there to be:

“...women with cooked food and beverages...”

Here, the women continued to contribute in their traditional role of providing nourishment. Then beyond these needs of the body, Kautilya saw to the need for fighting men to stay in a sustained, high fighting spirit. Likely for this reason, he clearly specified that there to be women at the rear of the battle to:

“...encourage the men to fight...”
In this article, the author first reviews the curriculum of SCM and later some of the recent related literature. Then, the author seeks to relate the thinking of one of China’s greatest strategic thinkers, Sun Tzu, and India’s equally famous Kautilya, on the role of supply in the context of war (competitive) strategy. Since the work of Sun Tzu appeared prior to that of Kautilya, the discussion proceeded sequentially, beginning with the Art of War followed by ArthaShastra.

Despite the very different style in writings, Sun Tzu crafting his Art of War in a terse style of *Spring and Autumn* whilst Kautilya wrote his discourse in more of the flowing ancient Pali, an alphabet-based script, there are interesting common strands in their thinking about supply strategy. Based on the discussion, we can see clearly that both strategists emphasised the role of supply and resources in waging wars. For both of these strategists, a General (or CEO in modern context) can win (or profit) from timely, appropriate supply strategy. Both saw how by employing the right supply strategy together with deception, a weaker king may prevail (Kautilya) over the stronger or for Sun Tzu, how by implementing a General may win by a well-timed attack, one signalled by the resource or supply condition of the enemy.

What will be even more interesting will be to synthesise the thinking of Sun Tzu with Kautilya on supply strategy in context of competitive scenarios in which the extreme is war. From the earlier review of curriculum of modern MBA styled SCM and recent bulging literature, we can generalise on a recent, sharp bending supply knowledge curve (Figure 18). That in last two/three decades, there had been an outburst of articles on
SCM. And with fast growth of new technologies, many more articles are likely on innovative SCM strategies.

Yet even latest research often re-emphasises what is already a very well-known and accepted ancient principle in competition. For example, very recently Vivek et al. (2009) found the quality of information to be critical in supply chain—something that both Sun Tzu and Kautilya had already long prescribed. Similarly, Muniapan and Mohan (2008) cited Kautilya for insights for something that is so prevalently emphasised today, corporate social responsibility. As China and India become global economic players, both Chinese and Indian researchers have the scholarly responsibility to integrate ancient works with mainly American managerial thinking.

Figure 18  Supply knowledge curve

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Notes

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