

APPENDIX ONE: CASE STUDY METHODOLOGY

INTRODUCTION

This appendix discusses the research methods utilised to study patterns of firm-level adjustment and the underlying processes that explained them. It outlines my main decisions on methods and data collection and considers their implications for the research findings. It also shows how features of this research environment and my own position within it influenced the case study methods. Part One describes my position in the broader research setting, while Part Two explains the choice of method in general terms. Part Three considers the availability of written data sources and their main limitations. Part Four looks at the specific methods utilised to interview employees and observe events in the factories, emphasizing the various types of triangulation applied to increase the reliability and accuracy of the research findings.

PART ONE: POSITION OF RESEARCHER

This research was conducted at the height of military conflict between the Nicaraguan revolution and *contra* forces financed and trained by the U.S. government. A U.S. financial and trade embargo imposed additional hardships in this period. How did my U.S. nationality influence the research process? To my knowledge, information was not withheld due to my nationality nor were interviewees reluctant to speak with me. The gregarious nature of Nicaraguans and my personal and professional ties to the country over a decade proved to be more important.

I first visited Nicaragua in 1978 as opposition to the Somoza regime gained momentum, and worked on related issues at a Washington-based human rights group during the final months of the successful uprising in the summer of 1979. In 1980-86, I worked in Nicaragua and then studied development issues abroad, maintaining close communication with Nicaraguan colleagues. These prior experiences influenced the case studies. For example, upon meeting workers, I often knew their neighbourhoods and children's schools because of my work with Managua's community organisations in 1980. While unconsciously speaking the colloquial Spanish learned in Managua's neighbourhoods, I had also come to understand the capacity of this language to express irony and multiple meanings. This familiarity with the language and

non-verbal gestures of Nicaraguans enhanced my ability to learn from case study interviewees.

Likewise, I knew the region of the country to which interviewees traced their roots and the war zones to which they had been mobilised. As a journalist (1981-83), I had visited every province of the country, interviewing Nicaraguans across political, class and regional boundaries. Because of my familiarity with the broader context, interviewees tended to be more precise and open when providing information and describing their own experiences. Political events at the centre of each of our lives often became the starting point for informal interviews as workers and others would say “remember when...”. The distinct positions from which we lived the same events enriched the ensuing dialogue and contributed to the shared experience.

At the same time, I clearly remained an outsider. As a foreigner, I did not fit into the Nicaraguan class structure. As a social scientist, I stood outside the occupational categories utilised to stratify Nicaraguan factories. As a woman in a predominantly male industry, I was not under pressure to locate myself within existing hierarchies. This enhanced my ability to move outside these social categories when interviewing and observing events.

How was formal access to the factories obtained? This research was conducted from within the corporation of state-owned manufacturing firms and the two main enterprises under study. I initially met with the Minister of Industry, expressing my desire to study adjustment processes and encourage interdisciplinary research at factory level. The Minister and Heads of the state corporation’s Metalworking Division and its Technological Office supported this dual objective, expressing their own interest in the interrelationship between technological, economic and social processes within the factories. I was initially located in this Technological Office whose strategy built upon firm-level adjustment processes. This location did lend credibility to my research, perhaps counteracting a tendency to take women less seriously in traditional male industries.

However, power relations between the corporation, state managers and workers could potentially affect the interview process due to my ties to the former. I therefore underscored the historical perspective of the research, distinguishing it from the administrative and technical evaluations normally conducted by corporation staff, which often did have an

impact on resource allocation. Because I observed daily communication between corporation and enterprise staff in this small industry, I also understood its nature and how to avoid becoming entangled in it.

During each case study, the factory became my workplace. I arrived early in the morning and reviewed documents, interviewed employees, observed events in the plant, and wrote field notes throughout the day. In IMEP, I was assigned a desk in the technical department among Nicaraguan engineers and foreign advisers from nine countries. While reviewing company records and taking field notes, I observed and listened to the frequent communication between technical staff and shop-floor employees, providing an introduction to current production issues. Attached to the machining section, the office was located at the far end of the factory. I continually walked through the plant to reach administrative offices and the cafeteria. By the time I initiated the shop-floor research, I therefore knew the names and expressions of most production workers.

METASA's administrative offices were located in a building about twenty-five metres from the plant. I was given a place in the conference room located near the director's office where I often reviewed company records. However, this location did not facilitate observation and could have identified me too closely with management if it had been my only place of work. I therefore spent considerable time in union offices and the cafeteria (located just in front of the pipe section) in between interviews and visits to the plant.

My efforts to reconstruct the history of the firm fit naturally into the broader research setting as the revolution had given a heightened sense of significance to daily events. Workers invited me to participate in numerous social, cultural, political, and productive activities organised by their union outside working hours. These ranged from political rallies to videos, theatre, parties, and voluntary work days both within the factory and at a nearby agricultural cooperative. Likewise, shop-floor employees would often ask me to come by their work area to see a spare part or dye fabricated in-house, a new product or other innovation.

My presence eventually became a routine as workers saw me every day on the shop-floor, at breakfast and lunch breaks, waiting in line for rationed goods, and at union activities. Nevertheless, I was aware that the observer is also the observed and therefore sought out every opportunity to speak casually with employees throughout the enterprise's

organisational hierarchy and workers associated with distinct labour groups or political positions from my first days in the factories. Although four months were assigned to each case study, my association with the metalworking industry extended over a longer period. I first visited IMEP and METASA in 1986 and maintained contact until the close of 1989.

Daily access to the corporation and the factories allowed for an understanding of the interrelationship between these adjustment processes and the diverse roles of the state in the economy, which could not have been obtained through scheduled interviews and plant visits alone. Yet this degree of access did suggest a close relationship to the government, which could potentially affect the behaviour and responses of interviewees and thereby introduce a bias into the study. Part Four discusses my efforts to convey neutrality towards the questions under study, thereby addressing this concern.

PART TWO: CHOICE OF METHOD

Part Two explains my decision to build the case studies around in-depth interviews rather than closed questionnaires, arguing that the former were more suited to the nature, purpose, and setting of this research. It describes the three main types of interviews employed in the case studies, highlights their limitations, and points to the different types of triangulation utilised to overcome them.

1. In-depth Interviews

The case studies documented specific instances of adjustment, identified patterns and then selected analytical categories capable of explaining them. This contrasts with experimental research that begins with a set of predetermined categories, isolates a narrow range of variables and poses specific hypotheses regarding their interaction prior to fieldwork. In other words, the case studies followed a process of inductive rather than deductive logic. In-depth interviews are particularly suited to the former, while closed questionnaires are useful in the latter.¹

Why did this study demand an inductive approach rather than an experimental one? First, this research was contextual. Experimental research aims to establish a precise set of cause-effect relations between a limited number of variables isolated from the larger context. In contrast,

the interaction between patterns of adjustment and the external environment was itself the subject of this study.

Second, this research was exploratory. Chapter Eight argued that an analytical approach that focuses on micro-level adaptation calls for analytical categories closely matched to the research context and capable of capturing its complexity. In principle, specific categories and types of adaptation can be derived from theoretical work and comparative studies relevant to the particular type of political economy, sector and enterprise under study. In practice, the interaction between patterns of productive adaptation, changes in union-management relations, and the underlying processes that might explain them had not constituted a main subject of inquiry in peripheral socialist economies. The selection, modification and definition of analytical categories with explanatory power in this context was itself a significant finding.

Third, the case studies required a holistic approach and flexible methodology. They aimed to capture the interaction between numerous variables undergoing change in highly dynamic processes that produced patterns of productive adaptation and changes in industrial relations. In-depth interviews provided this flexibility and facilitated a process of discovery as each interview built upon previous findings to generate and pursue a new set of questions. Because a closed questionnaire requires the prior definition of categories, variables and questions, it is more suited to the relatively controlled environment of experimental research.

Fourth, the interviews left considerable room for interviewees to volunteer information and describe their own experiences. They were appropriate to a setting wherein workers had reshaped factory life and were anxious to tell their story. The introduction of a closed questionnaire would change the relationship between researcher and interviewee, assigning a more passive role to the latter. Their use would impose an unfamiliar structure on this interchange as such methods were not commonly used to obtain information in Nicaragua prior to 1990, and if anything recalled the exams of primary school. They would thereby undermine other aspects of the case study methodology.

Upon completing the case studies, I did consider using a formal questionnaire for two purposes: 1) to document the development of skills and shop-floor problem-solving and decision-making capabilities; and 2) to obtain quantitative information on select phenomena

described in interviews on adjustments in labour policy and changes in union-management relations. At this point, the case study findings did permit the selection of relevant variables and analytical categories. I planned to meet with workers to report preliminary findings, explain my interest in using a questionnaire to obtain further information, and see if they were open to participating in this subsequent stage.

I retreated from this plan for the following reasons. In 1988, the government introduced economic measures, forcing enterprises to reduce their labour force. Unions in both factories agreed to waive the right to veto dismissal decisions, effectively suspending employment protection. Obligatory military service was also enforced. In previous years, enterprises had postponed the mobilisation of workers vital to production. Under these circumstances, a written response to seemingly straightforward questions on workers' skills and their role in production could prove threatening. Furthermore, the 1988 economic measures pressured enterprises to reduce costs in local currency, threatening social welfare policies crucial to the income-earning strategies of workers' families. Questionnaires aimed at obtaining quantitative information on enterprise labour policies would be intrusive at this delicate moment. Under these conditions, a basic respect for interviewees ruled out the use of such questionnaires.

2. Interview Type

The case studies included structured, exploratory and informal interviews. Structured and exploratory interviews aimed to reconstruct the history of the firm with reference to company and union records. While both utilised an interview guide or checklist to ensure that the main analytical concerns were addressed, they differed in the degree to which questions were formulated prior to the interviews. This depended upon the extent of my own knowledge about the subject matter, and the type of cross-referencing to be applied during the interviews and subsequent interpretation of results. A more structured set of questions facilitated triangulation between interview findings and with written data sources. Exploratory interviews were employed to gain a preliminary understanding of a particular set of issues or events. Each question built upon the previous responses of interviewees and followed their train of thought, though still within the parameters defined by the interview guide. Subsequent structured interviews were then designed to enrich and cross-check versions of the same events offered in exploratory ones.

Informal interviews generally consisted of two or three questions discussed while observing production, participating in union activities, or speaking casually with workers. Their informality refers to the way they were conducted rather than their content. Though these questions were posed during informal discussions, they were often formulated in quite precise terms to expand, elucidate or cross-check specific information obtained during structured and exploratory interviews. For these discussions, I sought out those who would be likely to question my findings to date. Other informal interviews emerged naturally from my efforts to learn from employees under a variety of circumstances and were often initiated by them. In these cases, observation, participation and informal interviewing formed part of the same method. At times, key narrators were discovered during informal interviews and became essential sources of information and insights throughout the case studies.

3. Triangulation to Overcome Main Limitation

There is a trade-off between interviews tailored to draw out the experience and knowledge of each employee and those that follow a standardised format to facilitate a point-by-point comparison of results. The case studies emphasised the former at the expense of the latter. The interviews generally did not follow the same exact wording and sequencing of questions. Yet the case studies did employ several other forms of triangulation. For example, I compared the following:

- interview findings with observational data and quantitative and qualitative records;
- versions offered by different interviewees of the same set of events; and
- discourses of the same interviewees on the same subject when approached from various angles and under different circumstances.

In this way, the case studies identified consistencies in patterns of information obtained from multiple sources and methods, highlighted contradictions, and attempted to explain them. This methodology attempted to combine the flexibility required to capture dynamic processes, with the rigour obtained through cross-referencing.

The research findings were inevitably subject to several substantive judgements required in the course of fieldwork. To minimise possible biases, I continually cross-checked my interpretation of events and kept detailed notes on the data sources and methods that led to

specific conclusions. These notes, together with a complete transcript of structured and exploratory interviews, proved essential in the write-up stage. The data sources and methods utilised to reach specific findings are mentioned throughout the text and in chapter end-notes, enabling the reader to distinguish their different degrees of validity.

PART THREE: AVAILABILITY OF WRITTEN DATA SOURCES

This section considers the availability of written data sources, their main limitations and consequences for the case study methods and findings. To begin each case study, I set out to organise company records on an annual and quarterly basis in order to reconstruct its production and labour history. Monthly figures would also be reviewed to raise questions for the interviews. A list of information to be requested from management was drawn up prior to fieldwork.

However, a review of company records in the main metalworking firms revealed the lack of a consistent set of data compiled over the 1980-87 period in any one enterprise. A different approach to data collection would be required to bridge the gap between my initial set of information requirements and available figures. I therefore requested permission from management to review company files in each department. In this way, I ensured that information constraints were characteristic of the context under study rather than the result of poor access to data. Case study methods were adjusted to the availability of written data sources. Despite their limitations, company records could still be utilised to document firm-level adjustment processes when combined with the findings of in-depth interviews and direct observation. In other words, information constraints reinforced the need for triangulation between multiple methods and data sources.

1. Productive Adaptation

What type of insights and information were gained from a review of company files? Each firm kept output and sales figures (measured in metric tons) over the 1980-87 period, which coincided with those compiled by the Ministry of Industry and the State Metalworking Division. These figures did indicate output variations and trends in standard product lines. However, they could not be utilised to measure output performance in IMEP's equipment section due to its heterogeneous product mix. Value figures in constant prices were also

inadequate for reasons discussed in Chapter Three. The work order books, detailing contracts under way in each period, provided the best indicator of output performance and were utilised to interpret aggregate figures in subsequent interviews.

In addition, each firm compiled a wide array of quantitative records in areas such as raw material usage and machinery utilisation whose rough form stood in sharp contrast to the electronic information systems utilised by most enterprises today. However, this data was only available over limited time periods and therefore could not indicate changes over time. These records were reviewed to raise questions for the interviews and cross-check information obtained from interviewees. Quantitative records and qualitative reports were also cross-referenced for the same time periods.

The income statement, balance sheet, and cost records for 1980-87 were also available in each enterprise. A review of these records indicated the inability of domestic prices to guide adjustment in the productive sphere given the soft budget constraint, hyperinflation rates and the distortion in relative prices. In this case, information constraints became a subject of study, contributing to an understanding of the relationship between the nature of adjustment and financial conditions in local currency.

Despite their limitations, written documents obtained from IMEP, METASA, and the State metalworking Division provided the first indication of patterns of productive adaptation, as illustrated by the following examples.

- Foreign machinery supplier contracts and investment figures (by type of finance) suggested that the investment decisions of these enterprises represented a form of adaptation given foreign exchange considerations.
- Quarterly and annual evaluation reports listed production problems and steps taken to address them, thereby revealing forms of adaptation to resource constraints.
- The work-order books offered a detailed record of changes in output composition over time, which together with other company records suggested patterns of adaptation to resource constraints and demand-oriented adaptation.

- Correspondence with customers contained contract price adjustments which took into account the impact of inflation on each cost item. The ability of enterprises to adjust in this manner partially explained the absence of price-enforced adaptation in the productive sphere.

The decision to review company files thus proved vital to this study of productive adaptation, even when written documents alone could not provide conclusive evidence. Together with the interviews and direct observation, company records pointed to clear patterns of productive adaptation. Physical indicators compiled consistently over the 1980-87 period could have given a more precise sense of the implications of distinct forms of adjustment. Yet even if this data had been available, precise cause-effect relations between specific adjustment processes and performance indicators would still have been difficult to establish as numerous variables affecting performance fluctuated constantly.

2. Issues in Employment and the Division of Labour

An initial review of written records alone did not indicate the main labour issues arising in the course of productive adaptation. Rather these issues emerged in interviews with enterprise employees. I then returned to labour records to see if they would substantiate, negate or provide further information on the main points raised by interviewees.

Both management and shop-floor interviewees stressed the negative impact of high labour turnover rates on their efforts to adjust in the productive sphere. Acknowledging the limitations of their labour turnover figures, IMEP provided access to its payrolls, while METASA supplied seniority-based incentive records together with a list of workers by occupation in each production section. While these documents did not allow for a strict comparison between these two enterprises, they did offer important information and insights into the nature of labour instability. For example, these payment records confirmed the interview findings that type of occupation significantly influenced labour turnover rates, while also shedding light on a second issue. They showed constant fluctuations in the number and composition of workers in each production section, thereby further explaining the need for ongoing decision-making on labour allocation at shop-floor level.

Other information constraints could not be overcome. For example, interviewees underlined the constant pressure to train workers in-house and persuade them to remain within the firm. I therefore sought information on the names and numbers of workers attending in-house training courses, completion rates and degree of skill acquisition from the human resources department, course instructors and area supervisors, hoping to compare this information with a list of workers who later left the firm. Neither enterprise compiled such detailed records of their in-house training programmes. Payment records did indicate changes in the wage scales and corresponding labour grades of individual workers over time. Yet promotions did not provide a reliable indicator of skill acquisition as they were often utilised to compensate for the severe decline in the purchasing power of government-authorised wages.

Diverse interviews also pointed to the persistent demand for shop-floor problem-solving and decision-making capabilities. To pursue this issue, I attempted to reconstruct a history of changes in work organisation over the 1984-1987 period, utilising labour and production records to enrich and cross-check the accounts provided by employees. IMEP had introduced work order cards detailing the names, worker hours, and tasks performed on each order. If kept consistently, these records could have indicated the frequency with which workers moved between tasks, jobs and work orders, as well as other changes in work organisation. I also expected this data to raise a series of questions concerning associated changes in the skill profile of production workers and the extent and type of demand for problem-solving and decision-making capabilities. The production department supplied numerous cards, which I organised by production order, comparing them with the work order books. Yet several cards were missing, making it impossible to reconstruct work organisation in any one period or to map out changes over time.

These information constraints did affect the way I constructed my argument. Interview findings suggested that the development of skills and problem-solving and decision-making capabilities formed essential aspects of each firm's efforts to cope with crisis. An understanding of adjustment in these areas was highly relevant to the main concern motivating this thesis. How can short-term adjustment under crisis conditions enhance rather than undermine a country's long-term development perspectives? Yet there was not sufficient information to document the degree and nature of adjustment in these areas.

If this information had been available, such forms of adjustment would have been among the main subjects of study. I then could have examined the precise types of cooperation, negotiation and participation required to facilitate them. While this research would have enriched the thesis, it would not have altered the overall direction of its argument. Union strategy in response to these internal pressures in the productive sphere and to external political and economic conditions still provided the best explanation for the development of cooperative participatory relations.

3. Adjustments in Labour Policy and Changes in Union-Management Relations

Written documents such as government wage figures, quarterly and annual union reports (1986-87) and METASA's collective bargaining agreements (1984-87) provided useful background information to interviews concerning adjustments in labour policy and contributed to an understanding of changes in union-management relations. Under its national wage policy, the government compiled monthly figures on each wage scale as a percentage of the expanded and minimum basic goods basket at government-controlled prices. These figures did not reflect actual payment received by workers as they excluded overtime and incentive pay, payment-by-contract, payment-in-kind and social benefits. Nor did they accurately record the buying power of basic wages as several items included in the basic goods basket were often only available at higher speculative prices. Nevertheless, these detailed figures became the starting point for interviews concerning the responses of unions and managers to abrupt changes in real wages, which in turn contributed to an understanding of informal processes of plant bargaining and their impact on union-management relations.

In addition, IMEP supplied monthly figures on its total wage fund by type of payment in 1984-87, which were cross checked with interviewee's accounts of adjustments in labour policy. These figures were subject to hyperinflation, excluded social benefits and payment-in-kind and were reviewed by the Labour Ministry. Still they did indicate the growing share of overtime, incentive pay and payment-by-contract in the total wage fund, while also recording variations in the share of each from month to month. They were useful in a study whose objective was to analyse adjustment processes and changes in union-management relations, although they could not be utilised to document the precise amount of pay received by workers.

Quarterly and annual union reports listed social benefits and union activities, providing a reference point for questions pertaining to the 1986-87 period. Likewise, social welfare policies introduced in response to immediate circumstances were incorporated into METASA's collective bargaining agreements, providing additional documentation. These agreements did contain several clauses on bargaining procedures and participatory fora, which were useful when combined with the interviews and direct observation. If viewed alone, these documents would have been misleading. For example, clauses on participatory fora changed little over 1984-87, masking the power struggle between two labour groups that eventually led to the emergence of participatory relations.

By combining multiple methods, the case studies could document the dynamic processes that explained changes in union-management relations, recording the expressions of support or discontent that influenced their evolution. Yet they could not measure the percentage of workers supporting or opposing these changes in distinct moments. While workers delivered their verdict in annual union elections, voting records did not report the percentage received by each candidate. Sandinista leaders pointed to participation rates in the brigades as evidence of support for their position. Yet in METASA, there were clear economic reasons for joining the brigades. This study reported participation rates that influenced or reflected changes in union-management relations, as indicated by direct observation and in-depth interviews. Likewise, interviewees highlighted high labour turnover rates among the reasons for adjustments in labour policies. Labour turnover figures lent precision to employees' descriptions of informal forms of protest and bargaining particularly in IMEP. However, these figures alone did not accurately measure the political position held by workers as several other variables affected them.

In sum, this setting demanded that the researcher recognise the limitations of written data sources, while remaining open to what could be learned from them when combined with other methods. The case study methodology represents a series of adjustments to these information constraints, as well as a response to opportunities for continual access to the factories and their employees.

PART FOUR: THE INTERVIEW PROCESS

This section describes the interview process, highlighting four aspects that contributed to the reliability of information offered by interviewees. First, interview schedules were tailored to each employee and aimed to draw out their particular type of knowledge and experience. Second, questions were specific, informed, and open-ended. They were based on a detailed knowledge of the production and labour events under study gained through observation, previous interviews and a review of written data sources.

Third, sensitivity to social relations enabled me to seek out interviewees who would provide multiple perspectives on the same events, and to formulate questions that would convey neutrality towards the questions under study and respect for the distinct positions held by employees. Such sensitivity was obtained through observation of interactions between employees under a variety of circumstances over several days. Fourth, triangulation between multiple methods and information sources contributed to the accuracy of interview findings. These four main features of the interview process depended upon continual access to the factories, employees and company records. The following sections will identify interviewees and type and place of interviews, while discussing my main decisions on research methods and their consequences for the data collected. I did not count the exact number of workers interviewed in each phase, but the total exceeded 100 in IMEP and 80 in METASA.

1. Pressures and Constraints on Production

The first set of structured interviews were conducted with the enterprise director and heads of the finance, sales, human resources, production and technical departments in their respective offices with reference to company records. The interviews aimed to identify external pressures and constraints, management's response in each area of the firm's operations, and the resultant situation on the shop-floor. These analytical concerns defined the basic structure of the interviews and provided the organising principle for questions on each time period. Specific questions were then formulated based on a prior review of department records. With one exception, department directors expressed interest in my research, facilitated records and

often reviewed them with me. Several showed surprise at how clearly they remembered past events upon reviewing primary sources such as the work order and sales books.

Although I interviewed all current department directors, some had only occupied their posts since 1985 due to changes in personnel and the creation of new departments. Nevertheless, interviewees did include at least one person knowledgeable about each area of the firm's operations during the entire period under study. These sources were first sought within the enterprise itself. When necessary, I did go to considerable lengths to locate former department directors who had left the firm. For example, I searched one of Managua's major markets for a small pharmacy whose owner had been IMEP's financial director until early 1987. Former enterprise directors were also interviewed in each enterprise.

During interviews, I cross-checked information offered by interviewees with written data sources, which often generated a new line of questioning. For example, IMEP's enterprise director spoke of plans to specialise in twelve standard products, while the work order books indicated that the equipment line introduced sixteen additional products from 1985 to 1987, only two of which were in its standard product range. Inquiring into this contradiction, I discovered a series of pressures and constraints that continued to push the firm towards product diversification. Finally, these interviews sought different types of information from those holding distinct posts, thereby limiting the degree of cross-referencing among them. When the same questions were posed to more than one interviewee, I did cross-reference their responses, finding differences in emphasis rather than contradictory accounts. Continual access to administrative and technical staff throughout each case study enabled me to clarify or further develop specific points.

2. Productive Adaptation and Issues in Employment and Work Organisation

In the second phase, I interviewed the production and technical directors, area supervisors and production line managers, maintenance directors and production workers in each stage of the production processes under study. These interviews aimed to document specific instances of productive adaptation, identify external circumstances generating them, and pinpoint intra-firm variables affecting the ability to adapt in each case. These analytical concerns defined the basic structure of the interviews, though questions were phrased to reflect the stated objective of reconstructing a production and technical history of the plant. Specific questions

were formulated for each work area and time period based on information obtained from the previous set of interviews, a review of production records, and initial exploratory discussions with workers. A checklist was utilised to ensure that the main production variables were considered. These interviews often involved a two-way exchange as employees expressed interest in the information I had obtained from company records and management had agreed to share this data.

This phase benefited from several hours of direct observation on the shop-floor over several weeks. I had free access to the plant and could speak with workers at will. Often I would stand around waiting for a good moment to interview, taking the opportunity to observe production events, communication patterns and social interactions. Observations and discussions with workers became intertwined in an interview process that began with questions regarding immediately visible aspects of each work area such as the machinery, materials transfer, and work-in-progress, and built towards questions regarding changes over time and associated issues in employment and work organisation. The first part on changes in the productive sphere followed a structured format to permit cross-referencing with written data sources.

Subsequent questions aimed to discern how these processes of productive adaptation affected the job of each worker. During this part of the interview, I did work with a checklist of potentially relevant variables, such as changes in job content, task allocation, work methods, skill profiles, and problem-solving capabilities. The questions themselves were formulated during the interview, following upon workers' descriptions of adjustments in the productive sphere and their impact upon their own jobs. In this way, issues in employment and the division of labour emerged from a production and technical history of the plant. To this degree, these interviews were also exploratory.

The sequencing of questions reflected my analytical concerns. Employment and work organisation issues were relevant to this phase of the research to the degree that they affected the enterprise's ability to adapt. Yet during the interviews, I noticed that this sequencing contributed to the ease with which workers discussed their own job history, skills and ability to respond to a variety of situations such as product changes and machinery breakdowns. If skill-related questions had formed the starting point or sole focus of the interviews, they

could have been sensitive due to military service and recent economic measures, as discussed in Part Two.

Preliminary observational findings influenced the way I conducted these interviews. Prior to initiating the case studies, I accompanied engineers on visits to several metalworking firms. While observing the production process, I noticed the way information was communicated on the shop-floor. Workers tended to form small groups around the machine or technical process in question, focusing all attention on it as they discussed a particular problem. I therefore decided to imitate this dynamic during shop-floor interviews. This decision to interview workers on their own terrain, building upon the ways they generally convey information, facilitated interviews that aimed to draw out workers' experience and knowledge.

Because each work position formed a unit of analysis, workers generally formed into groups of two to four. Yet even in such small groups, there is always the possibility that more vocal interviewees will dominate the discussion, thereby biasing the results. Senior workers did tend to provide more information, while others would confirm or question various points through brief comments or non-verbal gestures. To some degree, this dynamic resulted from the stated objective of reconstructing the history of the plant. To compensate, I spoke with other workers informally during breakfast and lunch breaks, after work, and at union activities to follow up points raised in shop-floor interviews. I also sought out reticent workers in more anonymous settings such as the branch-level assemblies (which brought together over 500 workers) to see if they would offer a different version of events.

When employees' descriptions of the same events contradicted one another, I did not reject any one account, but rather explored these contradictions in subsequent questions or interviews. For example, in METASA's structural mill area, a line of inquiry that began with the question, "What happens when the machinery breaks down?", revealed an ongoing conflict. Operators wished to repair their own machine as down time reduced incentive pay, while the maintenance department was attempting to centralise these operations. This finding itself was significant as pressures to resolve this issue influenced the evolution of industrial relations.

I also interviewed shop-floor employees together with engineers, drawing upon their knowledge and rapport with workers. When interviewing workers alone, I benefited from my

position as outsider as workers generally did not attempt to second-guess the technical reason behind my question. Their description of daily adjustments was not mediated by their assumption of what the engineer would think to be correct. Interviews conducted together with engineers often provided a more precise technical description of productive adaptation. The results of interviews conducted alone and with engineers were complimentary rather than contradictory.

Shop-floor interviews could not be taped due to noise levels. Nor could I take extensive notes while remaining attentive to visual aspects of each work area and interactions among workers. I therefore interviewed for short periods, memorising the discussions with the help of key words, phrases and quotes written quickly in shorthand. My location in the factory enabled me to alternate between interviewing and writing up results throughout the day.

This section has explained my main decisions on how and where to conduct interviews. A brief anecdote illustrates the importance of these issues. An interview with IMEP's maintenance department director was progressing particularly well. As we walked from machine to machine, I asked him to give a brief history of each. He provided a detailed account of machinery utilisation and maintenance from which patterns of adjustment to resource constraints and demand-oriented adaptation emerged. Afraid I might forget aspects of the interview, I suggested that we move to a nearby office to tape the rest of our discussion. I plugged in the tape recorder and began to record, only to hear a quick explosion. "That's 220," he said, pointing to the outlet. "Why didn't you tell me?" I exclaimed. "I was too nervous about what you were going to ask me" he responded, as if unaware of the dozens of questions to which he had already responded so competently.

3. Adjustments in Labour Policy and Union-Management Relations

3.a. Interviews

Four sets of interviews were cross-referenced to obtain an understanding of adjustments in labour policy and changes in union-management relations. The first set involved union Secretary Generals, Enterprise Directors and human resources department directors. I began these interviews with a series of structured questions on adjustments in labour policy, and cross-referenced their responses with written records. This led to additional questions concerning the circumstances generating these adjustments and the processes by which they

occurred. These interviews thus produced detailed descriptions of plant bargaining and offered insights into associated changes in union-management relations.

Second, I interviewed twelve key narrators in each case study, who were selected for their role in recent labour history and their ability to describe events in detail. These interviews provided an initial understanding of patterns of union-management relations and how and why they evolved over time. They were the most open-ended in this study, beginning only with a checklist of events and issues compiled from background interviews, newspaper clippings and labour federation publications (1980-87). Key narrators defined the line of inquiry as each question built upon the previous responses, tracing the way they associated different events, issues and aspects of union-management relations.

Third, I conducted structured interviews with former and current Enterprise Directors, union Secretary Generals, union executive committee members, and representatives of factory organisations such as the Sandinista party committee, economic brigades, and Sandinista youth movement. These interviews focused upon the formal stances adopted by each group during the events that gave rise to changes in union-management relations. This more structured set of questions permitted cross-referencing between versions of the same events offered by these interviewees and key narrators. In METASA, interviewees associated with groups in conflict did provide different descriptions of the same events. Because of the small unit of analysis and my own familiarity with it, I could see how these different accounts formed part of the same story.

Fourth, I engaged in informal interviews with over one hundred workers in IMEP and over eighty in METASA. These interviews included questions formulated prior to discussions to facilitate triangulation, or those emerging naturally from my observations of immediate events and daily interactions with employees. They differed from the above three sets in where and how they were carried out. Structured and exploratory interviews were conducted in management and union offices, the cafeteria, factory classroom, conference room, or outside the enterprise, depending on the preference of interviewees. Transcribed in full, they ranged from eight to fifty pages long. In contrast, informal interviews consisted of two or three questions often posed during more ample discussions with workers. They took place throughout the case studies at breakfast and lunch breaks, assemblies, and union activities, as

well as on the shop-floor. Some workers also visited me at my home and spoke extensively of their experiences in the factory.

Although I did not utilise statistical samples, I am confident that I spoke with workers across occupations, production sections, skill levels, and political positions. This occurred because of the daily opportunity to speak with a large number of workers and my own efforts to seek out those who would provide a distinct perspective on emerging findings. I interviewed over 53% of workers in IMEP and over 18% in METASA. Differences in the extent of informal interviewing and participation in IMEP and METASA are discussed further below. (These are rough estimates based on the average annual number of workers as the actual number varied significantly from day to day.) In both factories, this selection excluded those working at on-site installations, those on authorised leave, and those with less than six months in the factory. I did attempt to interview workers who had left the factory to see if they would offer a distinct perspective on earlier events, but found it impossible to locate them.

Reconstructing past events based on interviews is inherently problematic as it is difficult to distinguish between what actually occurred and what interviewees wish to remember. Triangulation between the results of various interviews does provide balance, but consistencies in findings may still reveal a shared memory constructed over the years. Such findings are still significant. For example, similar recollections of the 1973 strike revealed a shared identity among METASA workers across the boundaries that currently divided labour groups. Nevertheless, the most effective interviews were grounded in written documents from earlier periods and were cross-checked with them.

This style of interviewing was possible even when labour and union records were not available. For example, while reviewing a list of IMEP's machinery park as of 1979, former enterprise director Herzán García provided a detailed description of how he and a small group of workers re-activated the plant following the war, thereby shedding light on the informal ties between management and the core group at the center of industrial relations. A review of written documents in IMEP itself shifted García's attention from METASA (where he was currently enterprise director) to this earlier period in IMEP, and minimised the impact of his current experiences on his description of these past events.

3.b. Observing the Social Environment

Observation of the social environment, informal interviews and casual conversations with workers formed an essential prerequisite to the more formal interviews on adjustments in labour policy and changes in union-management relations conducted in the third phase. From my first days in each factory, I began to study social relations. By observing daily events and attending union activities, I was able to identify different social groups and the position of individual workers in relation to them. Who attended union activities and what role did they adopt? Who met with the enterprise director? Who spoke during assemblies and what did they say? Who tended to be more reticent and less likely to speak both on the shop-floor and during assemblies? Answers to these questions provided just some of the indications of informal relations in the factory. An understanding of this social fabric enabled me to seek out workers who would provide multiple perspectives on the same events and to adopt their points of view during interviews.

The perspective of each was not seen as a bias that somehow blocked access to “objective reality”. Rather an understanding of industrial relations was necessarily subjective and could best be gained by viewing the same set of events from multiple perspectives. This style of interviewing provided an understanding of industrial relations that could not be obtained merely by interviewing anonymous workers without any knowledge of their role in the factory. By understanding the current position of individuals, I could also discern the more obvious ways in which it shaped their memory of past events.

Observing and interviewing became two inseparable strands of the same method. Sensitivity to social relations influenced where and how I approached individual workers and the ways I attempted to communicate neutrality and respect. For example, initial observations in IMEP indicated that area supervisors were part of the core group of union activists and also had considerable influence over job allocation, incentive pay and promotion. Shop-floor interviews therefore did not provide the best occasion to obtain the perspectives of workers outside the core group. In METASA, interviews with key narrators indicated that conflicts were closely tied to shop-floor issues. Likewise, workers often referred to conflicts when describing their job and how it had changed over time. I therefore returned to the plant to follow up these points in informal interviews and to observe shop-floor relations more closely. The open direct nature of conflict in METASA facilitated these interviews.

In IMEP, participation, direct observation and informal interviewing during social, cultural and political activities organised outside regular working hours provided an understanding of informal relations in the enterprise and their influence upon patterns of union-management relations. These included social events, videos, theatre, voluntary work-days at both the factory and a nearby agricultural cooperative and attendance at political rallies and outings such as an afternoon at the volcanic lagoon. The enterprise provided transport to and from these activities. As we stood in the back of a truck, which dropped us off at our homes, I was able to get a better sense of the relationship between workers and their location in the broader research setting.

METASA's union organised fewer activities and the distance from my home limited my participation. With hindsight, I may have been able to gain a better understanding of social relations by living in the small town of Tipitapa where METASA was the main employer and often several members of the same extended family were employed in the factory. These ties and other relations in the community could be expected to affect labour relations. Though sufficient access was obtained to support the main arguments, community research could have enriched this account. Yet this would also have its drawbacks. Workers could perceive me to have loyalties to certain individuals or groups engaged in conflict, and thereby edit their comments. Some distance thus also had its advantages and was consciously maintained during the case studies.

3.c. Main Challenges

Research into industrial relations posed different challenges in IMEP and METASA. After a few days in IMEP, I knew I would need considerable access to the core group to gain an understanding of union-management relations. Members of the core group actively sought me out to participate in political, cultural and social activities, as well as voluntary work-days. Yet participation itself did not guarantee access to the inner workings of this group or to informal bargaining between these workers and management. This group maintained a strong image of itself and the factory, which it routinely presented to Sandinista leaders, government officials and foreign delegations alike. In initial interviews, these workers tended to tell the story of a factory characterised by cooperative relations and a union loyal to Sandinista leadership. While this prevailing image was clearly part of the story, it tended to mask other aspects of labour relations.

To move beyond this impasse, I therefore approached the same subject from various angles, cross-referencing the resultant narratives. Discourses of the same interviewees did differ according to the way questions were posed. For example, when characterising union-management relations, IMEP workers tended to emphasise their cooperative nature. When the same workers were asked specific questions such as “What happened when real wages drop suddenly in June 1986?” they offered precise descriptions of conflicts and attempts to resolve them. Likewise, they described autonomous processes of plant bargaining whose outcomes were often at odds with government labour policy.

Did my relationship to the core group prevent access to other workers or affect what they told me, thereby biasing the results? Because of the time spent in the factory, I was able to interview the vast majority of workers with more than six months seniority. Questions about their experiences and knowledge conveyed respect for their distinct points of view. Listening became the best way of expressing neutrality.

In METASA, I aimed to produce a representative account of a highly conflictive situation by securing access to opposing labour groups. My visits to the factory over a three-year period contributed to this objective. I first interviewed opposition labour activist Pablo Hernandez when he was union Secretary General (during the pilot study) and attended assemblies under his leadership. The case study itself was conducted during the term of Sandinista labour leader Gonzalo Mendoza.

Sandinista and opposition activists alike tended to confide in me once I demonstrated a familiarity with the labour history from which their movement emerged. Background research prior to the case studies proved vital in this regard. Although I knew and had interviewed both Sandinista and opposition labour leaders at national level, I did not depend upon references from them to gain access to factory activists as such backing could bias interview results. If interviewees associated me with a well-known individual, their responses could be influenced by the relationship they either had or would like to form with that person.

In METASA, access to opposing labour groups was essential but not sufficient to reconstruct changes over time. Any attempt to document those dynamic processes would depend upon the careful selection of key narrators, as well as several other interviewees to balance and cross-check their description of events. The key narrators themselves represented the

changing and often contradictory nature of labour relations rather than fixed positions. For example, having advocated conflictive relations, Gonzalo Mendoza led the move to cooperative participatory relations. César Blandón had been a member of the party committee that opposed union demands in the early 1980s, but nevertheless remained a strong advocate of workers' economic interests. Francisco López was a key leader of the group that opposed management, while also serving as a worker-instructor in the training program that contributed to the move towards participatory relations. Their own reflections over the years enabled them to provide a rich understanding of labour relations. Those narratives were cross-checked with structured and informal interviews to ensure that they did not dominate my interpretation of events. In sum, the effectiveness of interviews depended upon my response to these main challenges, as well as on the quality of observational findings.

CONCLUSION

This appendix has demonstrated that in-depth interviews of an inductive nature were most suited to exploratory research on dynamic processes of adjustment to a changing external environment. Effective interview questions were specific, informed, open-ended, and tailored to each employee. Triangulation between interview findings, quantitative and qualitative records, and observational data contributed to the reliability of information offered by interviewees. The case study methodology proved capable of overcoming information constraints and responding to opportunities for continual access to the factories, employees, and company records.

ⁱ See Patton (1987), p. 15, on the distinction between an inductive analysis and the hypothetical-deductive approach of experimental research. Patton (1987) also provided helpful guidelines for the discussion of methodological issues encountered in the course of fieldwork.