

# Discussion



## Debriefing

- How did you feel while playing?
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- Were the patterns the same in each position?
- Was the experience similar across teams?

## Patterns commonly observed

### Phase Lag

- Due to **delays**, the peak in the order sizes tends to occur later in positions further upstream.

### Amplification

- Due to **overreaction**, the peak of the orders tend to be higher in positions further upstream.

### Oscillation

- Due to **correction**, the order sizes tends to go up and down in cycles.

## There's a name for this

These collective patterns are often called the "**Bullwhip Effect**", where "information transferred in the form of orders tends to be distorted and can misguide upstream members in their inventory and production decisions... the variance of orders may be larger than that of sales, and the distortion tends to increase as one moves upstream" (Lee, *et al.*, 1997)

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- What do you think caused these problems?

## Causes of the Bullwhip

- Jittery demand forecast
- Batching of orders
- Taking advantage of promotions
- Gaming of rationing & shortage

*From Lee (1997)*

*Do we have these in the beer game?*

## In the case of the Beer Game

### **Causes of Bullwhip**

- Lack of visibility
- Overreaction to changes
- Independent forecasting
- Lags in delivery
- Lags in communication
- No collaboration
- ...

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- What do you think caused these problems?
- What would you propose to solve them?

## Possible solutions for these issues

### Causes

- Lags in delivery
- Lags in communication
- No collaboration
- Lack of visibility
- Independent forecasting
- Overreaction to changes
- ...

### Solutions

- Faster delivery
- Faster communication
- Collaboration
- Increase visibility
- Joint forecasting
- Better reactions to changes
- ...

## What can the game teach us? (1)

- The Beer Game as an overly-simplified SC
  - No prices, no promotions, guaranteed sales
  - No competing for market share or customers
  - No facility location decisions (closing, opening)
  - Single product in the portfolio, no components
  - No procurement problems
  - No production issues (breakdown, maintenance)
  - No transportation disruptions or negotiations
- Simplest supply chain you could possibly have

## What can the game teach us? (2)

- Ok. But is it a fair game? Is it realistic?
  - There is a delay in production and transportation.
  - Super slow transportation, and no expediting.
  - No communication across entities.
  - No collaboration across entities.
- Can we do SCM without collaboration?

### What is SCM?

At the beginning,  
there was ***an intuition...***

*“The concept of SCM was mentioned in business literature as early as Forrester (1961), who suggested that the success of industrial companies hinged on the ‘interactions between flows of information, materials, manpower and capital equipment’.”*

Giunipero, et al. (2008)

What is new in the post-WWII world markets to give rise to this intuition?

...followed by early **initiatives**

*“The **early beginnings** of supply chain management can be traced to the textile industry with the **Quick Response** program (a **partnership where retailers and suppliers work together to respond more quickly to consumer needs by sharing information**) and later to **Efficient Consumer Response** in the grocery industry”*

Lummus, et al. (2001)

The **names** appeared in the 80’s

*“The term ‘supply chain management’ is **relatively new** in the literature, appearing first in **1982**”*

Cooper, et al. (1997)

*“the term SCM first appeared in the literature more than twenty years ago (Oliver and Webber, **1982**)”*

Gibson, et al. (2005)

*“only a **handful of articles** mentioned the phrase ‘supply chain’ between 1985 and 1997.”*

Giunipero, et al. (2008)



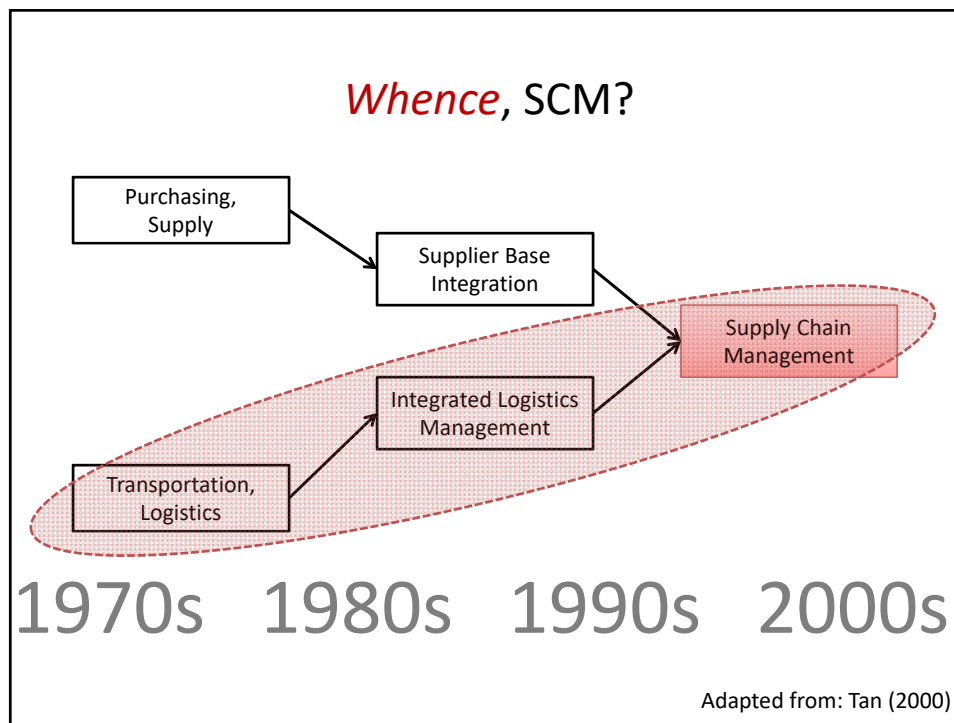
SCM came into **focus**  
and **grew** in the (late) 1990's

*"About 1990, academics first described SCM from a theoretical standpoint to clarify the difference from more traditional approaches"*

Cooper, et al. (1997)

*"the diffusion of the field did not take place until the late 1990s, with most of the theoretical and empirical investigation commencing in 1997"*

Giunipero, et al. (2008)



## Saying just 'logistics' was **not enough**

'**Modern logistics**', as defined in Bowersox 1978, is "the process of strategically managing the movement and storage of materials, parts, and finished inventory from suppliers, between enterprise facilities and to customers".

'**Business logistics**', 'Modern business logistics',

'**Integrated logistics**', 'Integrated logistics management'

## The definition of **logistics** was expanded...

- *"the management of all inbound and outbound materials, parts, supplies and finished goods"*
- *"the integrated management of purchasing, transportation, and storage on a functional basis"*
- *"the management of the pre-production, in-production and post-production channels"*

*Calvinato (1982)*

*"In a true business context ... **this definition expands logistics beyond** merely physical distribution"*

*Lummus, et al. (2001)*

‘Official’ definitions were also **revised**

*“The 1986 CLM definition of logistics has been augmented to include services along with goods and information movement.*

*In addition to conforming to customer requirements, others view the output of the logistics process as creating value for the ultimate customer (1992) and contributing to current and future profitability of the firm (1994).”*

Cooper, et al. (1997)

Redefinition brought some **confusion**  
around the turn of the 20<sup>th</sup> century

*“it is unclear what specific characteristics differentiate the two disciplines ... for many, the contemporary understanding of SCM is not appreciably different from the understanding of integrated logistics management”*

Cooper, et al. (1997)

*“The terms ‘supply chain management’ and ‘logistics’ are often confused and viewed as overlapping, depending on the definition used by an organization”*

Lummus, et al. (2001)

## “a discipline in the early stages”

SCM “is a discipline in the early stages of evolution”

“Academics have attempted to provide some structure to SCM by re-examining previous SCM definitions and **offering more complete SCM definitions** that include scope, functions and relationships.”

“Bechtel and Jayaram (1997) **classified more than 50 existing SCM definitions into five schools of thought** and identified functional and process areas covered.”

Gibson, et al. (2005)

## Some **consensus** was needed

*“The relevant question that we need to gain consensus on is **whether SCM is simply new words** for properly implemented logistics across organizations”*

Cooper, et al. (1997)

*“The discipline of supply chain management is going through **a normal maturation process of reaching a consensus** agreement on **what is included, and what is not included in the discipline**”*

Gibson, et al. (2005)

There was discussion about what SCM *is not*

*“supply chain management is not:*

- *inventory management*
- *logistics management*
- *supplier partnerships*
- *driven from the supply side*
- *a shipping strategy*
- *distribution management*
- *the logistics pipeline*
- *procurement management*
- *a computer system” (!)*

Lummus and Vokurka (1999)

### 2003: Logistics as a “part of” SCM

In 1986, CLM defines logistics

In 2003, CLM defines logistics

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“This does not make one definition ‘right’ and the other ‘wrong’ – it merely means ... a starting point for additional discussion by practitioners and academics in the discipline. Again, this is a normal evolutionary process”

Gibson, *et al.* (2005)

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## **2005:** from CLM to CSCMP

*“Effective January 1, 2005, the Council of Logistics Management (CLM) became the **Council of Supply Chain Management Professionals (CSCMP).**”*

*“This is more than a name change.”*

Larson, et al. (2007)

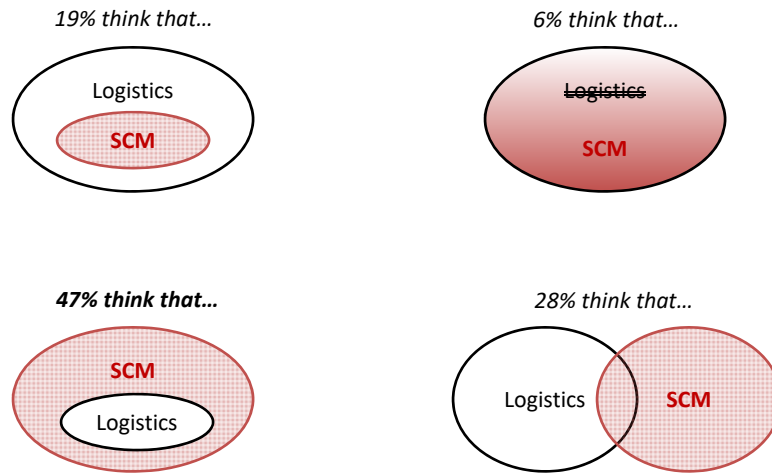
## *“a **broader** emphasis”*

*“Reflecting **expanded roles** ... the Council is adopting ‘**a broader emphasis on the entire supply chain,**’ incorporating ‘not only logistics but also procurement, manufacturing, operations, and sales/marketing functions”*

*“CSCMP, and other professional associations, such as the Institute for Supply Management (ISM), have developed definitions of supply chain management and **revised their missions accordingly**”*

Larson, et al. (2007)

Yet ***different perspectives*** remained



Adapted from: Larson, et al. (2007)

**SO, WHAT IS**  
**SUPPLY CHAIN MANAGEMENT?**

## Defining **supply chain** first

*“a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer.”*

**Direct:** a company, a supplier and a customer

**Extended:** + supplier's suppliers + customer's customers

**Ultimate:** all entities upstream and downstream

Mentzer, et al. (2001)

## SCM as a **management philosophy**

- a **systems approach** to viewing the supply chain as a whole
- a **strategic orientation** towards **cooperative efforts** to synchronize and converge intra- and inter-firm capabilities
- a **customer focus**, to create sources of customer value

Mentzer, et al. (2001)



## 'Supply Chain *Orientation*'

Mentzer, *et al.* (2001), call this management philosophy a Supply Chain Orientation, and defines it as *"the recognition by an organization of the systemic, strategic implications of the tactical activities involved in managing the various flows in a supply chain."*

Mentzer, *et al.* (2001)

## SCM as a *set of activities & processes*

To adopt a supply chain management philosophy, *the firm must establish management practices consistent with it.* Including: (1) integrated behavior, (2) mutual sharing of information, (3) mutual sharing of risks and rewards, (4) cooperation, (5) shared goals and focus on customer service, (6) integration of processes, (7) partnerships in long-term relationships.

Mentzer, *et al.* (2001)

## 'Supply Chain *Management*'

Mentzer, *et al.* (2001) equate supply chain management with  
*"the sum total of all the overt management actions undertaken to realize the SCO philosophy."*

Mentzer, *et al.* (2001)

## Defining *supply chain management*

*the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole*

Mentzer, *et al.* (2001)

## SCM's *functional scope*

*In Mentzer's model of supply chain management, the following traditional business functions are included:*

- *Marketing*
- *Sales*
- *R & D*
- *Forecasting*
- *Production*
- *Purchasing*
- *Logistics*
- *Information Systems*
- *Finance*
- *Customer Service*

Mentzer, et al. (2001)

## Collaboration is at the *core* of SCM

CSCMP survey circa 2004 asked its membership which of the following activities were encompassed by SCM

- ***Supplier and Customer Collaboration: 80.8%***
- *Information Technology: 49.7%*
- *Marketing: 39.4%*
- *Finance: 32.4%*
- *Sales: 32.4%*
- *Product Design 24.3%*

Gibson, et al. (2005)

### ***The key *promise* of SCM***

- Collaborative decision-making can result in better overall results for the supply chain.

### ***The key *challenge* of SCM***

- Collaborative decision-making is not easy!

### ***The week ahead***

- That is the essence of SCM. However,
- there are many other aspects to SCM:

Finance for SC

SC Risk Management

SC Resilience

Omni Channel Distribution

SC Sustainability

Last Mile Logistics

Global SC

FFF & Future of SC

## ***Thanks for playing!***

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