**Market Production Equation**: profit = invested capital x rate of return

- Higher rates of return result from a competitive advantage inherent in the structure of a player’s network and the location of their contacts in the structure of the entire market.

Three types of capital that players possess and bring to the competitive arena:
- **Financial**: cash, reserves, investments due to them, lines of credit
- **Human**: charm, health, intelligence, job skills/experience, education
- **Social**: relationships with other players; friends, colleagues, general acquired contacts

**Distinguishing the Types of Capital**:
- Financial & Human capital are the *property of an individual*, they account for the investment part of the production equation, (financial) is the needed for raw materials and production sites, and (human) is needed to sculpt the materials into a product.
- Social capital is *owned jointly* by those involved in the relationship; if one person dissolves their part, the capital itself is diminished; accounts for the rate of return portion of the production equation.
  - Profit = invested capital (financial & human capital) x rate of return (social capital)
  - Competition is imperfect. In a perfectly competitive market, social capital would be a constant variable, but since it is not, it plays a more complex role in the equation.

**Who You Reach and How You Reach Them**:
- Your access to a network opens up the possibility to various resources. This correlation between yourself and the other actors generates power, prestige, social resources, and social capital.
- **Social Contagion Analysis**: used to estimate similarity between attitudes and behaviors
  - Ex: Lazarsfield, Berelson, and Gaudent (1944) could predict how a person would vote depending on the party affiliations of the player’s friends.
  - “People develop relations with people like themselves…Socially similar people, even in the pursuit of independent interests, spend time in the same places.”
- **Network Range**: demonstrated by size, typically those with larger networks are wealthier than those with smaller networks.
  - “How a player is connected in social structure indicates the volume of resources held by the player and the volume to which the player is connected.”

**Information and Control**:
- **Information**: evokes benefits that increase opportunities; defines who knows about such opportunities, when they find out about them, and who gets to partake in them.
  - **Three Forms of Information Benefits**:
    1. **Access** – assuming there is a limit to the volume of information that anyone can attain, the network itself can be a screening device of sorts to depict who can obtain the information.
2. **Timing** – when information is received by a network, personal contacts can influence who is informed early. This can further generate higher rates of return because early warning allows a player to act on the information or invest it in another player within the network.
3. **Referrals** – positive forces to affirm current or future opportunities (Ex. Someone in a decision-making position can put in a good word for a job candidate.)

  - **Benefit-Rich Networks**: information benefits can allow players to have other contacts in locations where useful information is likely to be generated or shared as well have having a reliable flow for the information to go to and from such places.

Selecting and Siting Contacts:
- More contacts are usually better, but it is vital to consider the diversity of the contacts within a network.
  - Redundancy among contacts leads to the people who provide the same information benefits.
  - Establishing diversity within a network can create nonredundant connections, thus expanding new players with new information.

**Structural Holes**: “the separation between nonredundant contacts. Nonredundant contacts are connected by a structural hole.” – These holes ensure that network benefits are additive rather than overlapping.

Empirical Indicators: Cohesion & Structural Equivalence – neither absolute nor independent indicators of redundancy. There is no definite indicator that a structural hole is evident.

  - **Cohesion**: a strong relationship between two contacts demonstrates the lack of a structural hole.
    - Frequent contact and emotional closeness influence a connection’s strength.
    - Theory of Social Groups – “the likelihood that information will move from one person to another is proportional to the strength of their relationship.”
    - Concerned with direct connection
  - **Structural Equivalence**: the extent to which particular actors have the same contacts

**The Efficient-Effective Network**: strives to optimize structural holes in order to maximize information benefits

  - **Efficiency**: maximize upon the number of nonredundant contacts to optimize the take back in structural holes per contact.
    - Maintaining such a large network would increase cost in terms of time, money, emotions, etc.
    - In turn, it is recommended to focus on a primary contact and to have that contact maintain closer relationships with the others which would then be considered, weaker, secondary contacts.
    - Time and other resources that would have been otherwise spent on the now secondary contacts can be reallocated to expand the network with more nonredundant contacts.
    - Overall, accounts for the average number of people reached from generating a primary contact relationship (yield per primary contact).
Effectiveness: perceives contacts, not as the “people on the other end of your relations” but rather “ports of access to clusters of people” beyond that initial primary contact.

- Overall, accounts for the total number of people reached from all primary contacts within a network (total yield of the network)

---See Figure 1.5 (page 24)---

Maximum Efficiency: pertains to networks in which each new contact is nonredundant with other contacts.

- Two types of clusters urge optimizing for saturation (treating each actor as a primary contact) rather than for efficiency:
  1. Leisure and domestic clusters – typically low-maintenance and redundant
  2. Dense resources are present – such as CEO and the board of directors, university provost and the board of trustees; in each case, the clusters themselves are vital and should be treated as a primary contact, even if they are redundant.

Burt recognizes Granovetter’s (1973) weak tie argument, but asserts that weak ties are a correlate rather than a cause and the true cause in this phenomenon is the structural hole that weak ties span. He also states that integrating control and information benefits paints a fuller, more complete argument for this study.

- “The weak tie argument is about the strength of relationships that span the chasm between two social clusters. The structural hole argument is about the chasm spanned.”
  - Information benefits reside in the chasm span
  - Despite the strength of a relationship, information benefits are generated when a bridge is present over a structural hole.
  1. Nonredundant ties within ones network serve as the bridge between that and another network.

Control and the Tertius Gaudens: the social structure of a competitive arena depicts certain opportunities present in the network. A player can decide to pursue such opportunity and at times, is successful.

- A successful negotiation can result in a player being deemed the tertius gaudens (the third who benefits) – structural holes are the setting for tertius strategies.
  - Two tertius strategies:
    1. “Being the third between players in two or more players after the same relationship”
      - Exerts the control benefits of having a choice between the simultaneous demands of players in separate relationships
    2. “Being the third between players in two or more relations with conflicting demands.”
      - It may be beneficial to insight some competition among these cohorts. Make explicit their conflict explicit and ask them to resolve it.
        - Essentially, “plays conflicting demands and preferences against one another and builds values from their disunion.”
        - Aka entrepreneur
  - Tension is inevitable. Tertius is a broker for tension between the other players.
Often, they negotiate favorable terms.  
- Certain motivation can increase the rate of return.  
  - Information benefits can be given to passive players  
  - Control benefits need to be pushed by an active entity  
    - When there is a clear opportunity present, psychological and cultural pushes to seek such relationships  
    - Variations in motivation account for the disparities in rate of return among players investing in any given venture

- Secondary Structural Holes: “holes that are present among the secondary contacts within the cluster around each primary contact that play a role in the tertius strategies.”
- Withdrawal: a threat to a negotiating relationship – breaking a link to a former contact’s cluster or transferring the designated primary relationship to a new person in the cluster  
  - Alternatives must be present to transfer power  
  - If no alternatives are present, the primary contact can impose demands

The Depth of Structural Holes:
- Primary holes: between a player’s direct contacts  
- Secondary holes: between indirect contacts  
  - Secondary holes are the more intense of the two  
  - “When the hole is deep between two individuals, it is easy to play them against one another with tertius strategies.”  
  - Cohesion is a good indicator of depth – when the cohesion between players is low, there will be a hole between those players.  
    - As a regression model, the depth of a hole between two actors increases upon their equivalence, decreases with increased strength, and decreases drastically with the extent that they are equivalent and strongly connected.

<table>
<thead>
<tr>
<th>Equivalent ties to clusters</th>
<th>Cohesion between players</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Hole</td>
</tr>
<tr>
<td>Strong</td>
<td>Deep</td>
</tr>
</tbody>
</table>

“Conclusion: Players with contact networks optimized for structural holes enjoy higher rates of return on their investments because they know about, have a hand in, and exercise control over, more rewarding opportunities.”

Table 1.2 (pg. 43)

Chapter 2 – Formalizing the Argument
The strength of relations between pairs of players is demonstrated between one of three kinds of network data:
- Sociometric choices (binary data)  
- Joint involvement (counts of the times that two players are involved in the same events)  
- Direct measures of interaction  
  - Combine, these three types are transformed to define relationship variable $z_{ij}$  
  - “A high level of $z_{ij}$ depicts a strong relationship from player i to player j (cohesive tie).
Actors i and j are structurally equivalent if they have identical relations with every other player q.

**Redundancy** (formalized): based on connection; this repetitive nature among an actor’s contacts can be defined as the information access, timing, and referrals actor i obtains through player j so that actor i has a substantial investment of time and energy in a relationship with another contact, q, to whom j also has a strong tie.

**Constraint**: based on dependence; opportunities may be constrained to the extent that another of an actor’s contacts (q), in whom the actor has invested a large proportion of your network time and energy, has invested heavily in a relationship with another one of the actor’s contacts (j). In essence, the opportunities are constricted to the extent that the actor has invested a bulk of its network time and energy into relationships that lead back to a single contact.

- Assumed networks contain one contact and no connections between contacts
- Influenced by the proportional relations from other contacts.
- Compromises techniques (such as tertius) that strive to play actors and their demands against each other.
  - Expanding a network to include an actor’s first close contact increases constraint.
  - Additional entries into the network may decrease constraint (more people to spread across resources and trust, etc.)
  - Density increases constraint.
    - Measures in constraint may vary in how they portray indirect constraint.
      - One measure is based on proportional strength relations (See top graph and Equation 2.4).
      - Another is based on marginal strength relations (See bottom graph and Equation 2.5).

**Hole Signature**: both investment and constraint, compared over all relationships, contribute to demonstrate where opportunities are abundant and where they are sparse for a given player.

- This pattern can help identify, study, and compare a player’s entrepreneurial opportunities.

**Kinds of Relationships found in Hole Signatures**:

- **Opportunity**: represented by a large band in the hole signature that occurs when a relationship indicates a large proportion of the actor’s network time and energy. There are also a vast number of structural holes around the reached contact.

- **Constraint**: represented by a high, narrow band in the hole signature that occurs when a large proportion of time and energy is evident, but there are few structural holes around the reached contact.

- **Sleeper**: relationships in this category are ignored at that moment in time because they represent minimal time and energy, therefore there is “little to protect and little to gain by alleviating the constraint.”

**Kinds of Environments**:

- **Clique**: every contact is strongly connected to each other.
- **Center-Periphery**: contacts are solely connected through one actor.
- **Leader Hierarchy**: typically calls for strategic action; competition for the top position is evident in this realm; context sensitive; many secondary targets are subject to strategic action.
Leaderless Hierarchy: also context sensitive; incentives for targeting secondary actors for strategic action is evident.

Structural Autonomy: a set of players “with relationships free of structural holes on their own end and rich in structural holes at the other end.” These players are in the best position for information and control benefits apparent in the network.

Low levels of constraint can impact the most dramatic change in structural autonomy.

Hierarchy and Strategic Partners

Information and control benefits negotiated internally are taken seriously, but when discussed by outsiders, it is suspect.

“Breaking through” image for entry-level men and women entering the workforce; how they are unlikely to get a promotion early on, unless they have ties to high-ranked entrepreneurs who can induce access, timing, and referrals.

- The outsider should develop a network contact in which this strategic partner is the primary contact to the target population (represented by a cluster surrounding the primary contact).

- Adjusted Constraint: players who need a strategic partner to flourish (and who have, in turn, generated a network around this partner), need to adjust their constraint downward to alleviate the high constraint inherent in this network (See Equation 2.11 page 77 for how to adjust constraint)

Chapter 3: Turning a Profit

Product Networks and Market Profit

- Profit potential of a product predictable based on supply and demand

- Margin of profit is defined by the relationships between suppliers and manufacturers and customers
  - Even with popular products, producers in a low-autonomy network of dominant suppliers or customers will have a minority share in the profit
  - Suppliers will want more money, customers will bid down prices eating away at profit

- Supply and demand describe the profit possible, not the producer’s share of that profit
  - Structural autonomy increases profits for producers

- Suppliers or customers can act as a tertius when there are multiple producers
  - If the producing firms collaborate they can counter the impacts of this through oligopoly
  - The more a market is dominated by a few large firms, then the more the firms can raise market price above production costs

- The lack of structural holes between supplier and consumer markets constrains producers
  - Losses in a negotiation with one group cannot be balanced easily with gains elsewhere

- The lack of structural holes within supplier-customer markets constrains producers
  - Large firms can offer long-term stability in supplies or consumption and maintain barriers to new entrants

- When distribution of structural holes in a product network gives producers a negotiating advantage, producers can be expected to negotiate prices in their favor (higher profit margins)
The Study Population

- American market data from US Dept of Commerce
  - Average results over time

- Market topology map (Figure 3.2)
  - Market proximity based on structural equivalence (closer more equivalent)
    - These markets compete with each other
    - Relations are buying and selling between markets
  - Shaded areas are contiguous markets
    - Not necessarily structurally equivalent
  - Related technologies are adjacent
  - East-west axis is a distinction between inorganic and organic products
  - North-south axis is a distinction between old and new technologies
  - West: Large purchase on contract beforehand, East: small purchases with volatile volume
  - Goal is to learn how structural holes and profits are distributed across markets in the map

Measuring Structural Holes

- Four-firm concentration ratio
  - Proportion of market output by four largest firms
  - High ratio is few holes, low ratio is many
  - Data not available for non-manufacturing markets
    - Uses approximate ratio based on sales data
  - Market structure (Table 3.1)
    - Markets are large, dense networks of weak relations
    - Relations connecting suppliers and customers are weak
    - Sales are concentrated in a small number of transactions
    - Average concentration of producers is .352

Hole Effects

- Figure 3.3 shows that both markets trend line follow a path that suggests structural holes play a role in price-cost margin
- The significantly negative estimate of Beta o describes how autonomy decreases as the structural holes among producers increase
- The significantly negative estimate of Beta c describes how autonomy decreases as the structural holes among suppliers and customers decrease
- Profit margins in non-manufacturing markets are about twice the manufacturing margins
- Structural holes have their greatest effect as unconstrained action begins to be constrained
  - This effect has an increasingly lower marginal impact as constraint increases
- In Oligopoly, profit margin decreases as structural holes disappear among suppliers and customers
  - Better to lose market share than to face organized suppliers and customers
- Association between profit margins and concentration is sensitive to functional form
  - Real estate, agriculture, and forestry and fish products do not fit the constraint prediction
    - Many competitors, but high profit margins
Effect stability
- Looking at results over time
- Larger number of observations shows similar results
- Structural hole effect remains strong
- Effect Variation (Figure 3.5)
  - Markets in Figure 3.2 are bubbles
  - Larger the bubble the greater contribution to evidence of hole effects
  - This map shows that the test works across markets not just for individual ones

Market Hole Signatures
- Markets are not compared for the strength of their relations but rather for the similarity of their respective rank-order distributions of business and constraint across transactions (similar to role equivalence)
- Cluster Analysis (Figure 3.6)
  - Shows the equivalence between markets
  - Similar markets are clustered and homogenous
    - Five total clusters
    - Similar profit, concentration, constraint characteristics
- What do the kinds of distributions look like?
  - Most business is concentrated in few transactions so measure primarily considers ten largest supplier-customer transactions
  - Figure 3.7 shows signature hole
  - Figure 3.8 is a topography map of markets hole signatures
  - Type A Signature: Constrained Mono-market producers
    - Defined by sales to firms that produce iron and steel products
      - 70.9% of sales with steel plants
      - Steel is moderately concentrated
    - Type A markets yield a below-average profit, highest average concentration, and reliant on single transaction (high constraint)
      - Not conducive to small, entrepreneurial firms
  - Type D Signature: Unconstrained Mono-Market Producers
    - Consists entirely of sales to a customer market
      - Second largest transaction is typically with a supplier
    - Type D markets yield the highest average profit, lowest average concentration, and lowest level of supplier-customer constraint
    - More conducive to small, entrepreneurial firms
  - Type B, C and E Signatures: Lesser Hierarchies
    - Largest transaction counts for a small proportion of business compared to the combined second and third largest transactions
    - Low volume transactions with different supplier and consumer markets
    - Largest transactions are half the size of Type A and D
    - Type B most constrained in largest transaction, Type C in second-largest, Type E in low volume transactions
    - Type B has highest constraint and lowest profit margins
- Signatures, Profit and Constraint
  - Profitability lies in having the bulk of a business in a single, competitive market

Summary
Profit Margins are eroded by structural holes among producers and are enhanced by structural holes among suppliers and customers.

Hole effects are nonlinear and multiplicative in the final structural autonomy model predicting profit margins:
- Greatest effect when unconstrained becomes constrained, at some point constraint has little effect.
- Bulk of business for most producers in concentrated in no more than a handful of transactions.
- Alternative constraint measure is much weaker than the measure used in this chapter.
- Limiting the study to product networks rather than the whole economy provided similar results.

Chapter 4: Getting Ahead

Looking at networks and achievements of senior managers in one of America’s leading high-technology firms:
- Managers with networks rich in structural holes get promoted faster and at a younger age than do their peers.

Contact Networks and Management Achievement:
- If connections matter, the manner in which you are connected matters.
- Information benefits abound for individuals who are structurally autonomous.
- “Gossip moves faster and to more people than memos”
- Tertius plays a critical role in corporate response to disorder and demoralization, rushing coordination to structural holes that could be usefully closed.
- Different levels of education achievement are used to legitimate inequalities of control and income is used to encourage managers to exercise their greater control in ways serving the interests of their corporate employer.
  - Safe to assume worker’s network has fewer structural holes than a manager’s.
- Rate of return is measured by income divided by expected income.
  - Average is 1, but some have greater.
  - Structural hole argument predicts this value will increase with greater structural autonomy.
    - Eliminates need for distinction between worker and manager.

The Study Population:
- Personnel records and mail survey of top managers in one of America’s largest high-technology firms.
- Matrix based management structure rather than bureaucratic hierarchy.
  - Two relations.
    - Supervisor to subordinate (Solid line)
      - Responsible for salary recommendations and periodic reviews.
    - Manager to important people on a project (dotted line).
- 100,000+ employees.
  - 3,303 occupy four managerial ranks below VP.
- Environment in which information access, timing, referral, and control benefits of structural holes should be especially valuable.
- Sampling Managers.
  - Strata defined by location, sex, functional division, rank and seniority.
72% work in core locations
87% are men
Field and production managers are each about 40% of the study population, the remaining being corporate managers
Top two ranks comprise 28% of population
Veteran managers were distinguished from newer peers (about half the population)
In total, 48 categories of managers

Respondent managers
10% is an accepted response rate in the company
This report had a 52% response rate
Used personnel files to test for non-response bias

Sampling Network Contacts
Manager networks involved more than the ones discussed and any good manager adjusts composition of network to the needs of immediate projects
Used name-generator items that result in a list of core contacts
• Nine total
• Included name-interpreter items such as contact’s age, sex, authority relation outside relation, years known, frequency of contact, emotional closeness, division and years with the firm

Resulting Networks
Of the average 12.6 contacts in a network, two are outside the firm.
• 6% family, 10% friend
Four kinds of work contacts developed
• Two kinds of solid line relations, one dotted line relation and one thin line relation of personal relevance
• Many people cited their boss’ boss as a direct solid line contact
  ♦ 24% dotted line contacts
  ♦ 38% thin line contacts
Network size increases with rank

Measuring Structural Holes
Respondents were asked to describe strength of relationships as especially close, close, less close, or distant
• Useful for measuring primary holes but not secondary
• Assumption that managers and contacts view one another as unique sources of interaction
• Estimates of hole effects are conservative

Measuring Achievement
Participation in an innovative, high-visibility project with broad implications
Rank and promotion was a good measure
• Data had most recent promotion date
• Average time in rank was 2.8 years, highest was 10
• Created a measure to compare years in rank to education
  ♦ Average age of promotion to current rank was 39.3
  ♦ Women were younger than men
• Looking to find who was promoted early and who was promoted late or never
• Used Merton’s Socially Expected Duration (1984)
♦ Expect people promoted before SED to have many structural holes, and those behind to have high constraint networks

- Measures of early promotion and fast promotion
  ♦ Positive values of measure means early promotion, negative is late promotion, 0 is expected time of promotion

- Cautious interpretation
  - Early promotion might be defined by biological age instead of years after graduation (Biological age is not available)
  - No data on length prior to promotion for those recently promoted
  - Cannot prove the causal order of promotion and network composition

❖ Hole Effects
  - There is significant evidence of hole effects
    - Associations are negative, a lack of structural holes delays promotion. Associations are significant
      - Constrained managers are older when promoted and are in the same rank longer
    - Correlations are “disappointingly small”
  - Hole effects vary between kinds of managers
    - Effects are most evident for managers on a social frontier
      - More diverse networks, entrepreneurial wits
  - Structural Holes and Fast Promotion
    - Negative correlation indicates faster promotions for managers with networks in rich structural holes
    - Stronger for managers at remote plants, women, field managers, and recently hired managers
      - Each of these individuals operate on the frontier. Remote and field managers operate more outside of employees, women are minority, new people do not have as many relations
    - Divided employees into insiders and outsiders
      - Insiders worked at a core plant and were at the firm for a long time
      - 31% insiders v. 69% outsiders
    - Clear evidence of hole effect on fast promotion
      - Insiders are distinguished by relevance of networks to promotion not their tendency to be promoted
      - Figure 4.5)
  - Structural Holes and Early Promotion
    - Fast promotions over time determine early promotion
    - Strong hole effects on social frontiers
    - Structural holes improve chances of early promotion for all men
    - Different frontier
      - Managers seem focused on task at hand rather than big picture, resulting in slower promotion
      - Frontier between employee protected by the firm and being a leader responsible for the firm

❖ Hierarchy
  - Kinds of Hole Signatures
- Not associated with kinds of managers, defined by aggregate level of constraints in the network and the extent to which the constraint is concentrated in a single contact
- Types A and B: Entrepreneurial Signature
  - Many contacts, low constraint
  - Type A is younger than the average person promoted to his rank and has half the expected time in the rank, numerous structural holes
  - Type B has a higher level of constraint
- Type C: Clique Signature
  - Smaller networks with strong relations between contacts
  - Typical signature is entry-rank manager in sales, has been with the firm for a long time and was nearly twice as old as the average person promoted to his rank
- Type D: Hierarchical Structure
  - Same size as Type C, lower density relations
  - Constraint is concentrated in a small minority (e.g. supervisors)
  - Typical signature is a mid-rank manager with the firm for 5-10 years with an early to average promotion rate

- Implications for promotion
  - Managers had different constraint distribution across contacts
  - Hierarchy not associated with fast promotion, but is associated with the accumulation that determines early promotion
  - In aggregate, managers with low constraint get promoted early
    - For high ranking men, constraint is important, hierarchy is not
    - For women and low ranking men, hierarchy determines early promotion
  - Some managers have developed low constraint networks with lots of structural holes, others have been more hierarchical and strategic
  - Strategic networks are more at risk to potential failure
  - Tendency for hierarchical networks decreases with increased time in rank
  - Hierarchy defined by weakness of individuals (entry-level and women)

- Institutional Holes
  - Frontier managers are assumed to have networks that span institutional holes
  - Reported data on divisions in corporation were useless
    - Unable to define institutional holes
    - Networks that reached beyond the work group contained more institutional structural holes than those concentrated in the work group
  - Picking the strategic partner
    - Individual at the top of a hierarchical network is the principal source of constraint
    - Individuals choose the top of the network (usually dotted or thin line contacts as strategic partners)
    - Weak positive correlation between hierarchy and early promotion
      - Different based on what type of contacts make up the network
      - Hierarchies built around supervisor are promoted early but stay in new rank for a long time
      - Thin line contacts most profitable
  - Building Bridges beyond the Immediate Work Group
    - 62% of managers socialize with one or two core work contacts
    - Three kinds of networks
• Task-oriented
  ♦ Contacts are related to current work, socialization within the group
• Opportunity-oriented
  ♦ Contacts are mostly thin-line, no socialization within the work group
• Middle
  ♦ Mixed qualities of both
    ▪ Task-oriented associated with short time in rank, no association with opportunity-oriented
    ▪ Interesting since structural holes primarily exist in opportunity-oriented networks suggesting no association between time in rank and structural holes

❖ Selecting a Network
  ➢ Flat networks
    ▪ No single contact is dramatically more central than others
  ➢ Hierarchical networks
    ▪ Built around one or two strategic partners
  ➢ Figure 4.13 shows a decision tree for early promotion networks
    ▪ High ranking men= flat structure, opportunity oriented
    ▪ Women and Low ranking man= hierarchical structure, task-oriented
  ➢ Networks should be selected for their advantage not for the kind of manager who has in the past most often benefited from its advantage

❖ Summary
  ➢ Managers with networks rich in structural holes tend to be promoted faster and earlier
  ➢ Hole effects are most evident for managers operating on a social frontier
  ➢ Most serious frontier is the political boundary between top leadership and the rest of the firm
  ➢ Competition has a more personal flavor (lower ranks and women have to have hierarchical networks to move forward at some point)
  ➢ No difference in managers to choose one type of network rather than another

❖ Appendix A: Weighing Alternatives
  ➢ Managers with many non-redundant contacts are rich in structural holes
  ➢ Larger effective networks get promoted faster and earlier
  ➢ Alternative constraint measure provides weaker evidence of hole effects (similar to earlier chapter)
  ➢ Structure of missing or hostile relations between contacts indicate structural holes more than strong relations between contacts

❖ Appendix B: Causal Order
  ➢ Perhaps promotions cause networks, not the other way around
  ➢ Need more data to understand
  ➢ Arguments that support one direction could support the opposite (Consolidation argument)

Brokerage and Closure: An Introduction to Social Capital- Ronald S. Burt
Images of Equilibrium

❖ The distribution of informal relations among people and groups constitute a network of dense clusters segregated by structural holes.
Network models of brokerage and closure predict the distribution of social-capital advantage in the network.

Brokerage:
- Information is more homogenous within than between groups (people whose networks bridge the holes between groups have a vision advantage in detecting and developing good ideas).
- Advantages of introducing variation into group opinion and behavior.

Closure:
- Where 3rd parties close the network around bridge relations, reputation pressures encourage trust/collaboration needed to deliver the value of bridges
  - Creates a social capital advantage defined in terms of closure across structural holes.
- Social capital of closure is about the advantages of driving variation of out of group behavior or opinion.
- Breaking the link between two contacts in a completely connected network erodes trust-performance more than breaking the link between two contacts in an already fragmented network.

**Effects of social capital are substantial and concentrated in extreme network conditions.**
- Performance effects of brokerage/closure repeatedly documented in empirical research.
- All 4 stylized facts, show effects disproportionately stronger at the extreme levels of closure.

**Brokerage and closure are twice complementary** (because augment one and other in creating social capital).
- Advantage is greatest when closure within a group occurs with brokerage beyond the group.
- Provide a cure for the other’s failure mode
  - Unrestrained brokerage can create organizational chaos.
  - Unrestrained closure can created organizational “arthritis” (groupthink).

Closure reinforces existing structure: strong relations are less subject to decay and relations between friends of friends are more likely to form and survive through the initial high decay period.
- Closure creates inertia in social boundaries
  - Existing segregation between groups is a kind of equilibrium.

Equilibrium: defined by a lack of endogenous changes disrupting the status quo
- is a function of brokerage breaking free from the inertia of closure.

Knowledge unevenly distributed across groups creates local advantage
- Information everywhere is imperfect and incomplete.

Bridge-builders:
- Premium given to the people who do the integrative work of creating valuable new combinations of knowledge that would otherwise be segregated in separate groups.
Network work entrepreneurs: move into the white space between groups to add coordination where it is valuable to do so

Price Incentives for Action

- Benefits received for creating new combinations make visible the price for integrative work and causes others to want to join in the integrative work
- As network entrepreneurs receive disproportionate returns to their integrative efforts, other are drawn to earn the same returns
- Decentralization is fundamental because specialization is extreme
- Austrian economics focus on the process by which markets move toward equilibrium
  - Price makers vs. price takers
- As successive bridges are built across a structural hole, returns diminish and the hole is closed
  - When incentives for brokerage are no longer visible, the existing structure has reached an equilibrium

Path to Equilibrium: Prices paid for integrative work should decrease in mean and variance on the path to equilibrium as buyers/sellers become more accurate in estimating price as average price paid for integrative work across a structural hole decrease with the amount of bridges across the hole
- Price bridge is a function of Benefit minus cost

Brokerage is valuable for introducing variation-benefits decrease with additional redundant participants

- Value created by a bridge can be expected to decrease with the number of bridges across the same structural hole
- Decrease in benefits is probably steeper for the first few bridges than the last few
  - This creates a second-mover advantage – benefits are higher for the second few entrants (than the first who bridges the structural hole), than decreases for subsequent entrants

Holes are closed by individuals
- A high density of bridges is not required to close a hole, the first few bridges suffice

There is no competitive advantage at equilibrium to another bridge
- Network entrepreneurs moved the market to equilibrium by eliminating holes where it was valuable to do so

Enduring Advantage: Brokerage provides a temporary, local advantage

- Bridging structural holes is a short-run advantage on the path to equilibrium
- Ignorance is an unstable foundation for equilibrium
- Trial and error, or shock in the population make visible the value latent in unbridged structural holes
- Once visible- the rewards for bridging a hole elicit the efforts of network entrepreneurs who move the population to a new equilibrium

Passive and Active Structural Holes
- Ex: as an industry of managers/organizations moves toward equilibrium, managers whose networks span structural holes have an advantage in identifying/developing the more rewarding opportunities

Active hole: if interest attached to the hole resists bridges
- Ex: headhunters- bridging structural holes involves simultaneous process of creating holes
  - Success rests on the dual function of creating and filling holes

Structural hole is active, if:
1. Provides opportunity for insiders on one side of the hole to exploit outsiders on the other sides
2. Permits insiders to hoard opportunities from outsiders
3. Makes it easier for insiders to construct new organization based on existing models in which insiders are advantaged
4. Daily routines and valued social ties of aid, influence, and info gathering have adapted to the hole
   - Way a passive hole becomes active- if people adapt
     Ex: Clendenin case- illustrates resistance when people adapt daily routines/behaviors to otherwise passive structural holes

A way to think about active structural holes is to ask why a hole observed is not already closed
- Is there value to bridging the hole, why hasn’t someone already done so?
- Actives holes can be bridged

Stability Despite Brokerage
- Many people disinterested in brokerage but still reap the benefits
- It is possible for network entrepreneurs to enjoy rewards of brokerage without having to pay the high cost of establishing bridge relations, where brokerage is an enduring advantage and existing network structure continues through time as if in equilibrium

Positive and Negative Cycles to Reproduction
- Negative cycle: managers surrounded by densely interconnected discussion partners (high network constraint) were likely to have their ideas dismissed by senior management- seen as low value-
  - Learned not to express ideas
- Positive cycle: managers whose networks spanned structural holes (less network constraint) were likely to express/discuss idea, have them engaged by senior management and seen as valuable
  - Managers expected to continue to have good ideas
- Ideas alone don’t disrupt status quo
  - Have to be worked into coordination across holes in the existing structure

Inertia Model of Social Convenience
- Centrality measured by network constraint index
- Accounts for distribution of good ideas which were discussed to display competence and entertain familiar colleagues
Logit model predicts the probability of discussion from centrality will likely only be with the first three people (that are most connected to upper management) and in decreasing order.

Good ideas emerged as hypothesized from the intersection of social worlds but spread in a way that would continue segregation between the worlds.

Conclusion: Equilibrium image that emerges is one of local balance, between closure pulling groups in on themselves and brokerage pulling them apart into new combinations.

- Closure is the more obvious force- people advantaged by barriers between insiders/outiders have little incentive to bring in outsiders
- Productive potential of brokerage as an engine of endogenous change is more clear in theory than fact
- Closure’s inertia force typically prevails (once recognized in for their role in failed brokerage, can be more effectively addressed)

Moral: When you have an opportunity to learn how someone in another group does what you do differently- take advantage!!!

Social Capital in the Creation of Human Capital- James Coleman

- Two broad intellectual streams in description and explanation of social action
  - Actor is socialized and action is governed by social norms, rules, obligations
  - Actor acts independently, wholly self-interested

- Coleman discusses social capital as a conceptual tool for use in the theoretical enterprise
- Criticisms: implies that actor has no “engine of action” etc.
- Granovetter- argues that in the new institutional economics, there is a failure to recognize the importance of concrete personal relations and networks of relations- embeddedness- in generating trust, establishing expectations, and in creating and enforcing norms
  - Embeddedness- may be seen as an attempt to introduce into analysis of economic systems social organization and social relations not merely as a structure that springs into place to fulfill and economic function, but as a structure with a history and continuity that give it an independent effect on the functioning economic system
- Economists and sociologists have constituted a revisionist analysis of the functioning of economic systems
- Coleman: wants to import the economist’s principle of rational action for use in the analysis of social systems proper, including economic systems without discarding social organization in the process
  - Concept of social capital is a tool to aid this process
  - The usefulness in education is examined throughout this paper
- Theory of rational action: each actor has control over certain resources and interests in certain resources and events
  - Social capital then constitutes a particular kind of resource available to an actor

- Social capital is defined by it’s function
Variety of entities, with two elements in common:
1. All consist of some aspect of social structures
2. They all facilitate certain actions of actors (persons or corporate actors) within the structure

- The strength of the ties makes possible transactions in which trustworthiness is taken for granted and trade can occur easily (Ex: Wholesale diamond market in NYC).
- Human capital is created by changes in persons that bring about skills and capabilities that make them able to act in new ways.
- Social capital comes about through changes in the relations among persons that facilitate action.
  - Physical capital is tangible (embodied in observable material form) and human capital is less tangible (embodied in skills and knowledge acquired by an individual), social capital is even less tangible, because it exists in the relations among people.
  - Physical capital, human capital, and social capital facilitate productive activity
    - Ex: a group that has extensive trustworthiness and extensive trust is able to accomplish much more than a comparable group without the trustworthiness and trust.
  - Using concept of social capital, can take such resources and show the way they can be combined with other resources to produce different system-level behavior/different outcomes for individuals.
  - Informal social resources can be used instrumentally to achieve occupational mobility.
  - Another important form of social capital are information channels (potential for information that inheres in social relations)
    - Information is important in providing a basis for action (acquisition is costly)
    - Provides information that facilitates actions (social relations that constitute a form of social capital).

- When norms exist and are effective- it is a powerful and fragile form of social capital
  - Prescriptive norm is one that a person should forgo self-interest and act in the interests of the collectivity
  - A property of social relations that effective norms depend on is closure
    - A necessary but not sufficient condition for emergence of effective norms is a action that imposes external effects on others.

- Social capital in the creation of human capital
  - Effect on the creation of human capital in the next generation
  - Social capital in the family and the community play a role in the creation of human capital in the rising generation
  - Single measure of human capital formation used for this was one that appeared responsive to the supply of social capital: remaining in high school until graduation versus dropping out
    - Social capital in the family and outside it, in the adult community surrounding the school showed evidence of considerable value in reducing the probability of dropping out of high school.
Summary: concept of social capital can be explained through the identification of three forms:
1. Obligations and expectations (depend on trustworthiness of the social environment)
2. Information-flow capability of the social structure
3. Norms accompanied by sanctions
A property that most forms of social capital share (that differentiates them from other forms of capital) is: public good aspect
  - Actors that generate social capital ordinarily only reap a small part of its benefits—this leads to underinvestment in social capital

Personality Correlates of Structural Holes - Ronald Burt, Joseph E. Jannotta, James Mahoney
- Survey network and personality profile data to explore the idea that personality varies systematically with structural holes
- Structural hole theory describes how social capital is a function of brokerage opportunities in a network
  - Discontinuities between exchange relations (structural holes) are entrepreneurial opportunities to broker the flow of information between people on opposite sides of the structural hole, and control the form of projects that bring together people on opposite sides of the structural hole
  - Conclusion: individuals with relations to disconnected social groups are positioned for entrepreneurial action, building bridges between groups where it is valuable to do so.
- Motivation: what extent is the connection between success and brokerage contingent on having a personality suited to working with structural holes?
  - People can be compared for relative achievement
  - Empirical evidence of correlation between opportunity and achievement
  - Clear association between structural holes and individual differences in learning
- Data: questionnaire responses from University of Chicago MBA Students
  - Data defined contact network around each student
  - Measuring the lack of structural holes in a network, network constraint decrease with the number of contacts in the network (network size), increase with average strength of relations between contacts (network density), and increases with the extent to which relations among contacts are concentrated in a single contact (network hierarchy).
  - Personality data- self-administered using instrument from Management Research Group (MRG) to help identify features of their organizational personalities compared to their colleagues
    - 252 statements organized into 84 clusters (see figure 1, page 68).
    - Content of the personality items associated with network structure is consistent with network theory.
  - Possibility of selection bias (paid $10 (51 out of 122 filled it out))
    - Selection bias seems to not be a concern
- Results: (See Table 1, page 71)
- Two conclusions:
  - Personality does vary with structural holes
Respondents in entrepreneurial networks claim personalities of people who are the authors of their own worlds.

Respondents in constrained networks claim the personalities of people living in a world created by others.

- Association is consistent with the structural hole argument
  - People in the least constrained networks claim the personality of the entrepreneur outsider (as opposed to conforming and obedient insider), in search of authority (versus security), thriving on advocacy and change (versus stability)

- Network Entrepreneur personality index
  - Defines accurate probability of the respondent having an entrepreneurial network
  - Respondents sorted into three categories:
    - entrepreneurial networks (most interesting because contains respondents directly involved in structural holes)
    - cliques,
    - hierarchical networks

- Cautionary Evidence from a survey of corporate staff in a large financial organization
  - No implied causal order
  - Analysis is no more than an exploration of personality correlates
  - Respondents are a convenience sample of MBA students

- Where the personality index is associated with entrepreneurial networks (lower ranks), neither the index nor networks are associated with manager performance
- Where manager performance is significantly linked with entrepreneurial networks (more senior ranks), personality index is not associated with network structure and performance is not higher for managers with more entrepreneurial personalities.
  - Men are hurt by having an entrepreneurial network (better off with a constrained network of interconnected contacts). (Respondents are predominantly women)
  - Entrepreneurial network increases a woman’s odds of receiving the highest job evaluations
  - In this study- women do well if they build and entrepreneurial network while expressing the conformist team-spirit of personalities associated with cohesive networks
  - Strength and consequences of associated between personality and network structure are more complex than implied by our results with the MBA students

- Personality data are interesting correlate but no substitute for sociometric data

**Social Networks and Status Attainment**-Nan Lin

**Status Attainment**: “the process by which individuals mobilize and invest resources for returns in socioeconomic standing.”

- Resources are defined as wealth, status, and power, while socioeconomic standing is depicted as “valued resources attached to occupied positions” such as personal and social resources.
  - Social resources are attained both directly and indirectly.
Limitations Presented and to be Considered:
- The study does not account for densities, centralities, bridging, etc. because the focus is on network resources.
- The outcome examined is status attained, not whether or not a job search was successful.

The Theory of Social Resources: a pyramid-shaped structure to examine wealth, status, and power in which accessibility and control of such resources are depicted in the authority associated with each piece. The higher the occupant on the pyramid, the less co-occupants, and the more control over resources.

Three Hypotheses:
1. Resources accessed in social networks impact the outcome of attained status.
2. “The strength of position proposition: that social resources, in turn, are affected by the original position of ego.”
3. “The strength of ties proposition: that social resources are also affected by the use of weaker ties rather than stronger ties.”

Research in this realm offers two relationships apparent between social resources and status attainment:
- One follows the access to social attainment while the other focuses on the mobilization of social capital in the process of such attainment.
  - Accessed social capital – measured with name and position generators (See page 11).
  - Mobilized social capital - study was conducted by Lin and associates in Albany, NY. A representative sample of 400 men confirmed that contact status impacted status attainment, accounting for both parental and educational effects.

Examines the difference between formal and informal job searches:
- Depending on one’s background (advantaged versus disadvantaged) the use of informal networks may or may not be necessary. Typically advantaged cohorts (ascribed, etc.) do not use informal networks as often, however results are mixed. Informal networks can assist and supplement the use of formal networks in job searches.

In general, resource availability and accessibility does influence status attainment.

Strength of Ties of Extensity?
- Lin proposes that having both strong and weak ties makes ones network more extensive and more fruitful and in turn, the more extensive the network, the more resources a player can inherit leading to greater status attainment.

Inequality of Social Capital:
- Women and minority members are less likely and able to mobilize their social resources to attain and support a career.
- Urges for strategic initiatives to be taken by disadvantaged populations to further their social capital by accessing resources beyond their social circle (Ex. A women tapping into a male’s network for more populous, status having ties).

Social versus Human Capital:
- Social capital can help promote human capital (Ex. Parental connections can lead to greater opportunities for education, training, and skill-based venues) but
“Human capital does induce social capital” (Ex. Education and training can give way to environments richer in resources)

Overall, “when social capital is high, attained status will be high, regardless of the level of human capital; and when social capital is low, human capital exerts a strong effect on [status] attainment. Or, given certain minimal levels of human and social capital, social capital is the more important factor in accounting for status attainment.”

**Bowling Alone** - Robert Putnam

- Looking at links between democracy and civil society
- Civic engagement leads to higher quality social institutions
- Social capital may be a framework to explain these phenomena
  - Sturdy norms of reciprocity and the emergence of social trust
  - Coordination and communication
  - Incentives for opportunism are reduced
- Whatever Happened to Civic Engagement?
  - Voter turnout has declined
  - Attendance at public meetings has declined
    - Same for political rallies
  - Increased distrust of government
  - Women group membership
    - Religious groups, PTA, sports groups, book clubs
  - Men group membership
    - Sports clubs, labor unions, fraternal orders, veteran’s groups
  - Religion is highest associational membership
  - Membership in all these clubs has declined
- Countertrends
  - Tertiary organizations
    - Environmental organizations
    - Feminist groups
    - AARP
    - These groups don’t require active membership aside from dues
  - Non-profits continue to grow
  - Self-help groups have grown
    - No strong commitment/loyalty
- Good Neighborliness and Social Trust
  - Families and associations with neighbors have decreased
  - Americans are less trusting
  - Ceteris paribus, US would fall to the middle of the pack in social capital in a few generations
- Why is US Social Capital Eroding?
  - Movement of women into the labor force
    - Statistics don’t add up
  - Mobility
    - Home ownership is greater now than ever
  - Other demographic transformations
- Divorce, supermarkets, online shopping
- Technological transformation of leisure
  - Individuals are spending more leisure time alone

What is to be done?
- What organizations most generate social capital?
- How do certain changes impact social capital?
- Assessment of social capital over the last quarter century considering social benefits and costs
- How public policy impinges on social capital formation