ORGANIZATIONAL GROWTH AND MANAGEMENT OVERHEAD

by

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I. INTRODUCTION

Company X manufactures refrigerator components. It was founded on the strength of a cooling container that became immensely popular when introduced on the market. The company grew at the rate of 30% per year for the first 20 years of its existence. Over time it diversified its product line, opened branches in four East Coast cities, and created a hierarchical management structure centered on the chain of command close to the founding CEO. Rewards and responsibility in the company were heavily tied to level of position in the hierarchy.

Opening in the four East Coast cities created ample growth opportunities for young managers, so many were attracted to the company. During the next five years, growth dropped off, ostensibly due to a number of highly competitive products entering the market. Senior management did a rigorous self-evaluation and found that management overhead was costing the company greatly. To the dismay of many of its newer employees, promotions were curtailed sharply. Many of the more capable managers got bored and left. The company lost much of the innovative spirit that had made it successful in the first place.

Many companies find themselves in this position—coping with slowed growth and excessive overhead by curtailing just the thing that promises renewed growth--its
innovative people. Why does excessive overhead develop? Is it inherent in the structure of management promotion chains? More importantly, are there ways to avoid the trap?

It is clear that with growth comes legitimate need for some degree of formalized managerial procedures to maintain coordination and control. But when growth can't keep up with overhead proliferation, a company finds itself with an unsavory array of symptoms: reduced flow of new products and services, an increasing proportion of "maintenance managers" instead of internal entrepreneurs, heightened commitment to established norms and procedures, and ultimately, a reduced capacity to learn and adapt.

The problems of excessive overhead are national, not just corporate. American business experienced a pervasive trend toward increasing overhead from the 1950s through the early 1980s. In 1950, 19% of the workers in US manufacturing industries were "non-production" workers. By 1970, this group had grown to 25%. By 1980, the number was 31% (Source: Bureau of Labor Statistics). We believe that this increasing overhead is rooted in the basic dynamics of corporate growth common to most of the organizations that grew and matured during this era.

Today, reducing management overhead is a key strategic element of corporations. In increasingly competitive global markets "downsizing" is a survival tool. But the frenzied "slash and burn" tactics being used to downsize many corporations are unlikely to have lasting effects because few organizations understand how their own management policies and practices produced excess overhead in the first place. Few recognize how their personnel structures and reward systems have generated a dynamic where excessive senior management is almost inevitable. Until the causes of excessive hierarchy and management
overhead are understood, frenzied reduction in management overhead simply treats the symptoms, not the underlying disease.

This paper presents one set of fundamental forces that creates excessive overhead and hierarchy as an organization grows: the dynamics of management promotion chains. We submit that traditional hierarchical structures, where reward is commensurate with elevation in the hierarchy, create a promotion chain that has to generate excessive management overhead as growth slows—something which invariably happens sooner or later. When hierarchical reward systems predominate, slowed growth creates stresses that can be resolved in one of two ways. Either traditional promotion practices are maintained and management overhead increases, or promotions are curtailed and promising young managers become dissatisfied and leave. In most organizations, the stresses result in a combination of both undesirable outcomes.

We recognize that many forces contribute to proliferating hierarchy and rigidification. However, because promotion chains are universal to all organizations, they represent an appropriate starting point in developing understanding of the overhead problem. The dynamics of the promotion chain form a "physical substrate" underlying more subtle dynamics of culture, structure, and managerial style. Moreover, as illustrated below, the forces generated by the promotion chain are of such magnitude that they should not be overlooked in constructing theories based on social and psychological variables.

The dynamics of the promotion chain suggest the adage "an ounce of prevention is worth a pound of cure." Most organizations sow the seeds of future difficulty during their growth phase by establishing hierarchical reward systems and nurturing unrealizable expectations of promotion. If a company is to avoid increasing hierarchy and turnover of
management talent as growth slows, it needs to establish non-hierarchical reward systems when growth rates are high. We find it significant that many of the most innovative small- and medium-sized organizations emphasize distributing general management opportunities and rewards for business success widely throughout the organization. Perhaps this promising recipe can be used in some of our larger corporations as well.

II. DYNAMICS OF THE MANAGEMENT PROMOTION CHAIN

An organization growing at 30% per year can find itself with 2 1/2 times as many senior managers relative to junior managers if growth slows to 15% per year. The ratio of middle managers to junior managers can increase by 50%. If growth slows to 10%, senior managers increase relative to junior managers by a factor of 4, while middle managers increase 80%. An organization that has been growing at 20% can find itself facing an 11-fold increase in the relative number of senior managers if growth stops altogether. These figures are based on the dynamics of a simple promotion chain shown in Figure 1.

The promotion chain in Figure 1 shows management divided into three levels--junior, middle, and senior managers. Additional management tiers could be added without qualitatively altering the dynamics of the promotion chain. Junior managers are hired from the outside. Middle managers and senior managers are promoted from within. Promotion of junior managers from employee ranks and hiring of middle and senior managers could also be incorporated without altering the following analysis significantly.

Initially, the promotion-chain model in Figure 1 will be analyzed under the following conditions. Junior managers are hired with the intent of maintaining a steady ratio of junior managers to employees. A certain percentage of junior managers are
promoted to middle managers each year, and likewise a certain percentage of middle managers are promoted each year. (This does not imply that all junior or middle managers are eventually promoted.) A certain percentage of junior and middle managers depart each year. Senior managers serve a constant average time before retirement or separation. Each rate of flow in Figure 1 is a constant fraction of the stock where the flow originates. The numbers indicate the fraction of the source stock flowing out each year. For example, 9% of junior managers are promoted to middle managers each year, while 20% depart. The numerical assumptions indicated in Figure 1 are typical for a rapid growth firm.

Internal Balances

If the overall rate of growth in employees is steady and if promotion and attrition rates (the numbers in Figure 1) are fixed, the management promotion chain maintains a set of internal balances in the management distribution. These internal balances represent a "steady state," wherein the overall organization can grow while the proportion of senior, middle, and junior managers remains steady.

To see how internal balances along the promotion chain are maintained, consider a situation where a company growing at 30% per year experiences a sudden influx of middle managers changing the management distribution. Imagine that this occurs as a result of a merger in which a rapidly growing enterprise acquires a smaller business and takes on a disproportionate number of new middle managers from the acquired business. The influx of middle managers initially results in a higher ratio of middle to junior managers (a reduction in middle management "span of control") and a lower ratio of senior to middle managers (an increase in senior management "span of control").
Given that the organization's 30% growth rate is maintained, the simulation in Figure 2 shows that the management ratios that prevailed prior to the influx of middle managers are eventually reestablished. It takes about five to seven years to approximately reestablish the original management proportions, although the complete adjustment takes over twice as long. Most of the adjustment occurs within the first few years.

To understand how the promotion chain reestablishes its set of internal balances, consider the consequences for promotions and attrition of the increased pool of middle managers. The increase in middle managers leads to an increased flow of middle managers promoted to senior managers. More middle managers are promoted because the fixed middle management promotion rate (7% per year) operates on a larger pool of middle managers. Similarly, middle management attrition increases with the larger pool of middle managers because of the fixed middle management attrition rate (8% per year). Thus, more middle managers are promoted and more middle managers leave until the proportion of middle managers adjusts back to where it was prior to the influx of middle managers.

It is important to understand that the management promotion chain works to maintain a constant distribution of managers even in the absence of explicit goals for management span of control. The promotion chain has its own implicit goals for management spans of control. These goals are implied by the promotion and attrition rates in the promotion chain--that is, by the organization's promotion policies and by the factors that influence quits, retirement, and terminations--and by the overall growth rate. If promotion and attrition rates change or if growth rates change, distribution along the promotion chain changes (see Table 1).
Explicit goals for management span of control can be in conflict with the spans of control implicit in promotion, attrition, and growth rates. In most organizations, senior management strives to attain desired spans of control without understanding the management distribution implicit in traditional promotion and attrition policies and overall growth rates. One particular situation where the conflict between desired spans of control and the implicit management distribution arises when overall business growth slows.

**Increasing Overhead when Growth Slows**

If the growth rate in employees drops, the management distribution implicit in the promotion chain shifts. When growth slows, the promotion chain tends to increase the number of managers at higher levels, especially in senior management. Traditional promotion and attrition rates steadily increase the percentage of senior managers and middle managers until a new steady state management distribution commensurate with the lower growth rate is achieved.

To illustrate, Figure 3 shows a simulation in which growth slows from 30% per year to 15% per year (a very realistic deceleration for maturing organizations) over a ten-year period. The result of the growth deceleration is that the ratio of senior to middle managers eventually increases from .2 to .35. That is, the growth deceleration eventually reduces senior management span of control from 5 to 2.9. This represents a significant increase in senior management overhead. The growth deceleration also eventually results in the ratio of middle managers to junior managers increasing from 0.2 to 0.3, corresponding to a drop in middle management span of control from 5 to 3.3. Overall, the ratio of senior and middle managers to junior managers increases 160%.
This growing management overhead develops gradually over a ten- to twenty-year period as growth decelerates over ten years. That is, management overhead continues to grow for about ten years after the external precipitating cause, slowing business growth, has ceased. This extended period of growing management overhead illustrates the momentum built into the promotion chain. From a managerial standpoint, the delays and momentum of the promotion chain are significant because they imply that management overhead continues to build at the same time that the organization has the greatest need for innovation and change to restimulate growth.

The increases in management overhead occur without any change in promotion policies. *The same promotion policies that maintain steady and relatively low percentages of senior and middle managers during rapid growth lead to large increases in management overhead when growth slows.* The increases in management overhead are especially large at the senior management level. Given that virtually all successful organizations experience a slowing in their overall expansion rates, the basic dynamics of the promotion chain explain why overhead growth and proliferating management hierarchy are such ubiquitous problems.

The effects of decelerating growth on management overhead may be masked by the gradualness of the process. The significant increases in senior management and middle management shown in Figure 3 develop over a generation of management. Such gradual changes might go relatively unnoticed, especially if they were occurring across an industry where slowing growth rates characterized a number of competing firms. The increase in management overhead is gradual because of the long "time constants" associated with change in each management pool. The management pools are very large relative to the
promotion and attrition flows, meaning that changes in the flows cause the pools to change very gradually.

Maintaining Management Spans of Control When Growth Slows--Shifting the Stresses from Overhead to Promotions

As growth slows, many organizations cut promotion rates to maintain traditional management spans of control. The tactic may control the proliferation of excess management overhead, but maintaining management spans of control does not eliminate stresses within the promotion chain brought on by slowing growth. It merely transfers the symptoms of stress from excessive management overhead to reduced promotions and increased management turnover.

Consider the effects of an extreme policy of never promoting more managers than needed to maintain rigid spans of management control. In other words, what if, as growth slowed, promotion were based entirely on need rather than on traditional promotion rates. That is, as the organization goes from high growth to lower growth, promotions of junior managers to middle management and of middle managers to senior management are based solely on the numbers of managers needed to maintain the management spans of control that existed during the high growth period.

Maintaining rigid management spans of control shifts the stresses in the promotion chain from increasing management overhead to diminishing upward promotion rates. When growth slows, fewer middle management promotions are needed to fuel growth of senior managers. Moreover, as the upward flow of middle managers is reduced, individuals stay at the middle management level longer and consequently, there is a reduction in the promotion of junior managers.
To illustrate, Figure 4 shows a simulation in which rigid spans of control are maintained while growth falls from 30% to 15%. As growth declines, the rate of middle management promotion to senior management falls from 7% per year to 4% per year. The rate of junior management promotion falls from 9% to 6% per year. This represents a significant reduction in promotion opportunities. Junior managers face a 37% reduction in promotion opportunities. Middle managers face a 42% reduction in promotion opportunities. If growth should decline still further, promotion opportunities can be even more drastically reduced. For example, if growth declines to 5%, middle management promotion rates fall from 7% to 2% per year and the junior management promotion fraction falls from 9% to 3% per year. Such dramatic reductions in promotion opportunities inevitably affect management turnover. Middle managers become discouraged at reduced prospects for attaining senior management positions. Junior managers perceive reduced prospects for promotion to middle management and drastically reduced prospects for ever reaching senior management.

The actual consequences of reduced promotions would depend on how strongly junior and middle managers reacted to changes in promotion opportunities. For example, if junior managers are highly sensitive to promotion opportunities, the organization can become "a junior management training center." Junior managers enter, become frustrated with the inability to achieve promotions, and depart. In effect, the organization invests its energy in a "junior management mill" which supplies competitors with management talent shed by its own inability to grow. Organizations may try to counteract junior manager discouragement with "fast tracking" and other methods for identifying and promoting good junior managers early. But, this can also lead to increased internal politics as junior managers eager to ascend must compete more aggressively against their colleagues.
Organizations may also try to reduce middle management turnover through "golden handcuff" compensation plans. Many organizations are concerned about losing good middle managers with 15 or 20 years of experience. If the organization succeeds in keeping middle manager turnover down as overall growth slows, the pressure on junior managers only increases. The lower outflow of middle managers causes fewer promotion opportunities for junior managers. Sweetening the pot for middle managers can lead to higher exodus of junior managers.

Regardless of the organization's reaction, reduced overall growth produces stresses in the management promotion chain. These stresses appear as increasing management overhead, reduced promotion opportunities for junior and middle managers, and increased management turnover among junior and middle managers. In most circumstances, the stresses produced by promotion chain dynamics will result in a combination of all three problems.

III. IMPLICATIONS FOR ORGANIZATIONAL DESIGN

The dynamics of growth and aging are common to all complex living systems. As individuals we undergo certain generic changes as we grow and age--the body thickens, the muscles lose their tone, the ligaments become more rigid. Regardless of our mental attitude or state of physical health, all of us experience certain changes in common as we grow older.

However, different individuals show widely divergent responses to aging. With age many people become sedentary, discouraged, and vulnerable to illness. Others remain vital and vibrant in their older years.
So too, many organizations ossify and may even die as they mature. The challenge is to seek a set of policies and traditions that deflect the negative pressures and capitalize on the advantages of maturity. The challenge is especially great because effective policies should be put into place during the period of rapid growth, when the need for them may be many years away.

Without such policies, stresses generated within the promotion chain will likely trigger cultural and structural changes that reinforce rather than counteract increasing management overhead. Layers of management increase to accommodate the increasing numbers of middle and senior managers. Isolated senior managers have diminishing understanding of customer needs and are increasingly unable to hear and appreciate the input from local managers closer to the customer. Reward systems increasingly focus on status and position in the hierarchy and local managers come to expect a low level of involvement in decision making.

The stresses generated by the management promotion chain when growth slows reveal fundamental problems with the "climb-the-ladder" culture of traditional organizations. As long as managers define their professional aspirations in terms of how high they want to climb, chronic problems of increased overhead, frustration, and turnover will eventually arise. Thoughtful redesign of an organization can decouple individual needs for recognition, reward, and responsibility from climbing the ladder of management hierarchy.

Many innovative corporations today focus considerable attention on developing non-hierarchical organizational cultures. Such a culture recognizes individual contribu -
tions, not position, in the hierarchy. Recognition by merit, not position, starts with simply eliminating the many trappings of "executive privilege" common to traditional organizations, such as reserved parking places, special offices, dining rooms, wash rooms, and so on. On the positive side, celebrating the accomplishments of individual engineers, manufacturing managers, or sales people underscores the importance of individual competence and contribution over position.

The signals sent by non-financial recognition systems will be undermined if financial rewards remain pegged to position in the hierarchy. Non-hierarchical reward systems include flattening or inverting the usual hierarchical salary structures. Implementing profit sharing and ownership plans that include all members of the organization is an important step.

Many variations of non-hierarchical reward systems have been developed and proven to be highly effective. The Herman Miller Furniture Company, the nation's second largest manufacturer of office furniture, has had employee ownership and the "Scanlon Plan" of profit sharing for 40 years. At Nucor, an American steel manufacturer that has been growing steadily for the past 20 years at consistently high levels of profitability while manufacturing all of its steel in the United States (an accomplishment most would think impossible), individual production workers earn bonuses as large as 100 percent of their salaries based on the productivity of their five- to six-person production team. Experiments with profit sharing and "productivity sharing" schemes are underway in an increasing number of organizations. They are striving for an atmosphere of merit rather than privilege. A key element in effective non-hierarchical reward systems is a direct connection between individual or small-group productivity and financial reward.
Beyond recognition and reward, many managers seek to climb the corporate ladder to get to "where the action is," where important strategic decisions are made. The need for increased responsibility will continue to draw people up the organizational hierarchy unless strategic decision making is widely distributed. Many innovative organizations emphasize local control and decision making. The organizations become a network of small, highly autonomous units with various coordinating bodies focussing on broader strategic issues.

Promotion chain dynamics may not be the sole explanation for increasing management overhead but they are a powerful contributing force in many cases. The forces generated by the promotion chain are strong and firmly rooted in the physical flows of management promotion and attrition. Stresses manifest themselves in rising overhead, frustration over slow promotion, high turnover, and possibly other symptoms. Strategies for coping with lowered growth rates must address these difficulties. Instituting nonhierarchical reward systems may relieve the pressure for excessive promotion rates while promoting continued vitality.
The steady state ratios of middle to junior managers and senior to middle managers for the structure in Figure 1 are derived below. The management ratio equations were used to generate Table 1.

In steady state growth the flow into each pool of managers must equal the flow out plus the rate of growth multiplied by the size of the pool. To calculate the ratio of middle to junior managers we set up an equation for the flows in and out of the pool of middle managers:

\[ \text{JuniorPromotion} = \text{MiddlePromotion} + \text{MiddleAttrition} + (\text{Growth} \times \text{MiddleManagers}) \]  
\[ \text{JuniorManagers} \times \text{Junior Promo Rate} = \text{MiddleManagers} \times (\text{MidPromoRate} + \text{MidAttritionRate} + \text{Growth}) \]  
\[ \frac{\text{MiddleManagers}}{\text{Junior Managers}} = \frac{\text{JuniorPromoRate}}{(\text{MidPromoRate} + \text{MidAttritionRate} + \text{Growth})} \]

Similarly, the ratio of senior to junior managers can be calculated:

\[ \text{MiddlePromotion} = \text{SeniorAttrition} + (\text{Growth} \times \text{SeniorManagers}) \]  
\[ \text{MiddleManagers} \times \text{MidPromoRate} = \text{SeniorManagers} \times (\text{SrAttritionRate} + \text{Growth}) \]  
\[ \frac{\text{SeniorManagers}}{\text{Middle Managers}} = \frac{\text{MidPromoRate}}{(\text{SrAttritionRate} + \text{Growth})} \]

The equations above for management ratios can be used to solve for the steady state promotion rates if promotion is based on a fixed span of control rather than time in service. These equations were used to determine numbers in the discussion of Figure 4. The JuniorPromoRate can be calculated by rewriting equation (3) as:

\[ \frac{1}{\text{MidSpanControl}} = \frac{\text{JuniorPromoRate}}{(\text{MidPromoRate} + \text{MidAttritionRate} + \text{Growth})} \]
\[ \text{JuniorPromoRate} = \frac{(\text{MidPromoRate} + \text{MidAttritionRate} + \text{Growth})}{\text{MidSpanControl}} \]

The MidPromoRate can be determined by rewriting equation (6) as:

\[ \frac{1}{\text{SeniorSpanControl}} = \frac{\text{MidPromoRate}}{(\text{SrAttritionRate} + \text{Growth})} \]
\[ \text{MidPromoRate} = \frac{(\text{SrAttritionRate} + \text{Growth})}{\text{SeniorSpanControl}} \]
FIGURE 1

Major stocks and flows in the promotion chain
(Numbers indicate percentage flows out of the stocks)
FIGURE 2

Management ratios are reestablished after an influx of middle managers.
The above table gives the steady state management ratios for different illustrative rates of promotion and attrition, given a steady 30% growth in employees. For example, the standard promotion and attrition rates shown in the simulation in Figure 1 lead to a ratio of 0.2 senior managers per middle manager and 0.2 middle managers per junior manager (upper left hand cell in the table). The corresponding span of control for both senior and middle managers is 5, a number typical in rapidly growing organizations.

Increases in promotion rates lead to higher ratios of superiors to subordinates. For example, if the rate of promotion of middle managers is doubled (from 7% per year to 14% per year), the ratio of senior managers to middle managers increases from 0.2 to 0.4. Increases in attrition rates reduce the relative size of the management pool out of which the attrition occurs. For example, if the attrition rate of middle managers doubles (from 8% to 16%), the steady state ratio of middle managers to junior managers goes down from 0.2 to 0.17. If both attrition and promotion rates are increased for a given group of managers, the management pool receiving the promoted managers increases and the pool out of which promotions and attritions flow is decreased. For example, if middle manager promotion and attrition rates double, the ratio of senior managers to middle managers increases to 0.4 and the ratio of middle managers to junior managers decreases to 0.15.

### TABLE 1

Steady state management ratios for different promotion and attrition rates under 30% growth.

<table>
<thead>
<tr>
<th>Promotion Rates</th>
<th>Standard Promotion Rates (Figure 1)</th>
<th>Double Middle Promotion Rate</th>
<th>Double Junior Promotion Rate</th>
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<td>Ratio</td>
<td>Senior/Middle Managers</td>
<td>Middle/Junior Managers</td>
<td></td>
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<td>Standard Attrition Rates (Fig. 1)</td>
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<td>.17</td>
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<tr>
<td>Double Middle Attrition Rate</td>
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<td>Double Senior Attrition Rate</td>
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</table>
FIGURE 3

A reduction in growth from 30% to 15% sharply increases management overhead.
Maintaining rigid spans of control reduces promotion rates sharply when growth slows.