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Factors for Improving the Supply Chain Management Performance: a Survey of Chinese Toy Makers

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Abstract: Chinese toy makers continue to make steady progress across the areas of supply chain competency. This paper contributes to the ongoing discussion about the supply chain management of Chinese toy makers by conducting a survey among 148 respondents from the industry. The questionnaire includes 24 questions that belong to six sections, which are design and buying, materials procurement, production operations, product distribution, quality control, list of tools (technology). Through analyzing the feedback data from 36 respondents, this study reveals the update circumstances of Chinese toy industry regarding supply chain management. Notably, on the one hand, most toy makers (about 90%) suggest that they value quality control, which is essential for global competition. On the other hand, less toy makers prefer to adopt advanced supply chain management tools; this may hinder their competitiveness in the long run. To conclude, both constructive and practical suggestions are given to the toy makers for improving their supply chain management performance.

Keywords: Procurement, quality control, supply chain management, survey, toy makers

1 INTRODUCTION

With the development of supply chain management (SCM) theory and global competition, Chinese toy makers continue to make steady progress across the areas of supply chain competency[1]. Although most companies are at about the same stage of evolution, there is still a significant gap between the performance of the leaders and the rest – and that is a gap the followers need to start closing now. These are among the key findings of the SCM Survey of Chinese Toy Makers.

1.1 In the International Spotlight

In August 2007, the head of a Chinese company that made Sesame Street and other toys that were recalled in the United States due to safety fears had committed suicide. Zhang Shuhong, the boss of Lee Der Industrial Co, was found dead in a factory warehouse in southern Guangdong province. Fisher-Price, a subsidiary of Mattel, recalled nearly one million toys, including popular Sesame Street and Dora the Explorer-branded models sold in US stores, because of fears they contained toxic lead paint.

Many of the toys were produced by Lee Der. The government ordered Lee Der and another toy manufacturer at the center of a similar high-profile recall in the United States to suspend their exports.

The newspaper quoted Lee Der staff as saying Zhang was distraught over feeling he had been “hurt” by the supplier of the suspect paint, whom he had counted as a good friend. China’s national product-quality watchdog has blamed Lee Der’s paint supplier for providing “fake lead-free paint powder” used on the toys. The other toy manufacturer, Hansheng Woodware, made 1.5 million wooden “Thomas the Train” figures for US importer RC2 Corp. Those products were recalled by the US company in June for similar fears over lead paint.

Lessons from this case:

- a) Overlooking Quality Control.
- b) Ignoring International Standards.
- c) Poor Supply Chain Management.

On Nov. 1, 2007, Chinese regulators said that they had suspended the export licenses of more than 750 toy companies because of quality control problems. And an additional 690 toy factories in southern China, the world's largest toy manufacturing region, had been ordered to renovate or improve their facilities. The regulatory moves could hurt toy makers gradually and possibly upset their extensive supply chain.

1.2 The Posing of this Topic

What happened to the Chinese toy makers? Was their quality control proved to be unreliable? Responsibly, we may start a research of Chinese toy makers by looking into their supply chain management performance.

There is no law stating that all toys have to be made in China. People get goods made in China because they are cheaper, and then the company sells the toys for 4X the price and makes a significant profit. All companies do this. Is it smart? Only, if you have quality control and you are truly testing the batches to test for safety and quality. On the other hand, we have found that the Chinese top 50 toy makers only have 18% share of the total market, which is quite different than that of other industries. This also indicates that the small- and medium-sized companies have been playing an important role.

So, to probe into this interesting industry, we would like to launch a survey concerning the supply chain management performance of Chinese toy makers.

1.3 Survey Methodology

The questionnaire includes 24 questions that belong to six sections, which are design and buying, materials procurement, production operations, product distribution, quality control, list of tools (technology). In each section, we seriously designed 4 questions, trying to induce as much information as possible. These questions may cover the fundamental domains that constitute true supply value[2].

The Chinese Toy Makers Supply Chain Management Survey questionnaire was sent by e-mails to 148 supply chain professionals in Mainland China. The names and addresses were drawn randomly from the relative web sites.

Promisingly, a total of 36 respondents completed the well-prepared, five-page questionnaire. No wonder that the majority of the responses came from small- and medium-sized toy companies.

2 LITERATURE REVIEW OF SCM IN CHINA

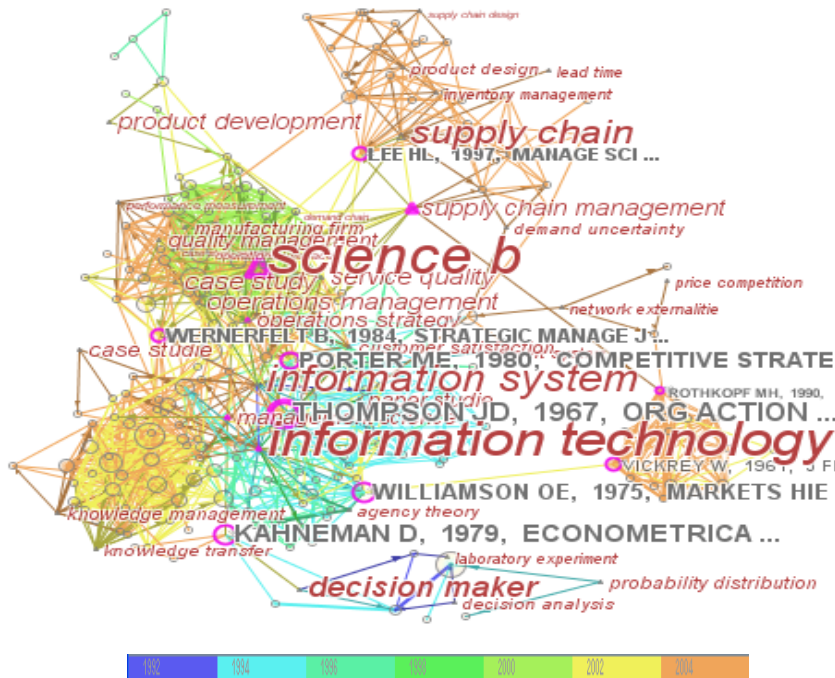


Fig. 1. Documents co-citation network of main theories in management (1992-2006)

2.1 Role of Supply Chain Management

Seen from the above figure (Fig. 1), we can judge that SCM has been becoming an important domain in the field of management science and

engineering[3]. And the key words of SCM include supply chain design, product design, product development, lead time, inventory management,

demand uncertainty, etc. Most of them are reflected in the composition of the questionnaire.

2.2 Main Ideas Regarding SCM in China

Zhang Ruimin, the former CEO of Haier Group points out that the most important problem for Chinese local corporations lies in the incomplete environment of domestic logistics. For example, in USA, the corporations have UPS, FedEx or DHL to do most of their logistics; in Japan, they make good use of Just-in-Time. But it is hard to name out a competitive local logistics entity of China. We must rely on overseas corporations[4].

Other supply chain professionals find that to improve the performance of Chinese supply chain, logistics, SCM and E-commerce must run corporately[5].

As global manufacturers expand operations in China, many face challenges in the basic building of supply chains. For instance, receiving updates on inventories or shipping cycles can take days because few Chinese companies have the technology to provide information electronically. As Mann of Accenture puts it, “China still has a Third World feeling[6].”

Promisingly, Infor Global Solutions, which makes supply chain management and ERP software, found an experienced partner to facilitate its introduction to Chinese market[7].

3 THE ANALYSIS IF THE FEEDBACK

3.1 Distribution of The Respondent Toy Makers

Frankly, we are satisfied with the feedback we got from this survey. To provide a simple first glance of the information, the following figure was prepared to show the basic data of the 36 respondent toy makers. The initial monetary unit was exchanged from RMB to US dollars.

To simplify the data, we can illustrate it by an Excel graph (data units adjusted proportionally), which makes the comparison and contrast among the respondent toy makers more visually.

Seen from the above figure (Fig. 2), we can conclude that most indexes across the toy makers are positively related. On the one hand, this indicates that the data we got are relatively authentic. On the other hand, this provides us some clue to mine more valuable discoveries.

3.2 Analytical Methods

To articulate more clearly how supply chain efforts among the respondents related to the dimensions referred above, the survey questions were broadly

categorized into these areas: Design and buying, Materials procurement, Production operations, Product distribution, Quality control, List of tools (Technology).

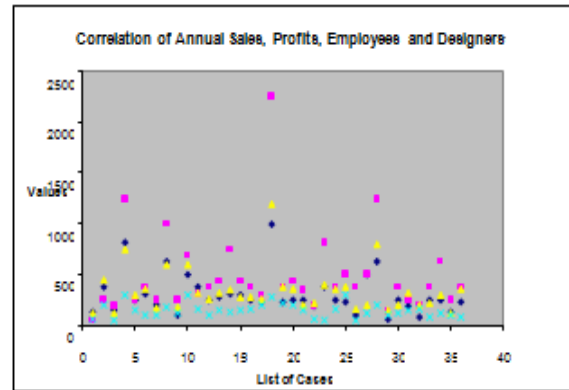


Fig. 2. Correlation of annual sales, profits, employees and designers

The result of the survey indicates the progress that Chinese toy makers have made to date in advancing their supply chain – and reflects the considerable work that still needs to be done. From a competitive standpoint, the good news is that with handful exceptions, most companies are at about the same stage of supply chain evolution.

The findings are inspiring but far from spectacular. In order to better illustrate the feedback data, we take advantage of the MS software Excel to turn the results into graphs.

4 DATA ILLUSTRATIONS

4.1 Design and Buying

As shown in the questionnaire, the first question in this section was: how many qualified toy designers do you have? Then, to determine how the design modes varied across the industry, we asked by which means do you design your products? The answers are transferred into a graph like the following (Fig. 3):

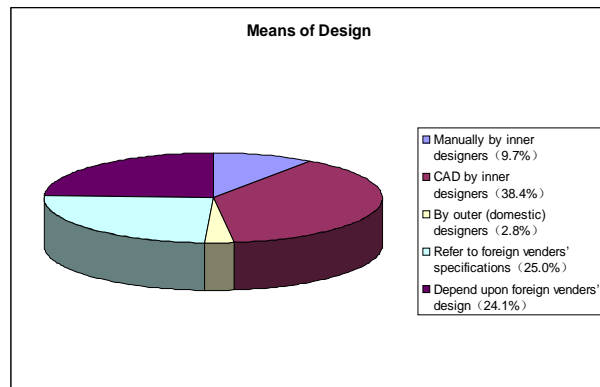


Fig. 3. Means of design

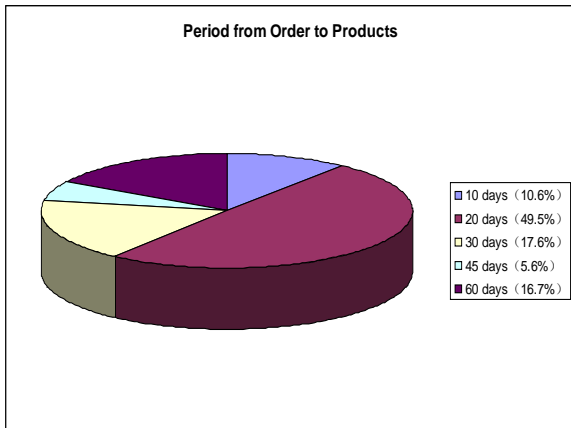


Fig. 4. Period from order to products

4.2 Materials Procurement

In this section, we posed the first question: rate the following in their importance in selecting material suppliers.

- a) Location proximity
- b) Cooperative relationship
- c) Material price
- d) Brand recognition
- e) Delivery reliability (Time lines)

About 52.8% respondents chose material price as their priority in selecting material suppliers. Not surprisingly, location proximity took a position of No.2 (22.2%). This indicates that three out of four or more respondents considered procurement to be a source of competitive advantage.

Since most respondents were apt to think material price as first things first, as we assumed initially, the next question which of the following modes determine the supply price for a current order were answered correspondingly (Fig. 5):

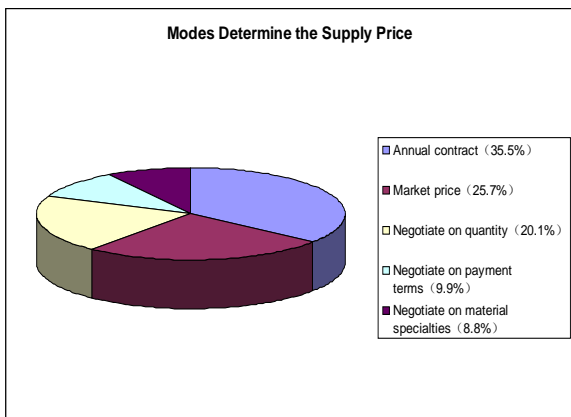


Fig. 5. Modes determine the supply price

As a matter of fact, about two third respondents made multiple choices upon this question, indicating that for different material orders, the determining modes are varied.

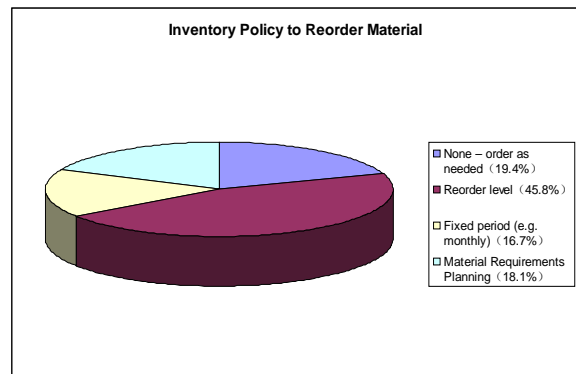


Fig. 6. Inventory policy to reorder material

When we continued to talk about the inventory level, responding to the question, the answers showed that more than 95% toy makers have a 1 week~2 month raw material inventory (1 week~1 month 63.4% and 1 month~2 months 32.9% respectively). As far as what kind of inventory policy is used to reorder material, we got data as illustrated in the above figure (Fig. 6). According to the on-spot practice, this question is also multiple-choice applicable.

4.3 Production Operations

The first question here was supposed to evaluate the priority in their plant locating – rate the following in their importance as far as plant locating is concerned[8]:

- a) Labor cost
- b) Material sourcing
- c) Environment
- d) Transportation
- e) Enterprise-government relationship

Nowadays less and less companies need to pay too much attention to E-G relationships. Interestingly, material sourcing placed 1st in the overall rankings (44.4%), and secondly labor cost (41.7%). The answers regarding this issue made it quite clear as we expected.

Answers to the followed multiple-choice question, which your priority is as you receive an unexpected big order, what we got are as following (Fig. 7):

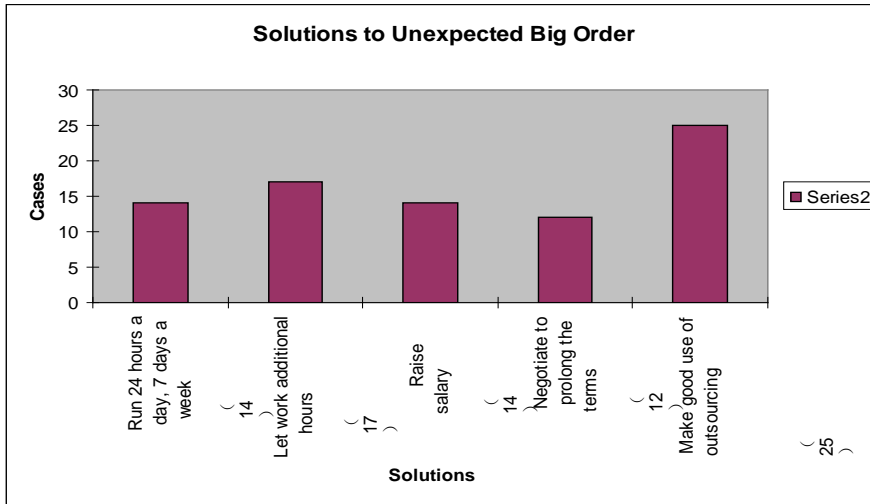


Fig. 7. Solutions to unexpected big order

Though the answers seemed diverse, we can tell easily that a quarter of the respondents knew to make good use of outsourcing in face of unexpected big orders. To deeply explore this question, we continued the question as far as what types of working shift has your company acquired to advance the production operations. Seen from the results, it is clear that most Chinese toy makers prefer a combination of permanent workers (8-hour) and temporary workers (unfixed hours), which is typical and popular. The truth is, most the companies in other businesses are doing the job likewise.

Generally manual workshops take a considerable portion in toy industry, so we implemented the question do you use any of the following in most of the manual workshops to probe into this. Inspiringly, about 70% of the respondents use diverse lights, background music, coffee or tea time, and break exercise respectively.

4.4 Product Distribution

Who is responsible for your product distribution? The first question in this section was designed to probe the actuality of the logistics in the toy industry (Fig. 8).

For this is a multiple-choice question, choosing “D” does not mean a company depends on FedEx or UPS completely, they sometimes turn to it in emergency.

In response to a question, what frequency is product shipments made? 86.1% answered “once per order”. Although in this case, the cost of supply chain may enhance, they have no other choice in the global competition arena.

Then, as far as the distribution lead-time, which is interval between factory exits to arrival at export

location, was concerned, the more telling number was that almost two third indicated “1~2 weeks”. While about 19.4% chose “within 1 week”, 18.1% chose “2~3 weeks”.

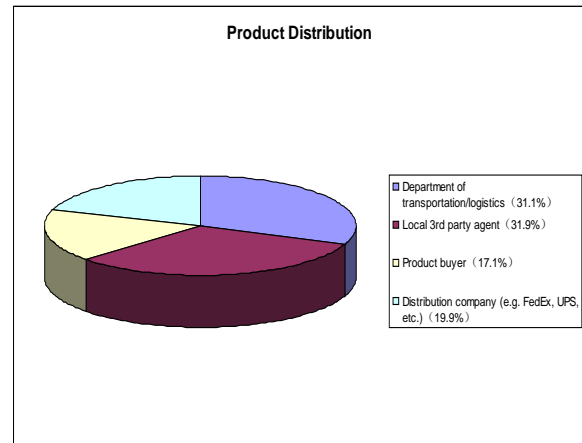


Fig. 8. Product distribution

4.5 Quality Control

Quality control is a conventional but always hot topic. To set the context for this line of inquiry, we first asked respondents what methods were used to inspect / audit incoming material quality, and got interesting feedbacks (Fig. 9).

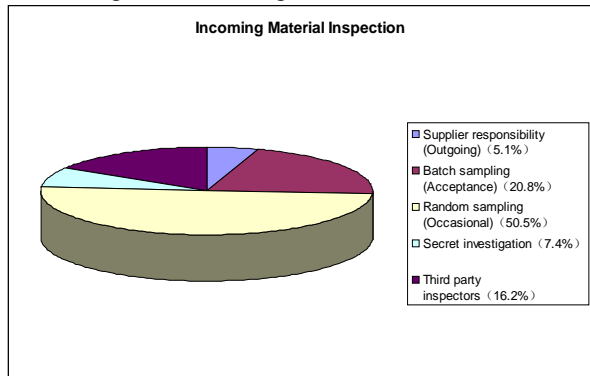


Fig. 9. Incoming material inspection

But it is obvious that about half of the respondents would prefer random sampling.

Followed up, we asked questions to reveal the percent of QC staff and percent of supervisors, and got ideal answers respectively. To simplify, we can say that about 90% respondents have 2%~5% QC members and 78% respondents have 2%~5% supervisors.

4.6 List of Tools (Technology)

In an effort to discover what toy makers are doing to advance their supply chain performance, we initiated 4 questions, inquiring about specific technology usage in the stages as: design & buying, materials procurement, production operations and quality control[9].

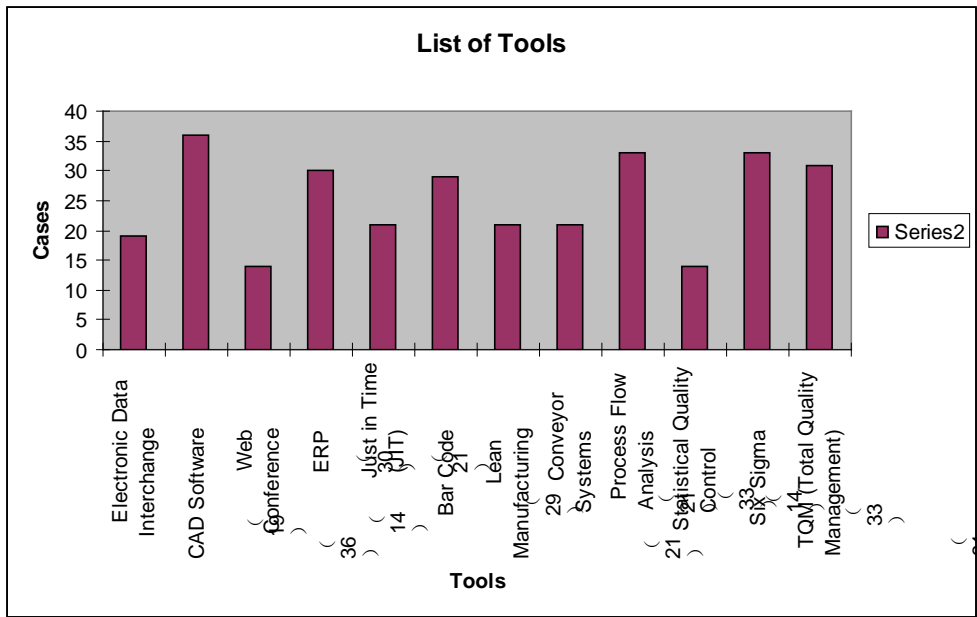


Fig. 10. List of tools

And 12 common tools were mentioned here. In all of these technological areas, roughly more than half of the respondents gave their encouraging answers. The results could be organized like above (Fig. 10).

The survey shows that respondents are relying on a wide range of technology to drive supply chain results, though some of the tools are no longer updated globally.

5 CONCLUSIONS

Supply chain management is important for Chinese toy makers, what should be done to improve their SCM performance? Based on extensive research and the survey feedback, we assume that this question could be answered from three perspectives.

Most toy makers are at the supply chain evolution stage between corporate excellence and partner collaboration[10]. They have made considerable process activities and may have taken initial steps to extend this integration to a few of their external partners.

The toy recall story exposed the problem of incoming material quality control. Seen from the feedback data of the survey, we are glad to see that about 90% respondents have 2%~5% quality control members (2~3% 58.3%, 4~5% 30.6% respectively). But cases study and hands-on working experience indicate that this does not necessarily mean perfect quality control effectiveness. Thus, quality control must be infiltrated into the whole process of supply chain management.

Through a variety of tools and techniques, the toy companies make profits by reducing cycle period, achieving faster time to market, and utilizing assets more effectively. Customers are a major driver for some companies and for some initiatives, but they are not the dominate driver. The survey findings reveal that other factors, such as cost reduction, play a greater role in driving supply chain initiatives. So, technology has an extremely important function. Toy makers still should adopt updated technologies before it's too late[11].

Acknowledgement

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References

- [1] A. Wong, D. Tjosvold and P. Zhang. 2005, Supply chain relationships for customer satisfaction in China: interdependence and cooperative goals. *Asia Pacific Journal of Management*. pp. 179-199.
- [2] C. C. Poirier and F. J. Quinn. 2003, A survey of supply chain progress. *Supply Chain Management Review*. pp. 40-47.
- [3] Rudzki. 2008, Management transformation: a leaders guide. *Supply Chain Management Review*. pp. 12-21.
- [4] J. J. Mu. 2001, Keep innovative: the case of Haier logistics. *Logistics & Material Handling*. pp. 2-6.
- [5] J. Child and Y. Yan. 2003, Predicting the performance of international joint ventures: an investigation in China. *Journal of Management Studies*. pp. 283-320.
- [6] A. Kover. 2005, China under construction. *Industry Week*. pp. 52-57.
- [7] C. C. Poirier, M. L. Swink and F. J. Quinn. 2007, Global survey of supply chain progress. *Supply Chain Management Review*. pp. 20-27.
- [8] O. Berman and Q. Wang. 2006, Inbound logistic planning: minimizing transportation and inventory cost. *Transportation Science*. pp. 287-299.
- [9] T. T. Le and A. C. Koh. 2002, A managerial perspective on electronic commerce development in Malaysia. *Electronic Commerce Research*. pp. 7-29.
- [10] J. B. Houlihan. 1985, International supply chain management. *International Journal of Physical Distribution and Materials Management*. pp. 51-56.
- [11] D. Semchi-levi, P. Kaminsky and E. Semchilevi. 2008, *Designing and Managing Supply Chain: Concepts, Strategies and Case Studies*. McGraw-Hill, New York, pp. 27-76.

