Managerial Conflict and Resistance: The Distinct Corporate Cultures of DuPont and Sun Oil

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Scholars interested in exploring the issue of managerial conflict and resistance during bureaucratization are not confronted with a plethora of sources. If they read the synthetic works of such leading structuralists as Alfred Chandler and cultural theorists as Thomas Cochran, the notion of managerial conflict and resistance is notably absent from their discussions of bureaucratization [Chandler, 1977; Cochran, 1985]. Even in more recent works dealing with the structural and cultural elements of bureaucratization, such as JoAnne Yates's *Control Through Communications* and Olivier Zunz's *Making America Corporate,* managerial conflict and resistance receive only occasional mention [Yates, 1989; Zunz, 1990]. While conflict and resistance are key themes for labor historians such as David Montgomery, the class conflict model they employ focuses almost solely on the conflict and resistance that existed between managers and their employees. Any discussion of conflict and resistance among managers is limited to that which occurred between foremen and their superiors [Montgomery, 1987]. While historians of technology such as Monte Calvert offer some insight into managerial conflict and resistance, their focus is primarily on scientists, engineers, and production personnel [Calvert, 1967].

What one garners from these diverse sources regarding the subject is that managers at all levels generally acquiesced to bureaucratization because they supported bureaucratic principles or gave in to authority. The managerial conflict and resistance that occurred tended to be among mid- and low-level managers who were engineers, scientists, or production supervisors, and they largely argued over what constituted best bureaucratic practice.

An examination of the bureaucratization of DuPont and Sun Oil, particularly their high explosives and refinery operations, reveals that this depiction is both incorrect and incomplete. The bureaucratization process generated a great deal of managerial conflict at all levels within organizations. Senior officials as well as middle and lower echelon managers argued over such

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strategic issues as authority and organization and such tactical matters as the logistical and economic feasibility of standardization, the best methods of standardization, and safety rules and procedures. Managerial resistance also accompanied the process. While resistance was far more prevalent among middle- and lower-echelon managers than among their superiors, even executives, particularly those with strong opinions regarding what constituted best bureaucratic practices and those who remained wary of bureaucratization, resisted certain bureaucratic practices. While corporate cultures had some effect on the nature of managerial conflict and resistance, they apparently had their greatest impact on how firms responded to conflict and resistance. Although some firms felt that managerial conflict and resistance had beneficial outcomes, they also believed in limiting their occurrence, and their corporate cultures had a significant impact on the control mechanisms they chose to employ.

The Distinct Corporate Cultures of DuPont and Sun Oil

Due to their executives' divergent views regarding control, coordination, and maximum efficiency, managers within DuPont readily adopted bureaucratic practices while Sun attempted to rely on informal mechanisms for as long as possible.

In 1902, a new generation of DuPonts, namely Coleman, Pierre (P.S.), and Alfred, acquired and reorganized DuPont and filled executive positions with individuals who shared their vision of ideal corporate organization. At the heart of the "new" firm were three operating groups, Black Powder, Smokeless Powder, and High Explosives. Each of these had plants of varying ages and labor conditions scattered across the country and some, like High Explosives, also oversaw their own engineering and chemical research organizations. For the new executive team, bureaucratic practices represented the most efficient and effective means of controlling and coordinating these widely dispersed units, which carried out multiple and varied activities with people of divergent backgrounds and experiences. Therefore as rapidly as logistics and budgetary constraints allowed, they established formal managerial hierarchies, standardized operations, and developed formal rules and procedures in the areas under their control.[2]

The attitude of Sun executives stood in sharp contrast to those at DuPont. By 1902, J.N. Pew already headed a company operating oil fields in Texas, Ohio, and Pennsylvania, two refineries, a fleet of rail cars, and two oil tankers. Moreover during the next three decades, the complexity, diversity, and geographic dispersion of Sun activities increased. By the early 1930s, Sun operations also included a fleet of oil tankers, oil pipelines, gasoline stations,

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[2] HEOD Circular Letter #93, Oct. 7, 1907, #547, May 5, 1910, #579, July 13, 1910, Box 550, #998, Nov. 14, 1912, Box 551; HEOD Bulletin #396, June 20, 1913, #415, Sept. 13, 1913, Box 554, Part II, Series II, Records of EIDPDN&CO: Superintendents Meeting Minutes, Nov. 1905, Oct. 1906, June 1907, File 418 – Box 13, Oct. 1909, April 1910, File 418 -Box 16, April 1912, File 418 – Box 15, Series A, Group 10, Longwood Manuscripts.

and a shipyard. Yet, wherever and whenever possible, J.N. and his successors, his two sons J. Howard and J.N. Jr., attempted to operate the firm as informally as possible. Unlike DuPont executives who viewed bureaucratic structures as a means of centralizing control over dispersed and varied activities, the three Pews felt that bureaucratic practices diffused authority and did not always improve efficiency or facilitate cooperation. Bureaucracy frequently involved unnecessary work, needless clerical detail, and the shirking of managerial responsibility [Johnson, 1983, p. 21]. At the same time however, they recognized that the increasing complexity and dispersion of their operations and such outside forces as regulation required them to develop and implement some bureaucratic practices. Yet these had to be kept as simple as possible because simplicity reduced the likelihood of limiting cooperation and coordination and losing control and efficiency. Therefore it was not surprising that while DuPont became a complex bureaucracy by the eve of Wold War I, Sun only emerged as a less elaborate version of its counterpart during the opening months of World War II.[3]

Managerial Conflict Over Bureaucratization

The process of bureaucratization generated managerial conflict at all levels within both Sun and DuPont. Despite their divergent corporate cultures, senior officials as well as middle- and lower-echelon managers in both firms argued over the strategic issues of authority and organization and such tactical matters as the economic and logistical feasibility of standardization, the best methods of standardization, and safety rules and procedures. Yet cultural differences between the two firms created variances in the rationales their executives gave for their involvement in conflicts over daily operating matters and the types of arguments supervisory personnel raised during their disputes with one another.

The major reorganizations that DuPont underwent in 1902, 1911, 1914, 1919, and 1921, frequently generated disputes among company executives regarding the strategic issue of what constituted the ideal form of organization. In 1902, company Treasurer, P.S. DuPont, and A.J. Moxham, the head of Development, argued that DuPont should completely absorb all the various companies in which it held interest. Sales head, J.A. Haskell, and Hamilton Barksdale, who oversaw the High Explosives Operating Department (HEOD), however, stated that some of the acquired companies should retain their autonomy due to their profitability and efficient means of operation [Chandler and Salsbury, 1971, pp. 110-116]. During the 1911 reorganization, Engineering Department head, William Ramsay, and Hamilton Barksdale, who then oversaw all of DuPont's operating departments as well as engineering and chemical areas, argued over whether the Heat, Light and Power Division

[3] J.H. Pew to W.D. Mason, Oct. 3, 1928, Box 132; J.N. Pew Jr. to A.E. Pew Jr., June 12, 1928, Box 133, Series 1F, Inventory #1, Accession 1317.

should remain a separate entity or be made part of the Engineering Department.[4]

Many of the reorganizations also generated executive arguments over whose department had authority over particular activities. In late 1903 for example, Moxham tangled with Haskell and Barksdale over whose department would determine the price of dynamite and identify the most viable sales opportunities in Mexico. Barksdale claimed that since HEOD manufactured the product and therefore had the most accurate information regarding the cost of manufacturing, it should set the price. Haskell felt that sales should determine both the price and the potential customer list. Moxham countered by claiming that since Mexico was a new market for DuPont, development should take on both tasks. The three could not agree so they presented their arguments to their counterparts on the company's Executive Committee. After much wrangling, the committee voted that pricing should remain the province of sales, while development should handle the gathering of competitive information and the identification of viable foreign markets. Their decision was short-lived however; in both 1904 and 1906 Moxham and Haskell were once again arguing over competitive information and foreign market identification.[5]

Such strategic issues were not, however, the only fodder for the disputes among DuPont executives. A number of their conflicts revolved around more mundane tactical matters. Between 1902 and 1914, Coleman and P.S. DuPont continually criticized the other executives for refusing to delegate authority for dealing with daily operating issues to their subordinates [Chandler and Salsbury, 1971, pp. 126 308, 312].[6] The other senior officials, however, felt that effective management equated to active, on-going participation in daily decision-making. Their attention to procedural detail and the conflicts that arose from it are exemplified by their disputes over personnel practices and policies. Between 1904 and 1908, members of the Executive Committee bickered about the wording of the company's non-disclosure agreements. In 1914, board members, Haskell and Moxham, acting Treasurer, J.J. Raskob, and company President, Coleman DuPont, held differing opinions regarding the stock bonus and efficiency rating systems proposed as part of a new salary scheme That same year, Executive Committee members and department heads, R.R.M. Carpenter

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[4] Alfred DuPont to T.C. DuPont, to Executive Committee Members, Jan. 27, 1911, 1911 Administrative Reorganization File, Box 131, Part III; W.G. Ramsay to H.M. Barksdale, Feb. 15, 1911, H.M. Barksdale to W.G. Ramsay, Feb. 20, 1911, T.C. DuPont to H.M. Barksdale, Feb. 20, 1914, File 1-1 – Box 1003, Part II, Series II, Records of EIDPDN&CO.

[5] A.J. Moxham to H.M. Barksdale, Nov. 2, 1903, File 18 – Box 806; H.M. Barksdale to A.J. Moxham, May 28, 1904, A.J. Moxham to T.C. DuPont, May 31, June 8, Oct. 13, 1904, T.C. DuPont to A.J. Moxham, June 13, Oct. 13, 1904, J.A. Haskell to A.J. Moxham, Jan. 29, Feb. 3, 1906, A.J. Moxham to J.A. Haskell, Jan. 30, 1906, File 13 – Box 805, Part II, Series II, Records of EIDPDN&CO.

[6] T.C. DuPont to P.S. DuPont, Nov. 21, 1913, File 418 – Box 4, Series A, Group 10, Longwood Manuscripts; T.C. DuPont to J.A. Haskell, Jan. 13, 1914, 1914 Administrative Reorganization File, Box 131, Part II, Series II, Records of EIDPDN&CO.

(Development), Irenee DuPont (Vice-president in charge of Manufacturing, Sales, Chemical Research, and Development), Lammot DuPont (Black Powder Operating Department), and J.J. Raskob (Treasurer's Office) debated the merits of paying workers by check rather than in cash.[7]

Like their executive counterparts, mid and low-level managers in DuPont's High Explosives Operating Department (HEOD) and such allied areas as engineering, purchasing, sales, and the Chemical Department argued over strategic matters as well as daily operating issues. While their superiors' divergent opinions regarding authority and organization generally emerged during periods of corporate reorganization, such was not the case among these lower-echelon managers. At the 1907 and 1914 HEOD superintendents meetings, plant superintendents and their assistants so vehemently disagreed over the suggested plant organization plans that they dropped the matter. In 1912, managers from the Engineering and Chemical Departments debated whether experimental engineering should remain in the Chemical Department, which was in charge of developing all new manufacturing processes, or be moved to the Engineering Department, which was responsible for plant and equipment construction. The issue was not resolved until 1917, when experimental engineering became part of the Engineering Department.[8]

Disputes over authority frequently occurred between HEOD managers and their counterparts in such closely allied areas as purchasing and sales. Almost every year, disagreements broke out between HEOD plant supervisors, the heads of HEOD's Order and Works Supplies Divisions, and managers within the Purchasing Department over raw material specifications, supply prices, and supply ordering and shipping procedures. In 1906 and 1913, the breach between HEOD and purchasing became so great that plant managers requested that each plant, or at minimum, each operating department, gain the authority to do its own purchasing. HEOD and sales managers also persistently argued over who had final say over such matters as the product specifications and usage instructions printed in sales literature and the procedures used in ordering goods and materials from HEOD plants.[9]

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[7] Contracts with Employees 1904-1908, J.A. Haskell to T.C. DuPont, Feb. 2, April 14, 17, 1914, T.C. DuPont to J.A. Haskell, Jan. 29, Feb. 6, April 6, 10, 1914, File 3C; J.J. Raskob to P. S. DuPont, Jan. 13, 1914, A.J. Moxham to T.C. DuPont, Mar. 24, 1914, Bonus Plan File – Box 123, Part II, Series II, Records of EIDPDN&CO; Irenee DuPont to J.J. Raskob, Nov. 17, 1914, R.R.M. Carpenter to Irenee DuPont, Nov. 20, 1914, Irenee DuPont to H.G. Haskell, Nov. 21, 1914, Lammot DuPont to Irenee DuPont, Nov. 23, 1914, H.G. Haskell to Irenee DuPont, Nov. 24, 1914, J.J. Raskob to Irenee DuPont, Nov. 28, 1914, Series H, Accession 228.

[8] Superintendents Meeting Minutes, June 1907, May 1914, File 418 – Boxes 13,15, 17, Series A, Group 10, Longwood Manuscripts; W.G. Ramsay to H.M. Barksdale, July 18, 1912, Irenee DuPont to H.M. Barksdale, Aug. 16, 1912, H.M. Pierce to Company Department Heads, April 9, 1917, File 1-1 – Box 1003, Part II, Series II, Records of EIDPDN&CO.

[9] F. G. Tallman to T.C. DuPont, Sept. 4, 1905, Box 812; Minutes of Purchasing Department Heads Meeting, May 27, 1905, W. C. Spruance Jr. to J. B. Niles, Feb. 1, 1911, H.G. Haskell to F. G. Tallman, May 5, 1911, H.G. Haskell to Wm. Coyne, Nov. 28, 1913, H.G. Haskell to H.M. Barksdale, Jan. 21, 1914, File 19 – Box 1003A, Part II, Series II,

HEOD mid and low-echelon managers also argued over the establishment of formal standardized and uniform practices in every category of activity conducted within their operating department. Disagreements over personnel practices ran the gamut from whether or not to conduct physicals on all workers seeking employment within their plants to the use of piece-part rates and premium incentive schemes, the acceptable level of merit pay increases, and the procedures used in recording employment terminations. Nearly every suggestion to standardize a portion of the high explosives manufacturing process – be it as broad an area as nitroglycerine manufacturing or as limited a topic as what screens were used in dope preparation – led to a lively debate among plant supervisors, their assistants, key personnel from the Engineering and Chemical Departments, and the managers of such HEOD support groups as the Finished Goods Division. Members of these same groups also argued over the merits of such formal safety rules and procedures as the proper way to discipline workers who broke match rules, the types of uniforms and safety shoes workers should wear, and safety barricade construction specifications.

To support their positions in these debates, the participants used a mixture of first-hand knowledge, the experiences of other explosives manufacturers, and empirical data. Since the overwhelming majority of those participating in the exchanges – be they line or staff, university or practically trained, scientist, engineer or factory operative – were not openly opposed to the establishment of bureaucratic practices, most of the debates revolved around the logistical and economic feasibility of standardization and the "best practice" to standardize.[10]

Sun Oil managers were also a contentious lot. Executive and mid and low-level managers argued over the same strategic and tactical issues as their DuPont counterparts. Yet because they worked in a different corporate culture, their executives provided somewhat different rationales for their involvement in disputes over tactical matters and their managers substantiated their arguments using different evidence than that employed at DuPont.

Executive disagreements over the strategic issues of organization and authority emerged during the company's initial years in the oil business. In 1897, Robert C. Pew, who oversaw the Toledo refinery, and his uncle and company President, J.N. Pew, fought over how to organize the refinery. That same year, J.N. had to step in to settle a dispute between Robert and John McMillan. McMillan claimed that since he oversaw the firm's Ohio oil fields, he had authority over the men working those fields. Robert argued that since he was in charge of all Sun's Ohio activities, the production men fell under his jurisdiction. While there is little surviving evidence that conflicts of this nature

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Records of EIDPDN&CO; H.G. Haskell to H.M. Barksdale, May 4, 1906, May 6, 1913, File 418 – Box 4; Superintendents Meeting Minutes, May 1914, File 418 – Box 15, Series A, Group 10, Longwood Manuscripts.

[10] Superintendents Meeting Minutes, 1904-1914, File 418 – Boxes 13-17, Series A, Group 10, Longwood Manuscripts.

also arose after the turn of the century, they most likely kept occurring because Sun's formal organizational structure became increasingly complex. By the mid-1920s for example, Sun had 21 departments at its Philadelphia headquarters and 17 at its Marcus Hook refinery.[11]

Like their DuPont counterparts, Sun executives also spent a great deal of time involved in disputes over operational detail. Due to their reticence to relinquish control and their need to be assured that all bureaucratic practices were kept as simple as possible, senior officials actively participated in most disputes over daily operating matters. As personnel-related activities and programs became increasingly bureaucratized during the 1920s and early 30s, they argued over such matters as the wording of the employee's stock purchase plan booklet and the merits of unionization. Over the years, they voiced their opinions on such diverse manufacturing topics as the specifications for the agitators used in crude refining, refining still construction specifications, the systematic marking of barrels, storage tank roofing specifications, and the proper way to gauge storage tanks. Even disagreements over performance reporting and accounting matters did not escape their participation. They took an active role in the debates over such issues as the standard method used in valuating oil in storage and the losses occurring during refining and the proper way to formally credit shipments.

Sun executives were not the sole participants in these disagreements. Their subordinates in the middle and lower echelons of such areas as refinery management took an active role as well. These refinery managers, like their HEOD counterparts at DuPont, argued over the logistical and economic feasibility of implementing bureaucratic methods and what constituted best bureaucratic practice. Yet in contrast to the HEOD managers who frequently used empirical data to support their arguments, they relied upon personal experience and the experiences of other refiners. They only began using statistics to substantiate their arguments during the mid-1920s when Sun exponentially increased the amount of manufacturing and financial data it formally recorded and distributed to its various refinery managers.[12]

While Sun's mid and low-level refinery managers apparently seldom argued over the strategic issue of organization, they frequently disagreed over

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[11] Robert C. Pew to J.N. Pew, Jan. 30, 1897, Box 22; J. E. Pew to J.N. Pew, Feb. 2, 1897, Box 55; John McMillan to J.N. Pew, Sept. 23, 1897, Box 51, Series 14; John McMillan to J.N. Pew, Oct. 1, 4, 1898, Box 4, Series 1A, Inventory #1, Accession 1317.

[12] R.C Pew to J.N. Pew, Dec. 21, 1894, Box 18, Mar. 28, 1895, Box 19, Jan. 30, 1897, Box 22; J.E. Pew to J.N. Pew, Feb. 2, 1897, Box 55, Jan. 3, 1899, Box 56, Series 14; R.C. Pew to J.N. Pew, May 24, 1900, Box 5, Series 1A; J.H. Pew to J.N. Pew, Mar. 29, 1909, Feb. 10, 1910, Mar. 10, 1910, J.N. Pew to J.H. Pew, Feb. 22, 1910, Box 14, Series 1C; F.S. Reitzel to S.B. Eckert, Mar. 5, 1925, Box 116; E.M. Hughes to J.H. Pew, Mar. 19, 1926, J.H. Pew to E.M. Hughes, Mar. 20, 1926, Box 122; J.N. Pew Jr. to F. S. Reitzel, Aug. 10, 1926, J.N. Pew Jr. to M.H. Leister, Nov. 10, 1926, Box 123; W.D. Mason to J.H. Pew, J.H. Pew to W.D. Mason, Mar. 24, 1927, Box 128; J.H. Pew to W.D. Mason, Aug. 20, 1931, Box 145; J.H. Pew to W.D. Mason, Mar. 23, 1932, Box 147; W.D. Mason to J.H. Pew, Mar. 24, 1932, Box 147, Series 1F, Inventory #1, Accession 1317.

the matter of authority – particularly with their counterparts in such departments as accounting and sales. From the mid-1920s to the early 30s, refinery and accounting managers differed over who would establish the formulas for estimating losses during refining and storage and who had was best qualified to approve standard gauging methods. During the same period, sales and refining supervisors argued over who would determine the production rate for such products as gasoline and motor oils.[13]

Thus the bureaucratization process at both DuPont and Sun generated a great deal of conflict at all managerial levels regarding strategic issues as well as tactical matters. While their cultural differences did not affect the types of issues over which their managers argued, they did affect their executive's rationale for participating in disputes over daily operational matters as well as how their managers substantiated their varying points of view.

Forms of Managerial Resistance to Bureaucratization

Just as managerial conflict accompanied bureaucratization at DuPont and Sun Oil, so too did managerial resistance. Among the executive ranks, the differences in corporate cultures caused individuals to resist bureaucratization very differently. At DuPont, resistance was rare and usually involved forming alternative bureaucratic practices more to one's liking. At Sun, the distaste for bureaucracy led executives frequently to ignore rules that even they had authorized. The cultural differences, however, did not affect the types of resistance shown by mid and low echelon managers within the two firms or their reasons for such resistance. At these levels, resistance most frequently took the form of submitting late or incomplete formal reports, which managers felt had less priority than overseeing daily operations.

While Alfred DuPont did not adopt bureaucratic practices in the Black Powder Operating Department he supervised as quickly as his cousins, Coleman and P.S. desired, he was not the only DuPont executive whose position on bureaucracy frustrated them. Hamilton Barksdale, head of HEOD, represented another source of frustration. It was not that Barksdale abhorred bureaucracy. He was, in fact, one of the firm's staunchest supporters of systematization – as long as it was done his way. When the Accounting Department under P.S.'s supervision began developing a uniform accounting system in 1902/1903 and the majority of the Executive Committee voted to have all areas within company adopt the system, Barksdale, an Executive Committee member, not only voted against the plan, but ordered HEOD's Works Accounting Division to keep two sets of accounting records – one that was acceptable to him, the other, to accounting. When the Executive Committee voted in 1908 that all areas had to allocate their costs, including overhead, in the same manner, Barksdale, once again instructed his accounting group to allocate

[13] S. B. Eckert to J.H. Pew, Mar. 20, 1926, Box 123; W.D. Mason to F.S. Reitzel, Oct. 30, 1926, Box 122; J.H. Pew to W.D. Mason, June 20, 1927, Box 128, Series 1F, Inventory #1, Accession 1317.

costs two ways – the one to his liking, the other, to accounting's [Chandler and Salsbury, 1971, pp. 152-154; Johnson and Kaplan, 1987, pp. 74-75).

Mid and low-echelon managers within HEOD appeared to be an even more resistant lot than their superior, Hamilton Barksdale, when it came to following formally prescribed performance reporting and accounting procedures. Like the remainder of the company, HEOD emphasized high volume and low cost. To assure that each area within its numerous and widely dispersed plants optimized their utilization of inputs as well as their outputs, headquarters required each one to complete extensive and highly detailed daily, weekly, and monthly operating and cost accounting reports. Plant supervisory personnel were constantly criticized for turning in incomplete and late reports. It was not that these individuals felt that the reports were without merit. Each time plant superintendents and their managerial subordinates attempted to eliminate or simplify the reports, they decided against such actions because the forms provided vital information for identifying problems within their plants and for helping them determine which approaches and techniques provided optimum results. It was simply that the reports required so much data that they were difficult to fill out and took a long time to complete. Moreover, most had to be filled out by those in charge of such areas within the plant as acid recovery and shell packing, and these individuals' first priority was production not report completion.[14]

Not all managerial resistance by HEOD's mid and low-level managers, however, revolved around the issue of formal reporting. On a number of occasions, plant superintendents, their assistants, and foremen failed to follow standardized operating procedures or established equipment, raw material, and intermediate and finished product specifications. The reasons for their resistance varied. In some instances, it was due to such local conditions as the inability to get specified materials or operating in a plant with outdated equipment. On other occasions, plant personnel were experimenting with materials and methods to improve output rates or product quality, or to reduce operating costs. Some plant supervisors simply felt that their old methods were superior to those prescribed, while others just found it difficult to break old habits [Rumm, 1989, 176].[15]

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[14] H.G. Haskell to T.W. Bacchus, Jan. 16, 1905, File 40 – Box 418; HEOD Circular letters # 149, Jan. 20, 1908, #263, April 28, 1908, # 286, Aug. 10, 1908, #354, Mar. 31, 1909, #401, July 3, 1909, #489, Jan. 5, 1910, Box 550, #735 April 17, 1911, #755, May 25, 1911, #764, June 16, 1911, #782, June 23, 1911, #836, Dec. 11, 1911, #882, Mar. 7, 1912, Box 551; H.G. Haskell to F.D. Brown, May 28, 1914, File 101 – Box 1002, Part II, Series II, Records of EIDPDN&CO; Superintendents Meeting Minutes, Oct. 1906, Nov. 1907, June 1908, File 418 -Box 13, Jan. 1909, File 418 – Box 14, Oct., 1909, File 418 – Box 16, April 1911, File 418 – Box 16, April 1912, File 418 -Box 15, May 1914, File 418 – Boxes 15 & 17, Series A, Group 10, Longwood Manuscripts.

[15] J.W. Burns to T. W. Bacchus, Mar. 3, 1905, File 20 – Box 417; HEOD Circular Letter, R46, March 5, 1906, Box 553, #108, Oct. 30, 1907, #110, Nov. 6, 1907, #547, May 5, 1910, Box 550; HEOD Bulletin #132, Mar. 15, 1910, #173 June 14, 1910, Box 553, Part II, Series II, Records of EIDPDN&CO; Superintendents Meeting Minutes, Nov. 1907, File 418 – Box 13, April 1912, File 418 – Box 15, Series A, Group 10, Longwood Manuscripts

While managerial resistance was by far more prevalent among DuPont's middle- and lower-level managers than among its executives, such was apparently not the case at Sun Oil. Due to his persistent dislike of bureaucratic practices, J. Howard Pew, on a number of occasions, refused to abide by the company's formal rules and procedures. In 1924 for example, he instructed Marcus Hook refinery supervisor, H.E. Michener to ignore an ICC mandate regarding tank car brake specifications because complying with the minor revision would require the company to make very costly modifications. In 1927 he admitted that he frequently ignored the capital appropriations approval system, which he himself had authorized in 1924.[16]

J. Howard's managerial subordinates also chose, on occasion, to ignore the rules, but not simply out of a distaste for bureaucracy. Just as in the case of the managers within DuPont's high explosives operations, the most frequent forms of resistance among Sun refinery managers involved submitting incomplete and tardy production and accounting reports. While like their HEOD counterparts, they understood the importance of communicating such information to their superiors and recognized the usefulness of the data in improving the operating efficiency of the areas under their control, they felt that overseeing production took precedence over filling out forms.

Yet, not all resistance on the part of refinery managers was in response to performance reporting requirements. Sun's adoption of sophisticated but dangerous thermal cracking technology during the 1920s created a heightened concern over safety. As a result, Sun hired safety engineers who developed extensive safety programs for the Toledo, Ohio and Marcus Hook, Pennsylvania refineries. Yet, plant managers and workers, unused to having to pay extra attention to safety, frequently ignored the rules and procedures. Safety engineers responded by implementing a "safety first" campaign. This attempt at instilling a heightened concern for safety generated additional displays of resistance. In March 1931, for example, an issue of the company newspaper, *Our Sun*, carried a cartoon of a Rube Goldberg like contraption entitled "fire protection for office waste baskets." Under the title, the anonymous author had noted "approved by A.J. Gorand, Safety Engineer," and at bottom of the cartoon, the creator had written "Messrs. Soden, MacMurtrie, Wells and other Marcus Hook executives please note."[17]

As these numerous examples demonstrate, managerial resistance at all levels accompanied the bureaucratization process at both DuPont and Sun. While the firms' cultural differences affected the types and frequency of resistance exhibited by their executives, they did not generate significant

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[16] J.H. Pew to H. E. Michener, May 15, 1924, Box 111; J.H. Pew to W.D. Mason, June 20, 1927, Box 128, Series 1F, Inventory #1, Accession 1317.

[17] Robert Pew to J.N. Pew, Mar. 12, 1896, Box 20; Toledo to J.N. Pew, June 30, 1899, Box 24, Series 14; A. Pomeroy to F. Cross, Nov. 19, 21, Dec. 6, 10, 13, 1901, Box 11, Series 1A; F. Cross to A. Pomeroy, Nov. 20, 1901, Box 288, Series 1M; J.N. Pew to J.H. Pew, June 7, 1911, Box 15, Series 1C, Inventory #1, Accession 1317; "Open Letter to Employees," *Our Sun* 7 (1930) 14; Cartoon, *Our Sun* 3 (1931) 38, Hagley Imprints Collection.

differences in the levels and types of resistance demonstrated by their mid and low-level managers.

Divergent Mechanisms to Control Managerial Conflict and Resistance

The divergent cultures of DuPont and Sun, however, had significant affect on how the two firms attempted to limit and direct managerial conflict and resistance. Given its executives' advocacy of bureaucratic practices, it is not surprising that Dupont used meetings, voting, committees, formal rules, and inspections to deal with managerial conflict and resistance. On the other hand, the on-going preference for informal structures and practices led Sun executives to continue to deal with managerial conflict and resistance on an informal basis.

Despite their cultural differences, neither DuPont nor Sun believed in totally eradicating any instance of managerial conflict and resistance. Entirely squelching resistance would have discouraged plant managers and engineering and scientific personnel from experimentation. Demanding absolute adherence to standards was unrealistic. The companies' widely dispersed facilities operated under a variety of local conditions. Yet, managerial conflict and resistance had to be limited and directed because they had the potential to undermine control and the coordination and cooperation necessary for efficiently and effectively operating their large and complex firms.[18]

The conflict resolution and resistance limitation mechanisms that emerged in DuPont's High Explosives Operating Department between 1906 and 1913 clearly reflected the firm's reliance on bureaucratic practices. Beginning in June 1906, HEOD began holding semi-annual Superintendents Meetings to which it invited its plant superintendents and their assistants, the managers and key personnel of all its other divisions, and the supervisors from such closely aligned areas as the Chemical Department, purchasing, accounting, and sales.[19] One of the key purposes of these meetings was to discuss and establish standard operating procedures and specifications for equipment, raw materials, and finished and intermediate products. Formulated by diverse areas and individuals within and outside of HEOD, these procedures and specifications were presented at the meetings in the form of resolutions which were then debated by the attendees within an allotted amount of time. During the course of the discussion, participants could offer amendments or substitute resolutions [Dale, 1957, p. 34]. Participation in the debate was generally limited to those who would be affected by the suggested procedures and specifications, those who had formulated them, and those who had requested their formulation. At the close of debate, plant superintendents and their assistants voted on the resolution, and the majority ruled.

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[18] See footnotes 2-3.

[19] Superintendents meetings became annual rather than semi-annual events in 1909 due to the difficulty experienced in assembling the large number of attendees together more than once a year.

If it was clear that a majority of the superintendents and assistants did not agree with the originally proposed resolution or any suggested modification, the matter was either dropped or the meeting attendees selected a committee comprised of representatives from among the superintendents and the group responsible for formulating the proposed procedure or specification. These individuals then met and developed a new resolution or series of resolutions to present during the current or a future Superintendents Meeting. All committee members had equal say and the majority ruled. If a majority position appeared impossible to achieve, the committee dropped the matter and reported its stalemate back to the Superintendents Meeting.[20]

By 1909 a significant portion of the proposed standard procedures and specifications coming before Superintendents Meeting attendees involved general rules, equipment and raw material specifications, the processes used in the manufacture of nitroglycerine, and safety. These proved to be issues that plant supervisory personnel could not agree upon, even during the course of a five-day meeting. Therefore between 1909 and 1911 HEOD officials established standing committees, called Commissions, to deal with these matters. They felt that since superintendents representing plants of various sizes, locales, and ages and members of such areas as purchasing, the Chemical Department, and engineering comprised the Commissions, most of the differences of opinions that would arise at the Superintendents Meetings would emerge during the course of committee work and be resolved there. Because there would be less debate at Superintendents Meetings, attendees could handle more resolutions more rapidly. Moreover, fewer matters would either be dropped or sent back to committee. Although the Superintendents Meetings were discontinued in 1915, HEOD's Nitroglycerine, Machinery, and Safety Commissions continued to operate.[21]

On a number of occasions, issues arose regarding standard operating procedures and specifications that could not be postponed until the next superintendents meeting. In such instances, HEOD issued a circular letter to which all plant superintendents and other affected managers were to respond with acceptance, objections, etc. If no dissent was voiced, the suggested procedure or specification became standard operating practice. If there were objections, the matter was turned over to either a standing committee or one formulated specifically for dealing with the matter.[22]

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[20] HEOD Circular Letter #9, May 27, 1907, Box 550, Part II, Series II, Records of EIDPDN&CO; Superintendents Meeting Minutes, 1906-1914, File 418 – Boxes 13-17, Series A, Group 10, Longwood Manuscripts.

[21] HEOD Circular Letter #553, May 20, 1910, Box 550, #747, May 9, 1911, File 116 – Box 1002, #1140, June 12, 1914, #1153, Aug. 20, 1914, # 1174, Mar. 17, 1916, Box 552; HEOD Bulletin #197, Aug. 19, 1910, #388, Feb. 16, 1913, Box 553, Part II, Series II, Records of EIDPDN&CO; Superintendents Meeting Minutes, Jan. 1909, File 418 – Box 14; April 1911, File 418 – Box 14, HEOD Machinery and Safety Commission Recommendations, Aug. 1910 – Nov. 1914, File 418 – Box 18; HEOD Nitroglycerine Commission Minutes, File 418 – Box 8, Series A, Group 10, Longwood Manuscripts.

[22] HEOD Circular Letter #809, Sept. 26, 1911, #983, Oct. 3, 1911, Box 551, Part II, Series II, Records of EIDPDN&CO.

While HEOD began developing formal mechanisms for dealing with managerial conflict in 1906, most of its bureaucratic approaches to limiting managerial resistance did not appear until 1910. Until that time, resistance was met with mild verbal or written rebukes from the head of HEOD or one of his assistants. This informal approach, however, apparently did not reduce the number of incidents enough to satisfy HEOD leaders. In 1910, the operating department issued a formal rule requiring all plants to notify headquarters, in writing, when they deviated from established product formulas or raw material and finished product specifications. The rule was expanded in 1913 to include departures from prescribed equipment specifications and operating procedures. Since plant personnel had to describe, in detail, the changes made, the results of the changes, and the reasons why they departed from established standards, HEOD could easily identify modifications that enhanced a plant's performance and instruct its other plants to make the same modification. It could also quickly put a halt to those practices that had a detrimental effect on plant operations.[23]

Formal inspection of all HEOD plants and facilities also served as a means of limiting managerial resistance. While the department had been sending out auditors to check inventories and inspectors to examine finished product quality since early in the century, semi-annual general inspections did not become standard procedure until 1913. The myriad of criteria the inspectors used to judge each plant and facility included adherence to standard procedures and specifications and complete and timely submission of reports. The inspectors prepared formal reports that noted all violations, and they relayed these back to headquarters as well as discussed them with the plant superintendents and their direct reports. These individuals were then expected to rectify all noted violations by the next inspection. To encourage plant supervisory personnel further, the results of each plant inspection were presented and discussed at the Superintendents Meeting. The system apparently worked because the number of violations dropped dramatically, and although HEOD disbanded the program in 1914 due to the company's poor financial performance, it quickly reinstituted it in 1916.[24]

Sun's responses to managerial conflict and resistance stood in sharp contrast to those of DuPont's High Explosives Operating Department. Due to its executive's on-going apprehension of formal structures, rules, and procedures, it continued to rely on informal control mechanisms. The unstated rule regarding managerial conflict seemed to be that the "warring parties" were to meet face to face and reach an agreement acceptable to all concerned. If they could not resolve their differences, they could appeal to whoever had authority over all those involved in the dispute. Custom also appeared to dictate that as

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[23] HEOD Circular Letter #547, May 5, 1910, #579, July 13, 1910, Box 550; HEOD Bulletin #396, June 20, 1913, Sept. 13, 1913, Box 554, Part II, Series II, Records of EIDPDN&CO.

[24] Superintendents Meeting Minutes, May 1914, File 418 – Box 17, Series A, Group 10, Longwood Manuscripts.

often as possible, this individual was to assume the role of mediator rather than judge. Any suggestion that more formal means of controlling conflict would be more effective than current methods was rejected. When, for example, W.D. Mason, head of the Marcus Hook refinery, requested a meeting with J. Howard Pew in 1928 to discuss the formation of a development committee that could better coordinate new product efforts between R&D, sales, and the refinery, J. Howard refused the request. [25]

How Sun dealt with managerial resistance varied from situation to situation and apparently had little to do with the potential harm such refusal might engender. When the supervisor of the Marcus Hook refinery barrel house refused to comply with the barrel numbering system J.N. Pew devised, J.N. instructed J. Howard, then head of Marcus Hook, to do whatever he deemed necessary to assure future compliance, including firing the man. Yet in response to entire departments not complying with safety rules and procedures, Sun officials implemented the "safety first' campaign. Apparently those who supervised the resistant manager lived by the rule, "handle as you see fit."[26]

Conclusion

These numerous examples of managerial conflict and resistance within DuPont and Sun Oil suggest that previously published works regarding business bureaucratization present an incorrect and very incomplete view of the role managerial conflict and resistance played in bureaucratization. The examples indicate that the bureaucratization process generated a great deal of managerial conflict at all levels within organizations. Senior officials as well as middle- and lower-echelon managers argued over such strategic issues of authority and organization and such tactical matters as the logistical and economic feasibility of standardization, the best methods of standardization, and safety rules and procedures. Managerial resistance also accompanied the process. While resistance was far more prevalent among mid and low-echelon managers than among their superiors, even executives, particularly those with strong opinions regarding what constituted best bureaucratic practice and those who remained wary of bureaucratization, resisted certain bureaucratic practices. While corporate cultures had some effect on the nature of managerial conflict and resistance, they apparently had their greatest impact on how firms responded to conflict and resistance. Although some firms felt that managerial conflict and resistance had beneficial outcomes, they also believed in limiting their occurrence, and their corporate cultures had a significant impact on the control mechanisms they chose to employ.

DuPont and Sun Oil, however, are only two companies out of the hundreds of large corporations that underwent bureaucratization during the early twentieth century. Until managerial conflict and resistance within these

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[25] W.D. Mason to J.H. Pew, Nov. 16, 1926, Box 122, Series 1F, Inventory 1, Accession 1317; see also footnotes 11-13.

[26] See footnote 17.

other organizations is examined in greater detail and in relation to the firms' corporate cultures, the challenge to the current interpretation of managerial conflict and resistance that is suggested by these two companies' experiences will lack further substantiation and many scholars will continue to rely on the apparently incorrect and incomplete depiction offered by such scholars as Chandler, Cochran, the labor historians, and the historians of technology.

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