



AMELIORATING THE PROBLEM OF SHIFTWORK

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MA in Human Resource Management

To my wife Bernie for all her support during the course, a special thank you.

I, Anthony Smyth hereby certify that this material which I now submit for assessment of the programme of study leading to the award of MA in Human Resource Management is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Abstract

“Employees who design, construct, and manage shift work systems are often not shiftworkers themselves, and may not be fully aware of the potential negative effects of shift-work on social and family life. They may understand the point of view of shiftworkers, but will not feel the strength of the experienced shiftworker’s instinctive reactions” (Hornberger, S. et al, 1991).

Hornberger would appear to have captured the insight and thought process of the experienced shiftworkers. How can they influence change and ameliorate the problems of shiftwork that is the question for the future. Quality of life is so important and yet there are shift cycles that have not changed in the last twenty years. Is it a question that shiftworkers need to look at their quality of life for a change? This raises issues for the attraction of workers/talent in shift positions.

CHAPTER 1

Introduction

The issue to hand is the proposition that shiftwork overlapping with social effective leisure time scars family life for those who form part of the shift work community. The outcome of this can make it more difficult for companies who face increased demand for twenty-four hour customer service to attract and retain the talent required in these shift positions.

The Problem

“Overlapping of socially effective leisure time with the morning, afternoon and night shift on particular days of the week” (Hahn, C. 1987 p. 11).

Hahn’s 1987 illustration of the overlapping of socially effective leisure time and the consequences on family life is investigated. Combined with the research of the European Foundation for the improvement of Living and Working Conditions (2000) this may further enhance the possibility to ameliorate the problem of shiftwork. Changes are ongoing in shift design to make shiftwork hours more flexible and compatible in a competitive global atmosphere. Modern management theory suggests that it is imperative in shift designs that shift workers have an input and use their experience in that process.

In this dissertation I will seek to identify the difficulties of shift-work and create a better working time method. Ameliorate the problems of shift-work and produce a more employee friendly and efficient working time method.

1. What are the problems?
2. How to ameliorate them?

Shiftwork scars leisure visibly

Not all types of shift have the same effect on leisure. Some of the main effects are obvious, for shiftwork that includes evenings or weekends is plainly most likely to interfere with many mass-programmed leisure activities” (Wedderburn, A, 1993 p.9).

Shift-work overlapping of socially effective leisure time scars family life and therefore there are consequences. Shift-work by nature is not natural it is alien to society as a whole. But society would not function without people working shift hours. Possibly, there are people who would not work shifts regardless of the remuneration. But alas there are new interests in society and there are more people working weekends. The quality of customer service is good because they can shop when it is convenient and suits them. The service industry requires more people working in supermarkets and restaurants at weekends. It is indeed basic supply and demand within the terms of economics. The trend is increasing with more people working in pubs, clubs and restaurants and finishing later in the early hours of the morning. This is indeed a different type of working arrangement and more and more workers are engaged in this area. The shift-worker is out of phase within society because of the hours of work he or she must perform within their shift cycle.

“Society runs with rhythms of time. Some times are useful for just about everything. Some times are rigidly fixed for specific activities. Some other times are much less useful in general.” (Wedderburn, A, 1993 p.7).

It is often the case the shiftworker must compensate within structures that are hidden from the rest of society. Shift personnel are aware of the problems of shiftwork. The vast majority of society work an eight-hour day, start at nine finish at five each evening and have weekends off. Therefore they would not have much of an insight or perspective unless their husband, wife or someone in the family actually worked shift. Each evening after five o'clock the person working normal hours has that socially effective leisure time in the evening to partake in social events. The natural tendency thereafter retires to a consistent sleep pattern each night during the week and most importantly during the weekend. There are natural rhythms within society and systems that run contrary to the norm could be related to as shift-work.

Hornberger, S. (1999) “Influence of Law on shift schedule design: USA and Europe”
The XIV International Symposium on Night and Shiftwork. Frankfurt Germany

Different times of the day are not equivalent and specific times are used for particular tasks. Normally for many families meals are at a particular time and a consistent pattern enables the family members relate to one another. Therefore, as a consequence shiftwork is not beneficial to family and social life particularly at meal times ----

“compromise time cannot be found.” (Nachreiner et al. 1975) Rutenfranz et al. 1980 p.12).

The European Foundation has researched shift-work and reported their findings in many studies.

“That disturbances of their social life are more important than physiological problems caused by the dislocation of biological rhythms”. (Wedderburn 1981 b; Costa 1991).

“Employees who design, construct, and manage shift work systems are often not shiftworkers themselves, and may not be fully aware of the potential negative effects of shift-work on social and family life. They may understand the point of view of shiftworkers, but will not feel the strength of the experienced shiftworker’s instinctive reactions” (Hornberger, S. and Schanfelder et al, 1991).

So what is the objective to hand is it simply to ameliorate the problems of shift-work by introducing a shorter working week as recommended. Reference can be drawn from Hornberger, S. et al, (1999) “Influence of Law on shift schedule design: USA and Europe” The International Symposium on night and Shiftwork. Frankfurt in respect of this.

Quality of Life

A shorter working week would ameliorate many of the problems of shiftwork and would create a quality of life for families. It would be fair to say that many shift workers and management acknowledge the necessity for change in order to improve existing working patterns. Thus prevent bad working arrangements particularly with outdated shift rosters. The socio-economic development of the European Union was to create a fairer society and promised prosperity to all European citizens. The Social Charter brought about change for many people. It was a very positive improvement from a social perspective and gave great hope for the future. The economic and social programmes have developed according to the fundamental principles of the foundation of economic cooperation for peace and prosperity for all European citizens. Ireland although geographically on the periphery of Europe is at the heart of European policy and playing her role in a constructive manner.

The economic and social prosperity of Europe was not easy. Jacques Delors and his strategy on unemployment gave leadership at the Copenhagen Summit. Lack of competitiveness, low growth and low productivity were part of the problem. It was realised approaching the problem on a national scale would not alleviate the problem from a European perspective. There were different opinions at the time and it is important to acknowledge those differences. It has relevance taking into consideration the economic view and on the other hand a social perspective of Europe.

In a document drawn up by Mary McCaughey the mood of “Combat Unemployed” Campaign was captured by her with John Major expressing his reservations.

“Any new commission proposal affecting industry on employment should be accompanied by a full analysis of their impact on competitiveness. The commission should carry out a full audit of the costs and effects on jobs of existing E.C. legislation on labour markets and health and safety. Different labour market traditions should be respected in each country and uniformity should not be sought for its own sake. (Major, John. 1993)

Hence a conservative economic projection and a social policy that may have to wait longer than expected with disappointment on the social side with derogations and wondering about the future of the European Union into the future.

CHAPTER 2

Literature Review

Shiftworkers Reported in Several Studies

“So going to work is not just a matter of giving up a quantity of time, as so many hours of work and free time; but the location of free time, both by time of day and by day of the week, is also important”. (Wedderburn, A. 1993 p. 8).

Therefore by definition shift-workers are out of phase within society. The following quote makes the argument clear and decisive for shift-workers to have a keen interest and a progressive attitude to change.

“Shift-work is not naturally beneficial to family and social life, but with imagination, hard work and some compromise, it can be highly flexible and much more acceptable”. (Wedderburn, A. 1993 p.35).

Greater understanding is necessary with a view to greater control over biological rhythms. Jet Lag is one of the identifiable features that can emerge following a lengthy journey and the parallel feeling may illustrate the maladjustment in the same light to shiftwork. Therefore attention has been drawn to the fact that awkward hours of work add to chronic tiredness within a demanding shift cycle.

“Perhaps because we all know about social life already, as human beings, this area of research captures less attention than when advances in technology (e.g. the use of bright light) and drugs (e.g. melatonin) promise greater control over biological rhythms, and so offer potential solutions to the problems of jet-lag and maladjustment to shiftwork.” (Wedderburn 1993 p.8).

Smith and Bennett in 1983 researched social activity, home and family life. The report emphasised the chronic tiredness of shift-workers and non-integration with day work people. The consequences on family life are all too real with a shift-worker in the family with a result “consequential indirect shift system” Parents are responsible for their children and their behaviour and domestic situations will arise. Shift work makes that particular type of situation more difficult. Quality of working life and the family relating to each other is different due to the shift cycle. The shared activity of

an evening meal may be a hit and miss episode and that same formula may also be a fact helping children with their homework, as the parents are the main educators. In essence the shared activity of the family is seriously affected throughout the shiftworkers family life.

“One effect of having a shift working father is to put the whole family on to what might be described as a “consequential indirect shift system” (Wedderburn, A. 1993 p.14).

Wedderburn should have indeed included mother and father or parent to be politically correct. It would also appear parental control is harder due to the absence of a parent as was observed by Koller et al, in his findings having researched a group in an oil refinery and he concluded.

“a decrease in parental authority over a five year period in an oil refinery, that was not found in a control group of day workers”. (Koller, M. et al, 1990 p.16).

As more women are returning to the workforce it is not without its problems on family life. A mother has to find suitable accommodation for her child or children as the case may be while she is working. That difficulty is greater in a situation were the mother decides to work on a shift roster. A typical example would be nursing in a two twelve-hour shift cycle or a three eight-hour shift cycle. In effect the hours are in blocks and cannot synchronise with the life and the rhythm of the children except rarely if at all in the shift cycle.

“The life of children has a rhythm which only rarely corresponds to that of a mother who works on a timetable based on fixed blocks of work time.” (Gadbois, C. 1991 p.14).

It is suggested that shift-work is often taken on to provide for greater levels of remuneration and the possibility of creating opportunities for their children in life. However, research points to a detrimental, rather than a positive impact.

“330 children of shift- or day-working found that 18% of the day workers’ children left school at the minimum school leaving age,(then 15 in Belgium) compared with

39% of the children with at least one parent who was a shiftworker: that is over twice the proportion". (Leonard, R. and Claisse, 1991 p.16).

There is consistency in the findings of other experts in the field and reinforces previous findings *"shiftwork impaired the school performance of their children". (Knauth, P. et al, 1991 p.16).*

"The two effects of less success at school, and lower likelihood of going into further education were still found after the qualification level of the father, and the employment /non employment of the mother were discounted". (Gadbois, C. 1991 p.16).

The above research was conducted among public service employees in Germany. Bunnage research in Scandinavia came up with similar findings. There is sufficient evidence to coincide and fundamentally agree shiftworkers working time systems does have a social effect on children.

"the working time system of shiftworkers effects the social activity with his or her children." Gadbois, C. (1991) Gordon, G. et al (1981)

"Fathers who were shiftworkers participated much less often in their children's social activities; only 11% of nightworking or fixed shifts, and 28% on alternating shifts attended parent – teacher association meetings, scout groups, sporting events, and school events compared with 64% of day workers". (Gadbois, C. 1991) (Gordon, G. et al. 1981)

The complexity of shift-work and the many drawbacks are not at times easy to identify. Therefore to generalise would not be fair but if there are reasons to respectfully advance equality within the Irish constitution and maintain our investment in the children of the nation ...*"cherishing all the children of the nation equally."*... why not identify, if it is possible to see if children of shift workers are at a disadvantage because of their parent's occupation. The government recent innovation on the research of children at an early stage of their life might be an ideal time to make the change in this particular area with Minister Brian Lenihan, Minister for Children in the Irish Government.

“I have embarked on an examination, on an article by article basis, of the provisions of the constitution as they impact on children. ... Any change to the constitution would involve a referendum. Time and time again, the Irish people have demonstrated their strong attachment to our constitution by rejecting government efforts to change it. Therefore, there is a heavy onus on the government to approach this issue carefully so that a good formula is devised which would ensure that the best interests of children prevail in matters which impact on them, and at the same time would meet with required public support”. (Lenihan, B. 2006)

Constitutional Articles under Review

The Alliance identified the following Articles in the Irish Constitution.

Article 40 Personal rights

Article 41 The Family

Article 42 Education

Article 15 and 28 The National Parliament and the Government

(right to raise and maintain armed forces)

Article 40

Article 40 provides for a series of fundamental rights for all citizens, including “where appropriate” children. These rights include the right to equal treatment before the law, personal liberty, inviolability of one’s dwelling, and the right to freedom of expression, association and assembly.

It also provides, in Article 40.3.1, for the protection of unenumerated personal rights. This provision has been interpreted by the courts as giving rise to rights not expressly stated in the constitution. For example, the courts have judged that a child has the right:

- *“to be fed and to live, to be reared and educated, to have the opportunity of working and of realising his or her personality and dignity as a human being”*
- *“to have decisions in relation to guardianship, custody or upbringing, taken in the interest of his/her welfare”*

- *“to be placed and maintained in secure residential accommodation so as to ensure, so far as practicable, his or her appropriate religious and moral, intellectual, physical and social education.”*

Unenumerated personal rights are not absolute

Restricted through judicial legislation, the Supreme Court has shown reluctance in particular, where the right is a socio-economic right. They revert to the express rights of the Constitution and refer to the separation of powers as a basis for their decisions. The rights of the family prevail under Article 40.3 in the event of conflict of unenumerated rights of the child.

Article 41

Article 41 outlines the rights of the ‘family’ The State “guarantees to protect the family in its constitution and authority as the necessary basis of social order and as indispensable to the welfare of the nation and the state.”

Article 41.1 states that:

The State recognises the family as the natural, primary and fundamental unit group of society, and as a moral institution possessing inalienable and imprescriptible rights, antecedent and superior to all positive law.

The courts in their interpretation of the rights set out in Article 41 have deemed that:

- *‘the family’ means the family based on marriage*
- *the right of the family belong not to the individual members of the family, but to the family unit as a whole*
- *same sex marriages are not recognised within the definition of the family in the Constitution.*

Article 42

Article 42 outlines the right to ‘education’. The courts have determined that education in this context has a broad meaning and includes the general upbringing of children.

Article 42.1 includes a statement of the rights and duties of parents in relation to their children: The State acknowledges that the primary and natural educator of the child is the family and guarantees to respect the inalienable right and duty of parents to provide, according to their means, for the religious and moral, intellectual, physical and social education of their children.

This article, along with the provision of Article 41, means that the Constitution grant rights to the marital family in relation to their children that are:

- *'inalienable' – absolute, not transferable to another power and incapable of repudiation*
- *'imprescriptible' – cannot be lost by the passage of time*
- *'antecedent and superior to all positive law' – above all law created through legislation or judicial decisions.*

However, under Article 42.5, the State is given the power in exceptional circumstances to limit these family rights and to intervene in family life with a view to protecting the rights and interests of children.

Article 42.5 states:

In exceptional cases, where the parents for physical or moral reasons fail in their duty towards their children, the State, as guardian of the common good, by appropriate means shall endeavour to supply the place of the parents, but always with due regard for the natural and imprescriptible rights of the child.

Children's Rights Alliance

A report was submitted to the United Nations Committee on the Rights of the child in January 2006. Karen McAuley on behalf of the Children's Rights Alliance prepared the report. The Irish Youth Foundation and the Atlantic Philanthropies funded the development and production of the report.

“The Children’s Rights Alliance is a coalition of eighty non-governmental organisations concerned with the rights and welfare of children in Ireland. The Alliance works to secure the full implementation in Ireland of the principles and provisions of the UN Convention on the rights of the child. (McAuley, K. 2006)

Principle of the Convention

Article 12 the child should have a right to have a say in all matters which affect him or her. More work is necessary to foster a culture of respect for children’s views and experiences. The idea of this programme is to create an awareness and understanding of Article 12. Children contributed directly to the examination by the UN Committee on the rights of the child. It was the second National Report on Ireland’s implementation of the Convention. The project allowed the voices of the children to be heard directly through the collaboration of thirteen organisations. Children were brought together collectively by Alliance membership. The Chief Executive, Children’s Rights Alliance, hope and aspiration are illustrated in the following piece.

“From the Committee’s examination will come recommendations that will have the potential to substantially improve the lives of children in Ireland over the remainder of this decade. The Alliance hopes that the effective implication of these recommendations by the Irish Government, and Irish society in general, will lead to the emergence of a culture that respects children, listens to their voices, responds to their needs and upholds their rights.” (Van Turnhout, J. 2006)

It will be interesting to see how this particular programme improves the lives of children in society. It is an opportunity to ameliorate the problem of shiftwork and the effect on children of parents working shift. In society today it is not unusual with the pace of life to observe both parents working. Single mothers or fathers working must also make suitable arrangements to have their child or children suitably cared for. A suitable crèche has to be found and the financial cost is a major expense on disposable income. Alternatively grandparents may be able to facilitate and mind the children. The difficulties are much greater if one or more of the parents are working shift. The family and extended family are involuntary on the shift cycle and it makes life more difficult and intolerable for children.

“It is always tempting, but perhaps too early, to generalise from what amount at the moment to fairly small and isolated studies. On the other hand, if there really is a general and serious deficit in the quality of children’s upbringing caused by having shift working parents, many of the effects are likely to be hard to detect, because they maybe as Godbois (1991) puts it, “not immediate, nor easily discerned, and may therefore pass unrecognised.” It certainly looks like the kind of problem that is worth some more demographic and educational research on a national or European Community scale” (Wedderburn, A. 1993 p.16).

Competitive Europe – Social Europe

An integrated competitive Europe needs a social policy and partnership is the way forward according to Bertie Ahern. A competitive Europe without a partnership approach will create rivals within society. Therefore if people feel alienated within society how could they possibly have an investment in their future within the European Union.

“It will come as no surprise that the Irish government is very much in the camp of those who believe that competitiveness and social inclusion are partners, not rivals”.
(Ahern, B. 2006)

Wealth creation is in our people and therefore economic and social policy should be mutually reinforcing those principles. Nurture talent throughout society with our social policies and people will believe they have a role to play in Irish society and the greater EU. Steady economic growth depends on government fiscal policy. Wealth creates resources that are necessary to fund services. In turn that wealth improves the quality of life and dignity of ordinary people.

Ahern takes pride in the Irish government towards 2016 social partnership agreement and shows his personal commitment. A committed socialist in his own mind-frame he embarks on a competitive Europe with a social agenda. The full potential of our people is to be exploited in the best way possible for the overall good, as Ahern makes his mark.

“This is a very ambitious project. But we believe it has great potential, compared to the traditional silo-based approach, for reinforcing the synergy between economic and social policies and improving service delivery”. (Ahern, B. 2006)

Ahern is upbeat about “Dialogue” and the Lisbon Agenda. He wants to talk to the people, and not lecture them. In the past the social partners didn’t trust one another. He sets the agenda and explains how partnership has worked in Ireland. Things are changing participants or social partners now discuss and articulate programmes for the future of Irish society. Ireland has come through high unemployment, economic decline, and mass emigration and does not want to return to those by gone days.

“Since then we have turned the corner and our social and economic results speak for themselves. Open dialogue that integrates thinking about social and economic policies is the way forward”. (Ahern, B. 2006)

The art of listening is so important when people express an opinion and particularly when a director of Social Affairs at the Union of Industrial and Employer’s Confederation of Europe (UNICE), display their concerns facing the European Union. Redesigning a social model is the thought process of de Liedekreke, to underpin national and European competitiveness. There are fifty to sixty labour laws that work at the EU and national level. It must be organised in a systematic fashion looking at strengths and weaknesses in each region. Policy makers must play to their strengths and target success as an economic strategy to succeed in a global market. She further emphasised the importance of a win win solution.

“It’s important to think in strategic terms about how labour market flexibility can work in the joint interest of both companies and workers”. (de Liedekerke, T. 2006)

For instance when it comes to “derogations” regarding working time is it justifiable to disregard or exempt the very industries that need those social changes in working time. In turn request the very same industries to negotiate a voluntary agreement or as perceived as “collective bargaining” to obtain what may be perceived by workers as a right to a shorter working week. As an example do away once and for all with the abuse of the “quick change” over and accept that it is either right or wrong.

Ameliorate the problem of shift in a progressive economic and as a social value for the prosperity of all. The idea was to move away from voluntarism to legalism with an economic and social element and move forward towards a progressive equitable society by 2020. The reverse would appear to acknowledge in parts of the European Union to move from legalism to voluntarism and delay any democratic movement towards social change.

Challenges for research and practice

Watershed in Shift Design for the future

Proposed EU – 33.6h a week

	1	1	1	1	1	1	1	2	2	2	2	2	2	2
	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su
A	D	D	A	N	N						D	D	A	A
B	A	A	N						D	D	A	A	N	N
C	N	N					D	D	A	A	N	N		
D					D	D	A	A	N	N				
E			D	D	A	A	N	N					D	D

Fig. 4: Similar approach EU – 33.6h a week

Influence of Law on Shift schedule design: USA and Europe

D = Day Shift

A = Afternoon Shift

N = Night Shift

On the next page this particular shift cycle is illustrated in a different format for easier understanding of the shift cycle.

PROPOSED EU-33.6 a week

	1	1	1	1	1	1	1	2	2	2	2	2	2	2
	M	T	W	T	F	S	S	M	T	W	T	F	S	S
A	D	D	E	E	N	N	O	O	O	O	D	D	E	E
B	E	E	N	N	O	O	O	O	D	D	E	E	N	N
C	N	N	O	O	O	O	D	D	E	E	N	N	O	O
D	O	O	O	O	D	D	E	E	N	N	O	O	O	O
E	O	O	D	D	E	E	N	N	O	O	O	O	D	D

Influence of law on shift schedule design: USA and Europe

D = Morning Shift

N = Night Shift

E = Evening Shift

O = Day Off

The above roster design addresses scheduling problems from an American and a European perspective. Avoiding overtime work and developing within the BEST requirements within the European legislative environment. The research reflects working hours below 40 h a week and thus American legislation does not lend itself because they work above 40 h a week under American legislation. Fast-forward rotating systems over 40 h may be regarded as unsuitable. The experts on shift design concluded.

“In general, European wages and labour laws allow for greater flexibility in work schedule design and, at the same time, allow for rotas that meet the BEST- Guidelines far better.” (Hornberger, S. et al, 1999)

Look at twelve-hour shifts

Twelve-hour shift rosters are an alternative cycle of compressed working hours. It is worth looking at as another method to ameliorate the problematic basis of shift. Any improvement is worth looking at if it can be adopted to make shift work more tolerable within family structures. In one sense it is a move away from the eight-hour day but on the other hand it can be looked at in a more favourable light doing away with the “quick change over” within a cycle that was not family friendly. Therefore sacred cows though very valuable in their own right may mitigate trying new systems. It is indeed forthright to acknowledge those principles. It is also progressive to accept an alternative in the short term as a stepping-stone to what may be referred to as an ideal in the long run economically. Competitive advantage must be part of a strategy and thus enable the workforce to develop their skills and take pride in the organisation's achievements. Within those positive structures staff that feel comfortable within those parameters doing their work are an asset to any organisation. Therefore training and development are components that may be facilitated by individuals on their day off within the shift cycle. Mentoring is one of those methods within teamwork structures that can create bonding of personnel in their combined objectives and goal setting. A shift system that can lend itself to training and development will create the competitive edge necessary for economic prosperity and the creation of wealth.

The continental shift or twelve-hour shifts are common in industry today. It is a simple mathematical formula: twenty-four hours divided by two is equal to a two-shift system in two blocks of twelve. The same change over time each day simplifies the whole shift process. This process allows greater flexibility and face-to-face working arrangements handing over from one shift to another. One of the critical factors is that it can be a long shift and can create fatigue. On the positive side, time off is very attractive and could be summed up as more favourable to family life.

Five crew shifts can continuously operate throughout the year on a day today basis. A typical shift cycle that would suit this example would be the thirty-three point six hour week. This twelve-hour shift cycle can be easily compared to the shift design of the proposed EU – 33.6h a week cited in the international symposium. In the fast forward

rotation the employee works only a short period in every shift type, e.g. DDAANN (Hornberger, S. 1999)

Table 3.3 : A 5-crew 12-hour shift rota, with 2 consecutive shifts of each type

	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	
1	D	D	N	N	-	-	-	H	-	-	D	D	N	N	-	-	-	-	-	-	-	D	D
2	-	-	D	D	N	N	-	-	H	-	-	-	D	D	N	N	-	-	-	-	-	-	-
3	-	-	-	-	D	D	N	N	-	-	-	H	-	-	D	D	N	N	-	-	-	-	-
4	-	-	-	H	-	-	D	D	N	N	-	-	-	-	-	-	D	D	N	N	-	-	-
5	N	N	-	-	H	-	-	-	D	D	N	N	-	-	-	-	-	-	D	D	N	N	-

Key: 1,2,3,4 & 5 are the five crews. 0 = Days, N = Nights, H = Shift: Annual Holiday entitlement. The full rota also contains training days, and statutory holidays.

Source: UPM - Kymmene's Caledonian Paper, (rvine, Scotland

Compressed Working Time Ch.3. p.20

The shift cycle above illustrates the workings of the cycle and it is simplified showing four days of twelve-hour shifts and six days off after that working arrangement. What has to be realised in this cycle that "H" indicates a day's holiday taken within the cycle to make it more operational friendly. To be more precise it amounts to twelve hours and is the same as a day and a half out of the allocation of annual leave. It is equivalent to the twelve-hour shift. There is nothing wrong with this flexibility but it must be recognised to obtain a fair and constructive view of the whole programme. The consecutive shift system gives a good illustration of handing over from one shift to another and this ensures good operational procedure and is safe reliable and efficient practice. It also gives a clear impression of good industrial relations between management and personnel to come to such arrangements and create a win win solution to ameliorate problems within the shift cycle. Above all it shows imagination and a willingness to change and try a different shift system.

The quality of handover in the two twelve-hour shifts is far superior because there is a built in consistency of one shift handing over to another and visa versa. There is also the added advantage in a practical sense returning to work after twelve hours the operations situation at the coal face will not have changed greatly. This can be illustrated in a ward situation or chemical plant, or power plant operations.

Table 3.5 : Types of handovers between shift crews: 12-hour rota

Primary Handovers	Number	Reverse Handovers	Number Handovers	Rare	Number
A→B	12	B→A	10	A→D	2
B→C	12	C→B	10	B→E	2
C→D	12	D→C	10	C→A	2
D→E	12	E→D	10	D→B	2
E→A	12	A→E	10	E→C	2
Total	60		50		10

Compressed Working Time Ch.3. p.21

Piper Alpha disaster

This type of analysis from a management perspective is important because of the risk of error or omission at shift handovers. The Piper Alpha accident occurred when a faulty valve was not reported to the incoming shift. In turn a fault occurred the faulty valve was put back into operation and there was an explosion.

*“This kind of detail analysis can be considered to be very important by management, because of the risk of error and omission at shift handovers. Some major disasters, such as Piper Alpha *, had their origins in faulty handovers (among other things). A valve under repair was not reported to the incoming shift at 18.00. When the duplicate valve went wrong, the night shift crew switched over to the valve under repair, which leaked and caused an explosion.” (Wedderburn, A. 1993).*

It was the worst offshore disaster in the United Kingdom and it was on the evening of 6th July 1988. One hundred and ten miles northeast of Aberdeen an explosion occurred on Occidental’s Piper Alpha platform. It would appear the fire engulfed the platform and didn’t give the emergency procedures an opportunity to implement a

response sufficiently to curtail the disaster. The chain reaction of events left personnel trapped on board and totally vulnerable with no means of escape. There were a total of two hundred and twenty six personnel manning the Piper Alpha platform. One hundred and sixty five personnel lost their lives in this tragedy. Two crewmembers of the Fast Rescue Craft Sandhaven also lost their lives in the course of their duty trying to rescue survivors. A public Enquiry investigated the Piper Alpha disaster about the circumstances surrounding this tragedy. The Honourable Lord Cullen chaired the Public Enquiry and after a year made particular far-reaching recommendations.

--- *“far-reaching recommendations concerning the organisation of work and safety procedures on North Sea oil installations for all companies involved in this area”*. Piper Alpha disaster 1988 (cited in Wedderburn 1993, p. 22).

Research literature points out reservations regarding the twelve-hour shifts. Although it is remarked that it is popular with employees there are drawbacks. Fatigue kicks in with low energy coming to the end of a shift. The chain reaction continues with low performance due to tiredness. On a long term evaluation health can be at risk. This in turn affects alertness and it is hard to concentrate on the job of work at hand. The lack of concentration may create risk or even injury. (Knauth, P. Hornberger, S. 1994)

----“after 8 hours of work a reduction of performance appears, the ability to concentrate ...reduces, the risk of motor and cognitive errors increases”

cited in Compressed Working Time (1996) (Knaupp, P. 1983)

In considering the twelve-hour shifts there are a number of helpful considerations depending on your particular industry.

- *A high portion of stand-by work*
- *Physical light work*

- *work in control rooms*

- *easy machine operations with longer gaps*
- *periodical plant control round*
- *Permanent medical monitoring*
 - *clinical start check-up*
 - *periodical observational check ups.*

Cited in Compressed Working Time (1996) Munstermann and Preiser (1978), referring back to Loskant (1970), worked out requirements to be fulfilled if contemplating 12-hour shifts:

There are indeed more considerations to be observed with the twelve hour shift system. The decision is not to be made lightly according to the amount of research in this area. The nature and workload is very important to prevent fatigue. Absentee and overtime cover must be investigated. The reason for the rest period in the shift cycle is to recuperate for the next cycle. There are multiple factors to be taken into consideration, housing, commuting to and from the job. Instead of making the shift system more family friendly it may alienate the family even more.

	Mo	Tu	We	Th	Fr	Sa	Su
A	D	D	A	A	N	N	
B	D	A	A	N	N		
C	A	A	N	N			
D	A	N	N				D
E	N	N				D	D
F	N				D	D	A
G				D	D	A	A
H			D	D	A	A	N
J		D	D	A	A	N	N

Fig. 3: Similar approach EU – 37.6h a week

Influence of Law on shift schedule design: USA and Europe

D = Day Shift

A = Afternoon Shift

N = Night Shift

By comparing and contrasting different shift patterns one may become familiar with one particular method of working time. In so doing debate the different cycles with an ideological perspective to find the best cycle that will ameliorate shift problems for families. In the same way a similar approach EU – 37.6 h a week can be looked at in contrast to the Poolbeg Power Station shift cycle thirty-seven and a third hour week. There are various shift cycles and the purpose of this exercise is to try and simplify the complexity of shift work to a win win solution. The primary objective is to find new ways to dispel old problems and again stressing the point to ameliorate the problem of shift work for families.

12-hour shift system in a German chemical industry

Table 3.8 shows an example of a shift system in the German chemical industry.

Table 3.8: 12-hour shift rota with single shifts of each type {Germany}

Week	Mo	Tu	We	Th	Fr	Sa	Su
1	D	N	0	0	0	N	0
2	0	D	N	0	0	D	N
3	0	0	D	N	0	0	D
4	N	0	0	D	N	0	0

Key:

D = Day shift, N = Night shift, 0 = Day Off.

(Compressed Working Time 1996 Ch.3. p.23)

Ergonomics is “the study of the relationship between workers and their environment” (Collins Shorter English Dictionary 1994, p.378).

The above 12-hour shift is regarded as ergonomic friendly and comes with their specification and recommendations. It would appear to be more favourable than the eight-hour shift system. This cycle is included to give an overall perspective and allow familiarisation with different types of shift operation.

Advantages:

Only single night shift spread over the shift cycle.

No “quick change” over.

Valuable time off.

4 week cycle easy to understand.

2 Sundays off in four weeks.

Disadvantage:

Starting night shift after day off.

One Saturday and Sunday off, in four-week cycle.

Overall this cycle would be a vast improvement to ameliorate shift problems.

12-hour shift system in a German hospital

Table 3.9 : 12_ hour rota from a German hospital

Week	Mo	Tu	We	Th	Fr	Sa	Su
1	D1	D1	N	N			
2				D1	D1	N	N
3							D1
4	D1	N	N				
5			D1	D1	N	N	
6						D1	D1
1	N	N					
8		D1	D1	N	N		
9					D1	D1	N
10	N						
11	D2	D2	D2	D2	D2		
12	D2	D2	D2	D2	D2		

Key:

01 = day shift 0700 - 1900 02 = day shift 0700 - 1530 N = Night shift 1900 - 0700 (Compressed Working Time 1996 Ch.3. p.24).

12-hour shift system worked in a German hospital over a twelve ^{week?} days cycle. The working arrangement would appear to be very stressful as there are four twelve hour shifts on the trot before an individual gets a day off. On paper the time off looks very good but the compact working week is very tight. Week eleven and twelve within the cycle allow for a day shift (D2 = day shift 0700 - 1530)

“Although the four days with 12 hours may be stressful, there are long recreation periods and a fortnight with no shiftwork at all (Weeks 11 and 12)” (Meggeneder, O. 1993).

The Start of the twelve-hour shift cycle is straightforward, starting at seven in the morning and finishing at seven in the evening. It is a long shift and the cycle continues the following day in the same way. (D1 = shift 0700 – 1900) Having worked those two shifts in succession you have twelve hours of a break before reporting to work on Wednesday at seven o’clock in the evening. (N = Night 1900 – 0700) and finish your twelve-hour shift at seven o’clock in the morning. After the first night you have twelve hours to rest before you continue the cycle on Thursday, starting at seven o’clock in the evening (N = Night 1900 – 0700) and finishing your night shift at seven o’clock on Friday morning. Having worked your weeks cycle and finishing that morning you have the rest of the day to rest and the following five days off before you resume your shift roster the following Thursday. The cycle continues in the same way for ten weeks and week eleven and twelve are the same as illustrated (D2 = day shift 0700 – 1530) completes the cycle.

The Antwerp oil refinery change over from 8-hours to 12-hours shifts

This case was reported by Leonard, R. 1994.

Antwerp oil refinery changed from a three eight-hour shift cycle to a two twelve-hour shift cycle. Three shifts covered the twenty-four hour continuous cycle and the shift time were 6 am, 2pm and 10pm.

The cycle consisted of seven day's 2pm to 10pm followed by 2 days off.

7 days 6am, to 2 pm followed by 3 days off.

7 nights 10 pm to 6 am, followed by 2days off.

The cycle was repeated thirteen times in the year. The alternative cycle average working time is 36 hours a week. There are still four individual shifts and two of those shifts man the plant on a two twelve-hour shift.

The shift-change over times is 7 am and 7 pm.

The average working week is forty-two hours by mutual agreement and two extra days are taken to conform to a thirty-six hour week. The only reason this system works is due to cooperation and it is strictly not a thirty-six hour week. The reduction of working hours has a salary cut but it is split fifty-fifty between the worker and the employer. The shift workers much prefer this new system and in a twenty-eight day production they work twelve days, and have two weekends out of four. Tiredness would appear to be less of a factor. There are other opportunities with this shift cycle to have a meal with the family either before going to work or when you are finished your shift. It would appear to be a win-win solution all round to reduce or ameliorate the problem of shift work. The human touch drove this modification to a working arrangement and triggered motivation and higher satisfaction in their job. Absenteeism reduced and efficiency has increased and because of the nature of the chemical sector there is not much physical labour involved in the job. There are different opinions about the twelve-hour roster and it is a healthy sign to acknowledge so much interest. There are knee jerk reactions to what may or may not be brought in through legislation. Chemical companies addressing a need for change may move to rectify the “quick change” in their present cycle. Trying to coincide with a European directive on working time being implemented as a ban on the “quick change” over may then find the industry being exempt due to a derogation order. In anticipation do the right thing with “best practice” and find their organisation in an industrial relations dispute over the same issue.

“A chemical company introduced 12-hour shifts on a trial basis, partly because it was feared that the forthcoming European directive on working time would ban the “quick change” back that was a feature of their previous rapidly rotating shift system. The 12-hour system has been retained, but not without some controversy among the workforce.” (Wedderburn, A. 1996)

The twelve-hour shift system would appear to be popular in Asia but it is not without its problems either. It would appear their sudden adoption was short lived with a subsequent abandonment in many industries in Singapore.

Gadbois 1994 study notes that Ong and Koki 1990 (cited in Wedderburn 1996, p.26) demonstrates that --“the use of 12-hour shifts in several developing countries in Asia,

and in particular their sudden adoption and subsequent abandonment within one year by numerous industries in Singapore.

The Climate is very humid and would not lend itself easily to twelve-hour shifts. It is bad enough in a cooler atmosphere putting in a twelve-hour day. It is recognised with longer hours and coming to the end of a shift your work rate or capability is at a minimum. To be safe, reliable, and efficient in such a warm climate the possibilities are that the eight-hour shift may have appeared less tiring. Having experienced the alternative twelve-hour shift it would appear their particular preference was to go back to what they were familiar with.

CHAPTER 3

Research aims and objectives

Aims of my Research

The idea of my particular research would be to elaborate on my personal experience and as a primary source collect data relevant to the particular theme. Build on the “overlapping of socially effective leisure time with the morning, afternoon and night shift on particular days of the week”. (Hahn, H.1987)

Expand on Hahn’s illustration over a period of time and show the difficulties inherent in shift-work. In a case study of Poolbeg Generating Station illustrate the difference between day work and shift-work using the shift cycle during a festive season and compare both. In so doing illustrate the overlapping of socially effective leisure time and the consequences on family life. This method will show clearly different times of the day are not equivalent.

What were the specific aim and objectives of this thesis? The primary aim is to highlight the need for change on shift-work cycle and the objective is to ameliorate the problem of shift-work.

Look at the possibility of a shorter working week and the difference it would make in the long run from an economic perspective regarding quality of life for families. Alternatively look at other shift systems in the short run again from an economic objective, a good example may possibility be twelve-hour shifts.

Hypotheses

The hypothesis would be taken as true that there are shift structures that would ameliorate the problem of shift work. Hypothesis is “1.a suggested explanation for a group of facts or phenomena, either accepted as a basis for further verification (working hypothesis) or accepted as likely to be true. 2. An assumption used in an argument; supposition” Collins Shorter English Dictionary (1994) p.555

The Problem

The problem being to find a suitable solution that will satisfy the economic agenda with a social perspective with a win win solution that is particularly more family friendly. The objective may be facilitated within a partnership agreement with cooperation and good will and most important trust. In turn the possibility may give rise on occasion to ameliorate the problem of shiftwork into the future.

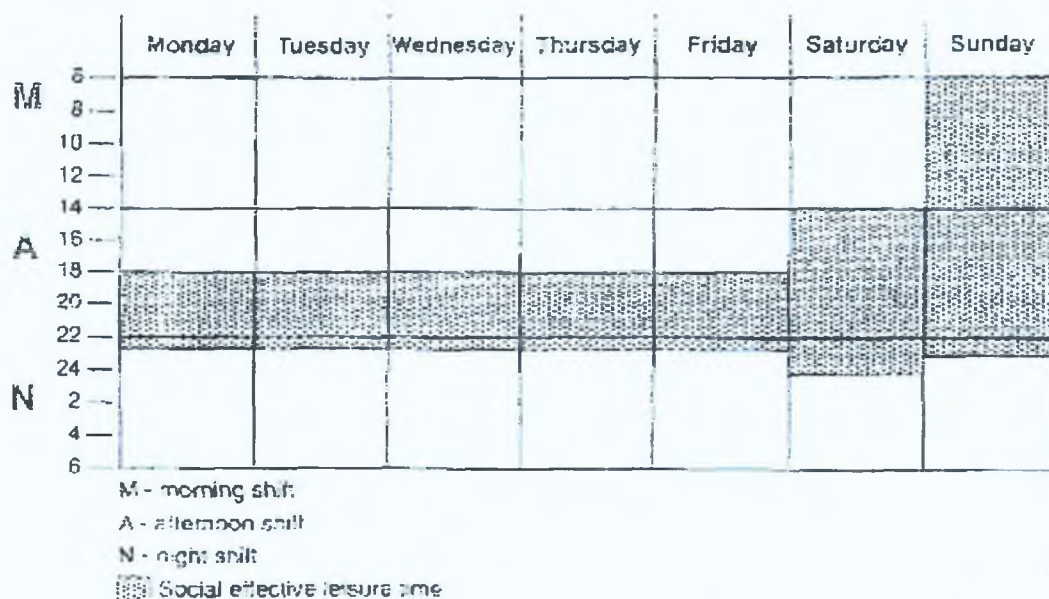


FIGURE 2.1 — Overlapping of socially effective leisure time with the morning, afternoon and night shift on particular days of the week (Hahn, 1987)

Family Factors in shift design Ch. 2. p. 12.

Hahn's graphic illustration of leisure time

Leisure time can be clearly observed throughout the week and the weekend. Neuloh referred to it as "evening and weekend society". (Neuloh, O.1964).

There is a consistent time frame Monday to Friday from approximately six in the evening to half ten at night. Prime leisure time on Saturday and Sunday beginning at two o'clock on Saturday afternoon to twelve o'clock midnight and Sunday from six in the morning to half ten at night is effectively social leisure time. Knauth et al, investigated overlap with traditional common shift times Hahn 1989. Overlapping of socially effective leisure time needs particular attention to show how shiftwork scars leisure time and festive family occasions. The "quick change-over" within a shift

cycle over a period of time has damaging effects as overlapping occurs. This difficulty can be shown in a practical way by observing the shift cycle in one of ESB power stations and the awkwardness of shiftwork. The generating plant is manned twenty-four hours a day, three hundred and sixty five days of the year. The shift system schedule is worked on a rota system over a nine-week cycle. It is a thirty-seven and a third hour week and covers days, nights and evening shifts in the course of a nine-week cycle. Having explained the system it will be easier to follow a roster showing the shift cycle over the nine weeks. The Poolbeg Shift Cycle is illustrated on the following page.

Clarification

For clarification in this piece it is necessary to point out that there are many categories of workers in ESB. In the broad sense of the meaning day work, includes all those on day work regardless of category in Poolbeg Power Station. The same applies to shift work regardless of category.

Hahn's diagram expanded

Hahn's diagram has been expanded into two weeks over the Christmas period and the New Year. This is a form of acknowledgement as to the development of this research and the use of Hahn's diagram in the whole process.

Poolbeg Generating Station Shift Roster

	Sat	Sun	Mon	Tues	Wed	Thurs	Fri
Week 1	D	D	N	N	E	E	O
Week 2	O	O	D	D	N	N	E
Week 3	E	O	O	O	D	D	N
Week 4	N	E	E	O	O	O	D
Week 5	D	N	N	E	E	O	O
Week 6	O	D	D	N	N	E	E
Week 7	O	O	O	D	D	N	N
Week 8	E	E	O	O	O	D	D
Week 9	N	N	E	E	O	O	O

Poolbeg Generating Station

D = Morning Shift

N = Night Shift

E = Evening Shift

O = Day Off

In week one above the shift cycle starts on day shift at eight o'clock in the morning and finishes at four o'clock in the afternoon. The following day is the same eight to four, but when you are finished at four o'clock you are due back in work at midnight. That is why it is called the "quick change over" because there is only eight hour of a break during that evening and you start shift one at midnight. On return to work at midnight you work until eight o'clock in the morning. You finish your shift that morning and are due in work that night at midnight again. On completion of your second night shift at eight o'clock you are finished your night shift. The following day you are due in on the four to twelve shift and the following day the same. On completion of the last evening you are off for three days. Thereafter the shift roster continues as before two days, two nights, two evenings and three days off. The shift cycle continues throughout the year regardless of the time of year, Christmas time, or Easter holiday time, or any other festive occasion.

Research Methodology

Case Study Research

"Economics is a science which studies human behaviour and how the scarce resources of the world which have alternative uses are distributed in attempting to satisfy the infinite needs and wants of mankind". (McCarthy, D. 1985 p. 10).

There are two methods of economic analysis the deductive method and the inductive method. (empirical method) The deductive method is to do with rational reasoning and depends on three factors.

Validity of hypothesis,

Rational reasoning

Human beings act in a logical manner under the circumstances.

The inductive method may draw from the known facts of economic life. Therefore the combined reasoning of deductive and inductive methods compliment each other and give a clear picture while researching. This case study refers to the presentation of detailed information over the Christmas period and illustrates the inconvenience of shift-work during a festive occasion on family life.

Quantitative Research Technique:

Detailed information about particular participants on shift-work and the social effect of leisure time is emphasised and compared to the holiday period with day-work participants. Conclusions will be drawn about those particular shift personnel in that specific context. Emphasis will be placed on exploration and description. The research covers ten years from 1985 to 1995 inclusive, with particular attention to Christmas Eve, Christmas Day, and New Years Day.

Task One

- Research aims : Highlight the need for change on shift-work cycle

Primary focus or theme of study

Objective : Ameliorate the problem of shift-work.

Data collection and analysis

Shift diary of particular shifts worked and analysis of shift cycle.

Task Two

Principles of application of research and objectives

- Reliability : *"The extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability."* The research instrument would appear to be considered to be reliable.
- Generalisability: Based on the quantitative technique as a generalisation there is a need to ameliorate the problem of shift-work on family life.
- Validity: Research truly measures the need for change to ameliorate the problem of shift-work on family life.
-

Task Three

Research Design

Case Study Research

Poolbeg Generating Station

Special emphasis will be placed upon Christmas Eve, Christmas Day and New Years Day. To focus on this particular period the dates around December 20th approximately are shown including New Year's Day to the 4th January of the new-year. Ten years from 1985 to 1994 are included showing the shift roster around that period, plus a more detailed account of the shifts worked.

Actual Shifts during Christmas and the New Year

From 1985 to 1994 inclusive.

Dec 1985

S	S	M	T	W	T	F
21	22	23	24	25	26	27
O	D	D	N	N	E	E
28	29	30	31	1	2	3
O	O	O	D	D	N	N

Dec 1990

S	S	M	T	W	T	F
22	23	24	25	26	27	28
O	D	D	N	N	E	E
29	30	31	1	2	3	4
O	O	O	D	D	N	N

Dec 1986

S	S	M	T	W	T	F
20	21	22	23	24	25	26
N	E	E	O	O	O	D
27	28	29	30	31	1	2
D	N	N	E	E	O	O
3	4					
O	D					

Dec 1991

S	S	M	T	W	T	F
21	22	23	24	25	26	27
N	E	E	O	O	O	D
28	29	30	31	1	2	3
D	N	N	E	E	O	O
4						
O						

Dec 1987

S	S	M	T	W	T	F
19	20	21	22	23	24	25
O	O	D	D	N	N	E
26	27	28	29	30	31	1
E	O	O	O	D	D	N
2	3	4				
N	E	E				

Dec 1992

S	S	M	T	W	T	F
19	20	21	22	23	24	25
O	O	D	D	N	N	E
26	27	28	29	30	31	1
E	O	O	O	D	D	N
2	3	4				
N	E	E				

Dec 1988

S	S	M	T	W	T	F
17	18	19	20	21	22	23
N	N	E	E	O	O	O
24	25	26	27	28	29	30
D	D	N	N	E	E	O
31	1	2	3	4		
O	O	D	D	N		

Dec 1993

S	S	M	T	W	T	F
18	19	20	21	22	23	24
N	N	E	E	O	O	O
25	26	27	28	29	30	31
D	D	N	N	E	E	O
1	2	3	4			
O	O	D	D			

Dec 1989

S	S	M	T	W	T	F
16	17	18	19	20	21	22
O	O	O	D	D	N	N
23	24	25	26	27	28	29
E	E	O	O	O	D	D
30	31	1	2	3	4	
N	N	E	E	O	O	

Dec 1994

S	S	M	T	W	T	F
17	18	19	20	21	22	23
O	O	O	D	D	N	N
24	25	26	27	28	29	30
E	E	O	O	O	D	D
31	1	2	3	4		
N	N	E	E	O		

Summary of shift worked

1985

In 1985 the shiftworker finished his shift at eight o'clock on Christmas Eve morning and was due in again at 12 a.m. midnight to start his shift on Christmas Day and finishing that shift at eight o'clock Christmas morning. The following day Stephen's Day, 4-12 shift. New Years Eve 8-4 and New Years day 8-4 and quick changeover on to night work.

1986

An exceptional Christmas

December 23, 24 and Christmas day off

8-4 Stephen's day

New Years Eve and New Year's Day 4-12 shift.

1987

Christmas Eve morning finishing nights and working Christmas Day 4-12 and Stephen' Day 4-12. New Years Eve quick changeover in work at 12.00 a.m. midnight.

Dec 1988

Day shift on Christmas Eve 8-4

Day shift on Christmas Day 8-4 and quick changeover.

Shift 1 Stephen's Day (in at 12 am Christmas night)

New Years Eve off and New Years Day off.

Dec 1989

Evening shift 24th December Christmas Eve and off Christmas Day and Stephen's Day Finishing night shift New Years Eve morning and due in 4-12 New Years Day.

Dec 1990

Christmas Eve Day shift 8-4 and quick changeover onto nightwork at 12.00 a.m

Christmas Day and finishing Christmas morning at 08.00 a.m. Due in Stephen's Day

Shift 1, 12.00 am. Working 8-4 New Years Day.

Dec 1991

Exceptional Christmas Dec 24, 25 and 26 off. Evening shift New Year's Eve and New Year's Day (4-12)

Dec 1992

Finishing night shift Christmas Eve morning and working Christmas Day 4-12.

Stephen's Day 4-12

Quick changeover New Year's Eve, working night shift New Years Day and due in the following night at 12.00 am.

Dec 1993

Day shift 8-4 Christmas Day

Day shift 8-4 Stephen's Day and quick changeover onto nightshift (shift 1) 12.00 am midnight

Day off New Years Eve, New Years Day and the following day

Dec 1994

Evening shift 4-12 Christmas Eve

Evening shift 4-12 Christmas Day.

First day off Stephen's Day

Night shift New Years Eve and New Year's Day.

Three Christmas Days off in ten years

Day off	Year	Christmas	Stephens	News Years
		Day Dec 25	Day Dec 26	Day Jan 1 st
	85	N	E	D
O	86	O	D	O
	87	E	E	N
	88	D	N	O
O	89	O	O	E
	90	N	N	D
O	91	O	O	E
	92	E	E	N
	93	D	D	O
	94	E	O	N

D = Morning Shift

N = Night Shift

E = Evening Shift

O = Day Off

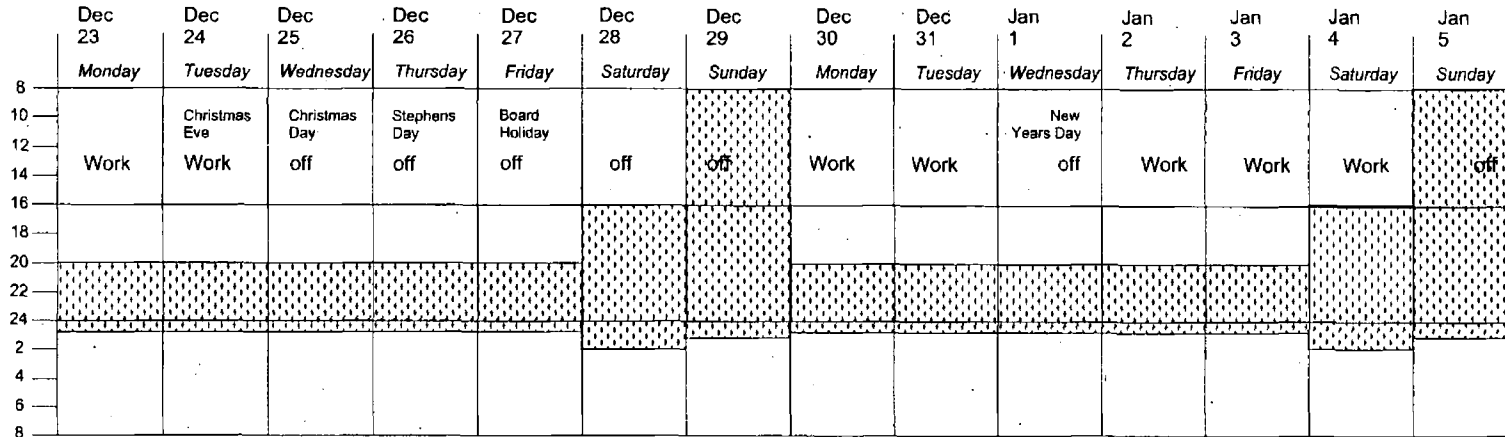
The above diagram is an illustration of the shift cycle over ten years from 1985 to 1994 inclusive. It gives a clear picture in that time frame of three Christmas Days off in ten years 1986, 1989, and 1991. Using the deductive method one may reflect on the other years for further information and compare and contrast Christmas Day, Stephens Day and New Years day and any of those shifts worked over the ten years. The information may be crossed checked on the diaries for clarification.

The following ten diagrams are an extension of Hahn's weekly illustration of the overlapping of socially effective leisure time with the morning and night shift on particular days of the week. They have been extended to two weeks over the Christmas period and the New Year. Day work and shiftwork are compared over the festive occasion and there are more details available to illustrate the data collection. They are in diary form of the shifts worked and day work schedule for the Christmas holiday period and New Year. This is just a brief introduction and there is more detailed information following after the ten diagrams

1985

DAY WORK

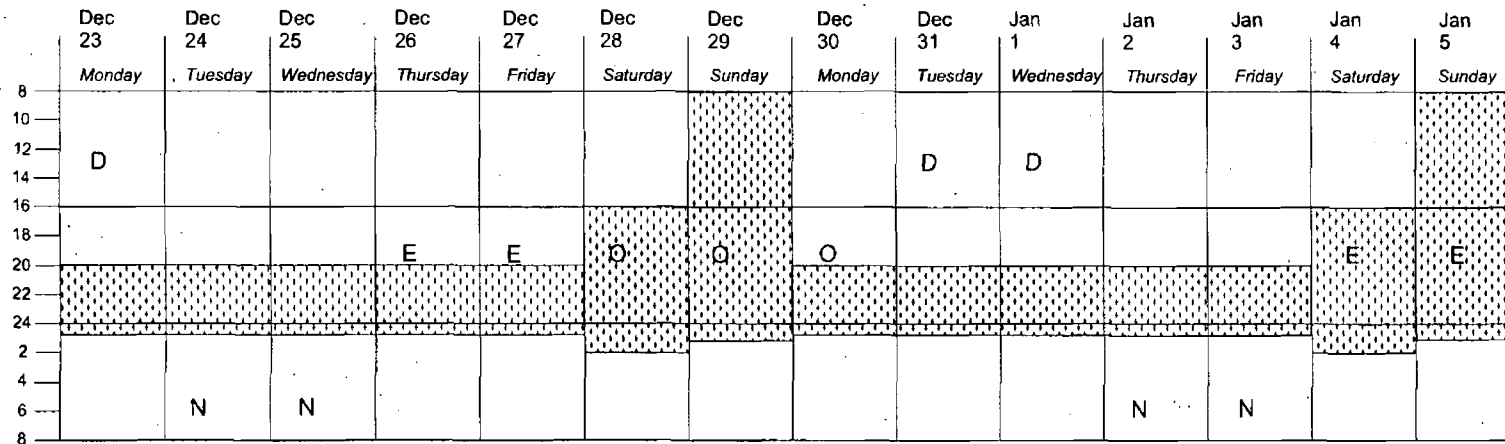
1986



SOCIAL EFFECTIVE LEISURE TIME

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SHIFT WORK

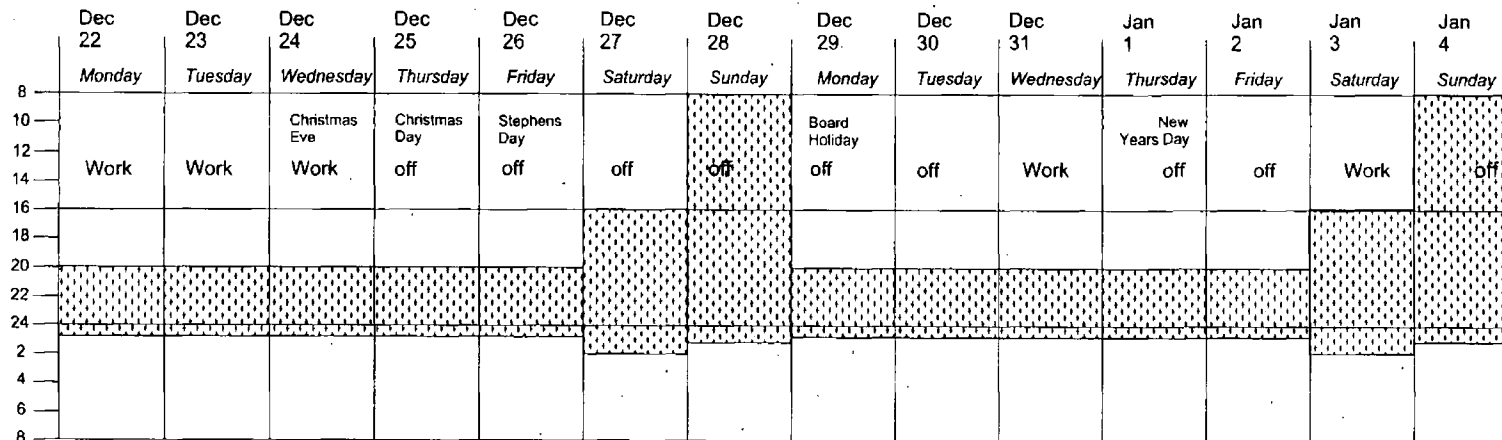


D: DAY SHIFT
E: EVENING SHIFT
N: NIGHT SHIFT

1986

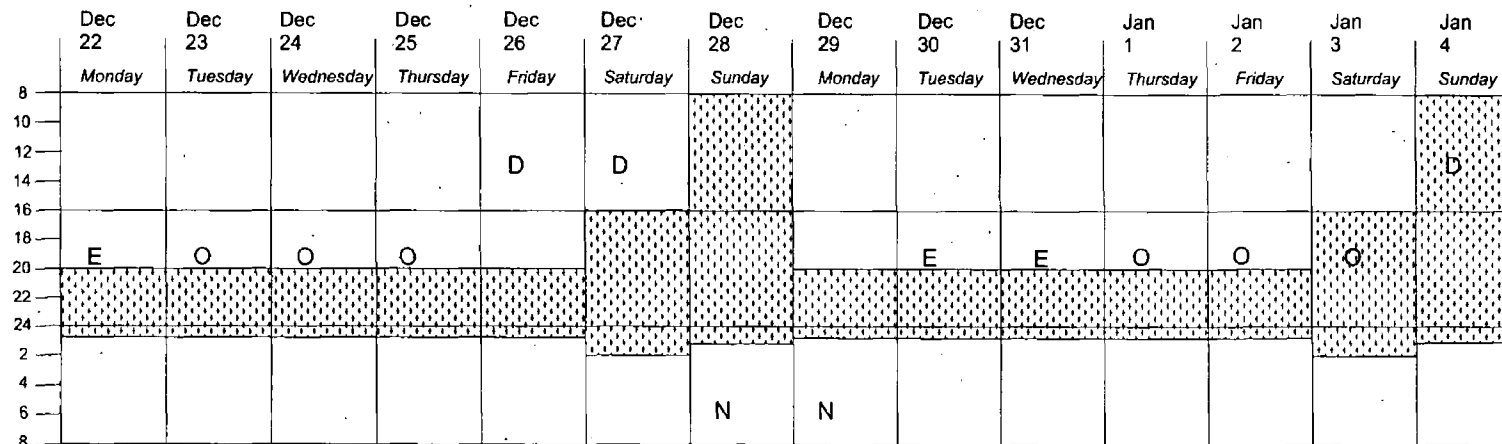
DAY WORK

1987



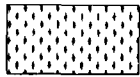
 SOCIAL EFFECTIVE LEISURE TIME

SHIFT WORK



D: DAY SHIFT
E: EVENING SHIFT
N: NIGHT SHIFT

	Dec 21	Dec 22	Dec 23	Dec 24	Dec 25	Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	Jan 1	Jan 2	Jan 3
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8														
10				Christmas Eve	Christmas Day	Stephens Day		Public Holiday	Board Holiday			New Years Day		
12	Work	Work	Work	Work	off	off	off	off	off	Work	Work	off	off	off
14														
16														
18														
20														
22														
24														
2														
4														
6														
8														



SOCIAL EFFECTIVE LEISURE TIME

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SHIFT WORK

	Dec 21	Dec 22	Dec 23	Dec 24	Dec 25	Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	Jan 1	Jan 2	Jan 3
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8														
10														
12	D	D												
14														
16														
18														
20					E	E	O	O	O					E
22														
24														
2														
4														
6			N	N								N	N	
8														

D: DAY SHIFT
 E: EVENING SHIFT
 N: NIGHT SHIFT

1988

DAY WORK

1989

	Dec 19 Monday	Dec 20 Tuesday	Dec 21 Wednesday	Dec 22 Thursday	Dec 23 Friday	Dec 24 Saturday	Dec 25 Sunday	Dec 26 Monday	Dec 27 Tuesday	Dec 28 Wednesday	Dec 29 Thursday	Dec 30 Friday	Dec 31 Saturday	Jan 1 Sunday
8														
10						Christmas Eve	Christmas Day	Stephens Day	Public Holiday	Board Holiday				New Years Day
12						off	off	off	off	off	Work	Work	off	off
14	Work	Work	Work	Work	Work						Work	Work		
16														
18														
20														
22														
24														
2														
4														
6														
8														



SOCIAL EFFECTIVE LEISURE TIME

SHIFT WORK

	Dec 19 Monday	Dec 20 Tuesday	Dec 21 Wednesday	Dec 22 Thursday	Dec 23 Friday	Dec 24 Saturday	Dec 25 Sunday	Dec 26 Monday	Dec 27 Tuesday	Dec 28 Wednesday	Dec 29 Thursday	Dec 30 Friday	Dec 31 Saturday	Jan 1 Sunday
8														
10														
12						D	D							
14														
16														
18	E	E	O	O	O					E	E	O	O	O
20														
22														
24														
2														
4														
6								N	N					
8														

D: DAY SHIFT
 E: EVENING SHIFT
 N: NIGHT SHIFT

1989

DAY WORK

1990

	Dec 18	Dec 19	Dec 20	Dec 21	Dec 22	Dec 23	Dec 24	Dec 25	Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	Jan 1
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
8															
10							Christmas Eve	Christmas Day	Stephens Day	Board Holiday					New Years Day
12	Work	Work	Work	Work	Work	off	off	off	off	off	Work	Work	off	off	off
14															
16															
18															
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 SOCIAL EFFECTIVE LEISURE TIME

SHIFT WORK

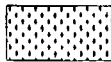
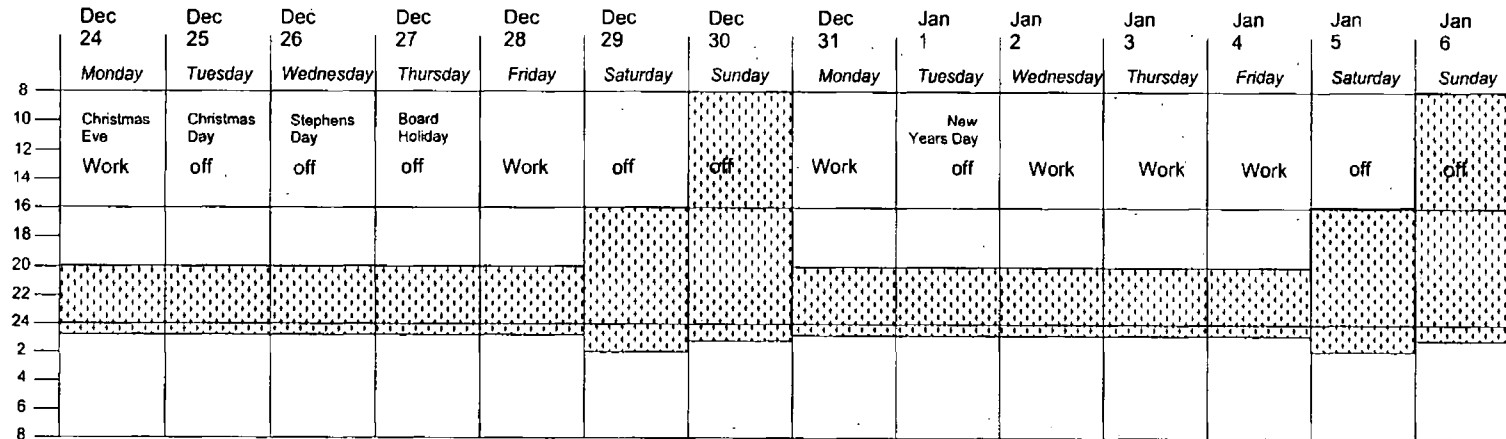
	Dec 18	Dec 19	Dec 20	Dec 21	Dec 22	Dec 23	Dec 24	Dec 25	Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	Jan 1
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
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D: DAY SHIFT
 E: EVENING SHIFT
 N: NIGHT SHIFT

1990

DAY WORK

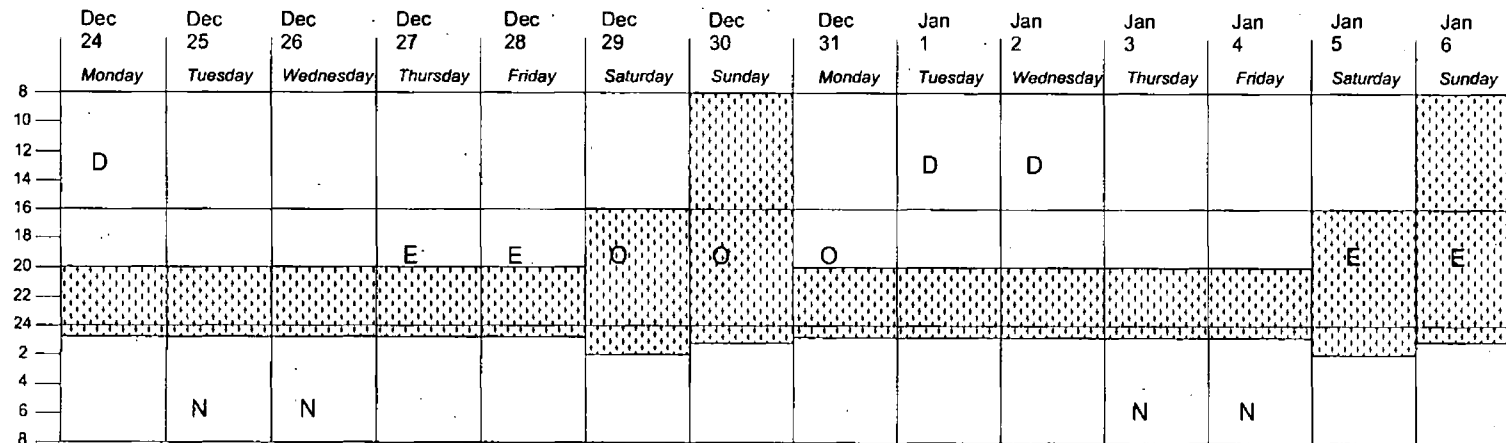
1991



SOCIAL EFFECTIVE LEISURE TIME

49

SHIFT WORK



D: DAY SHIFT
 E: EVENING SHIFT
 N: NIGHT SHIFT

1991

DAY WORK

1992

	Dec 23	Dec 24	Dec 25	Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	Jan 1	Jan 2	Jan 3	Jan 4	Jan 5
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8														
10		Christmas Eve	Christmas Day	Stephens Day	Board Holiday					New Years Day				
12	Work	Work	off	off	off	off	off	Work	Work	off	Work	Work	off	off
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 SOCIAL EFFECTIVE LEISURE TIME

SHIFT WORK

	Dec 23	Dec 24	Dec 25	Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	Jan 1	Jan 2	Jan 3	Jan 4	Jan 5
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
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12					D	D								D
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4							N	N						
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8														

D: DAY SHIFT
 E: EVENING SHIFT
 N: NIGHT SHIFT

1992

DAY WORK

1993

	Dec 21	Dec 22	Dec 23	Dec 24	Dec 25	Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	Jan 1	Jan 2	Jan 3
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8														
10				Christmas Eve	Christmas Day	Stephens Day		Public Holiday	Board Holiday			New Years Day		
12	Work	Work	Work	Work	off	off	off	off	off	Work	Work	off	off	off
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SOCIAL EFFECTIVE LEISURE TIME

SHIFT WORK

	Dec 21	Dec 22	Dec 23	Dec 24	Dec 25	Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	Jan 1	Jan 2	Jan 3
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8														
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12	D	D												
14										D	D			
16														
18					E	E	O	O	O					
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22														
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4														
6			N	N								N	N	
8														

D: DAY SHIFT
 E: EVENING SHIFT
 N: NIGHT SHIFT

1993

DAY WORK

1994

	Dec 20	Dec 21	Dec 22	Dec 23	Dec 24	Dec 25	Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	Jan 1	Jan 2
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8														
10					Christmas Eve	Christmas Day	Stevens Day	Public Holiday	Public Holiday	Board Holiday			New Years Day	
12					Work	off	off	off	off	off	Work	Work	off	off
14	Work	Work	Work	Work	Work									
16														
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SOCIAL EFFECTIVE LEISURE TIME

SHIFT WORK

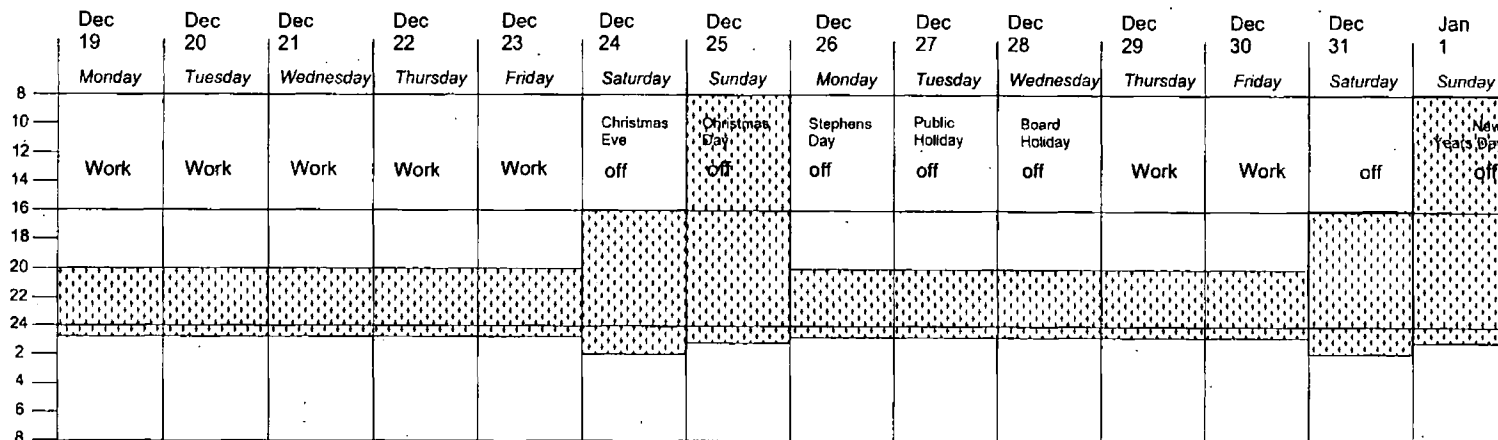
	Dec 21	Dec 22	Dec 23	Dec 24	Dec 25	Dec 26	Dec 27	Dec 28	Dec 29	Dec 30	Dec 31	Jan 1	Jan 2	Jan 3
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
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12						D	D							
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20	E	E	O	O	O					E	E	O	O	O
22														
24														
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6								N	N					
8														

D: DAY SHIFT
 E: EVENING SHIFT
 N: NIGHT SHIFT

1994

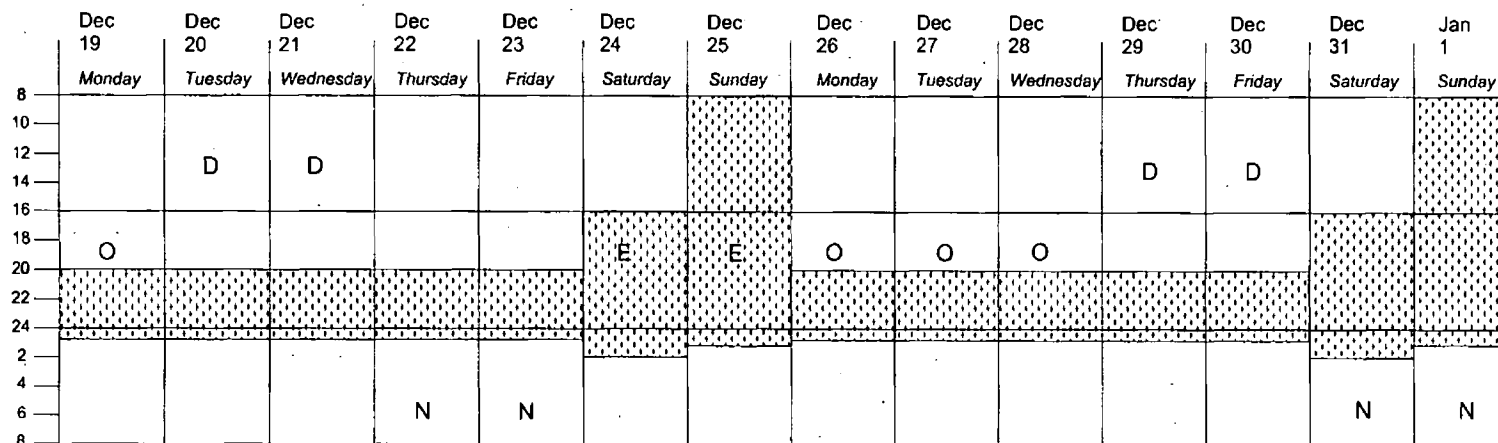
DAY WORK

1995



SOCIAL EFFECTIVE LEISURE TIME

SHIFT WORK



D: DAY SHIFT
 E: EVENING SHIFT
 N: NIGHT SHIFT

Poolbeg Study

Comparing day and shift work over the Christmas period and taking into account the social effective leisure time.

Day Work

There is a consistent holiday period each year and the individual can enjoy without interruption the Christmas festive occasion. This applied throughout the ten years of the study in question. With an additional one or two days leave the Christmas and New Year can be extended to give a greater break away from the workplace. It provides quality time with the family and extended family and arrangements can be easily made to visit or accept visitors around the festive family celebration. There is a consistent pattern throughout the years and relaxation can be planned. This can be easily identified from one year to the next and the illustration on the diagram can be easily examined.

Shift work

In this case study the shift work roster must be taken into consideration and each year is different to the other. The shift cycle continues as part of a set programme throughout the year. The first year as illustrated 1985 is a good example and clearly illustrates the awkwardness of shift work during the Christmas and New Year. To examine the cycle more closely take an overview of the social effective leisure time and observe the shift cycle cutting through it throughout the fourteen days from the 23rd December 1985 to 5th January 1986 in the New Year. Each of the years has been summarised around Christmas Eve and throughout this period to the New Year and extended by a few days.

Look at the shift part of the diagram 1985

(D) as it appears indicates day work 8am – 4pm on the 23 Dec 1985.

“quick change over” - What is “the quick change over”?

On this particular day of the shift cycle having finished at four o'clock in the afternoon he returns to work at twelve o'clock that night to start his night shift. It is referred to as the “quick change over” Throughout the nine weeks of the shift cycle it occurs once in each week irrespective of the day of the week.

“Sleep difficulties are often seen as the root cause of many other problems of shiftwork. A person short of sleep can be a tired and dangerous worker an irritable and bad-tempered member of the family, and can be building up problems for himself in other parts of his system, e.g. digestive” (Politis, D. 2000 p.15)

An account of the time on leaving the job at 4pm after doing a days work until his return to the workplace at 12 o'clock that night.

In between those hours he has to travel home, have his dinner, relate to the family and go to bed and acquire some quality rest, and be ready for the night shift. If he goes to bed at six that evening and prepares for work at ten o'clock that evening he will have slept less than four hours approximately. He returns to work within eight hours, for another eight hours work at night until 8 am the following morning. What has been describe is the "quick change over" and it is understandable how tiredness or fatigue can kick in.

"--- the postponing of sleep due to permanent night work or changing shifts causes changes in phases of sleep/wake rhythms and, thus disturbances in circadian rhythms" (Knauth, P. 1983 p.13).

Having finished the night shift on Christmas Eve morning at 8 am he returns home to go to bed in preparation for the second night shift Christmas Day. In between nights he has to try and obtain some quality sleep, relate to the family, have a meal during the day and possibly return to bed before going to work and start at twelve o'clock midnight Christmas Day. Leaving home on Christmas Eve at around eleven o'clock at night and reporting for work and returning home Christmas morning around nine o'clock. He then tries to obtain some quality sleep during Christmas Day, and possibly has his Christmas dinner with the family later that evening. The following day Stephens Day he works 4pm-12 midnight and the following evening the same followed by three days off as indicated on the diagram. The shift cycle then continues with another six consecutive days, two days, two nights, and two evening shifts. The second day shift as indicated on the diagram New Years Day, Wednesday 1st 1986 "quick change over" on to night work. Using the diagrams you can follow the pattern and compare and contrast each of the years. The information and summary are supplied to help you identify each of the days and are clearly marked to facilitate further study if necessary. ESB is an essential service and has to be manned not only throughout the Christmas period and the New Year but three hundred and sixty five days of the year.

Initial findings of the Poolbeg Shift Cycle over the Christmas period.

Looking at the shift cycle you can see it is a fast forward moving cycle. Fast forward means in the process of the shift cycle the shift worker moves from day work, to night work, on to evening shift. Three days off follow in sequence to give some quality time off. While starting back on day shift creates some normality but the shift cycle itself can be wearing.

Hahn's diagram

The effective leisure time is clearly indicated on Hahn's diagram and you can see in fact it is prime time off.

Monday to Friday 8pm – 12.30 am.

Saturday 16.00 – 2.00am.

Sunday All day Sunday 8.00 am. – 1 am the following day.

The Christmas festive season magnifies family difficulties around this period. Not only is the individual shift worker on shift duty but the family is on a consequential shift as well. While the person on shift is trying to get a sleep during the day it requires the children to be quiet and it is almost an impossible situation. Household domestic chores are put on hold and noise kept to a minimum to try and facilitate the shiftworker. The sleep pattern may be very disturbed and with the loss of quality sleep the shiftworker may have to return to his job of work on shift, ill prepared tired and with the possibility of fatigue.

“Sleep disorder can also occur, making it difficult during off duty to go to sleep, stay a sleep or experience a high quality of sleep. About 63% of nightworkers complain of sleep disturbance. Sleep length of night workers may be only 4-6 hours compared to day and afternoon workers who average 7-9 hours. This loss of sleep can become a “sleep debt” that robs an officer of energy and alertness” (Swenson, D. 1999 p.2).

We live in a changing society and there are more women working shift hours particularly in the nursing profession. The consequence of a parent regardless of gender has the same effect placing the family on a consequential shift system.

“One effect of having a shift working father (parent) is to put the whole family on what might be described as a consequential indirect shift system” (Wedderburn, A. 1993 p.14).

The festive season makes it all the more difficult when the family receives friends, visitors or relatives and the shiftworker is between night shifts. In between nights

means the person finished his first night shift and is due in again at midnight. It is not that the individual is anti social but that the individual is working anti social hours preparing for work and there is a significant difference. It is not free time between two night shifts it is rest time. That time is imperative for the shiftworker to function in a safe reliable and efficient manner in the course of his job. Therefore rest time is very important and what is particularly important is that there is an understanding of that situation in the immediate family and extended family. Shiftwork is not beneficial to the family and is increasingly so particularly around a festive occasion. It can have an effect on social events and without understanding it can create difficulties.

“Shift-work is not beneficial to family and social life, but with imagination, hard work and some compromise, it can be highly flexible and much more acceptable”. (Wederburn, A.1993p.35).

Family and Shift Design

The problem is not the family but to convince those individuals who design, and construct shift cycles of the necessity for change. It is often the case that they have never worked shifts and cannot understand the sentiments of a shiftworker explaining that type of situations. There is indeed a case to be made about imagination and try and ameliorate the problem of shiftwork.

“Employees who design, construct, and manage shift work systems are often not shiftworkers themselves, and may not be fully aware of the potential negative effects of shift-work on social and family life. They may understand the point of view of shiftworkers, but will not feel the strength of the experienced shiftworker’s instinctive reactions.” (Hornberger, S. et al,1991)

The family is a unique part of Irish society and has particular standing in the Irish Constitution. Pope Leo XIII in his encyclical letter *Rarum Novarum* said “Employers have rights but they also have responsibilities” so is there a moral question of justice to ameliorate bad shift practice in shift design in the future.

“A happy social and domestic life is an important foundation for good mental health, and shift work can put strains on this. An increasing emphasis on “family friendly” policies among good employers may do something to improve this situation. But it is also easy for employers to forget that changing working times affect families as well as the individual shiftworker.” (Politis, D. 2000 p.27).

Positive elements in shift design and human capital development in education and training enable the employer to attract the most suitable individuals to their organisation. Honesty and reliability are also assets in a moral sense and have legitimate aspiration for employers and employees alike to aspire too. Therefore religious upbringing is important with family values, and morals have a place in modern society having been acquired in the family.

“Studies have found that factors, other than education and training, are found to influence human capital and the level of earnings. Consider religion, which may be an important dimension of family background and environment. Religion may influence the family values, morals, skills and goals of an individual which are inherited or acquired in childhood. These endowments may be important in the marketplace where honesty, diligence and reliability may affect the returns on human capital and thus increase earnings.” (Florides, A. 2007 p.6).

Compensatory Rest Time

General Comments on Compensatory rest

The 11 consecutive hour interval between shifts is required for reason of health and safety to ensure that employees have a minimum period of sleep. From a health and safety point of view, it is dangerous for employees to miss out on a minimum number of hours sleep and then report for work. Therefore, when any variation of the 11 consecutive hours statutory rest is permitted under the Act, the employer should ensure that the health and safety requirements for adequate compensatory rest are sufficient in the circumstances pertaining in that employment. This is equally applicable to the weekly rest provisions. Consideration should also be given to such issues as distance from home and employment in order to ensure that adequate rest is obtained.

(Organisation of Working Time Act, 1997 p.10).

Particular personnel in certain job description are exempt from the above legislation it is illustrated as “exempted activities” in the following section.

General Exemptions

The Organisation of Working Time (General Exemptions) Regulations. 1998 (S.I. No

21 of 1998) prescribe, in accordance with Section (3) of the Organisation of Working Time Act, 1997, that persons employed in the following activities shall be exempt from the applications of sections 11, 12, and 13 of the Act which deal respectively with daily rest, rests and intervals at work and weekly rest:

Section 3. An activity falling within a sector of the economy or in the public sector (b) the nature of which is such that employees are directly involved in ensuring the continuity of production or the provision of services, as the case may be. and, in particular, any of the following activities –

(1) the provision of services relating to the reception, treatment or care of persons in a residential institution, hospital or similar establishment.

(V) the production, transmission or distribution of gas, water or electricity.

(Organisation of Working Time Act, 1997 p.16 -17)

Organisation of Working Time Act, 1997

The “Organisation of Working Time Act, 1997” appears in itself to be a very fine document. But it excludes the very institutions that need to be reformed. It would appear to follow the example of the derogations within the European Union. It does not make sense to have such directives and yet there is a clear contradiction in terms attempting to prevent change that has clearly been identified on health and safety grounds. The possibilities are there in theory but economically the probability or cost factor is preventing change. Colligan’s 1978 study (cited in Swenson 1999, p.1) demonstrates that “*As early as 1978 concerns over the effects of shiftwork led the Institute of Occupational Safety and Health to issue a warning that shiftwork and rotating shifts posed a significant health risk to workers*”

The only expression that comes to mind presently is “All men are equal but some are more equal than others” (Orwell, G. 1989)

The shift rosters of Gardai, Nurses, and ESB Shiftworkers are compared.

Ameliorate the problem of shiftwork through a democratic process for the future with a win win solution.

The Gardai Shift Cycle

Full Dublin Duty Roster for three relief system 2006 / 2007

Unit A	F	F	L	L	E	L	L	E	E	F	F
Unit A1	F	F	L	L	E	L	L	E	E	F	F
Unit A2	F	F	S	S	T	S	L	T	T	F	F
Unit B	E	E	F	F	L	E	F	L	L	E	E
Unit B1	E	E	F	F	L	E	F	L	L	E	E
Unit B2	T	T	F	F	S	T	E	S	S	T	T
Unit C	L	L	E	E	F	F	F	N	N	N	N
Unit C1	L	L	E	E	F	F	F	N	N	N	N
Unit C2	S	S	T	T	F	F	F	S	T	T	T
Unit D	N	N	N	N	N	N	N	F	F	L	L
Unit D1	N	N	N	N	N	N	N	F	F	L	L
Unit D2	S	T	T	T	S	S	F	F	F	S	S

Regular Units (A, B, C, D,)

F = Free day off L = 2pm - 10pm

E = 6 am - 2pm N = 10PM - 6am

L E F	L L E E F F F	N N N N N N N
L E F	L L E E F F F	N N N N N N N
S T E	S S T T F F F	S T T T S S F
F F F	N N N N N N N	F F L L E L L
F F F	N N N N N N N	F F L L E L L
F F F	S T T T S S F	F F S S T S L
N N N	F F L L E L L	E E F F L E F
N N N	F F L L E L L	E E F F L E F
S S F	F F S S T S L	T T F F S T E
E L L	E E F F L E F	L L E E F F F
E L L	E E F F L E F	L L E E F F F
T S L	T T F F S T E	S S T T F F F

Flexi Units

T = 10am - 6pm

S = 6pm - 2am

The Gardai Shift Cycle (continued)

Unit A

Week 1	Week 2	Week 3	Week 4
M T W T F S S	M T W T F S S	M T W T F S S	M T W T F S S
F F L L E L L	E E F F L E F	L L E E F F F	N N N N N N N

F = free day off

E = 6am - 2pm

L = 2pm - 10pm

N = 10pm - 6am

The Gardai shift cycle is a thirty-nine hour week over a four-week cycle. It continues three hundred and sixty five days throughout the year.

Week 1

The cycle as illustrated starts with two days off on Monday and Tuesday. The following day Wednesday the late shift starts at two o'clock and finishes at ten that night. Thursday is the same 2pm – 10pm. The following day Friday the early shift starts at six o'clock in the morning to two o'clock in the afternoon. Saturday and Sunday are two late shifts starting at two o'clock in the afternoon and finishing at ten o'clock that night.

Week 2

The cycle continues into week two Monday and Tuesday 6am - 2pm. Wednesday and Thursday are days off. Friday is covered by the late shift 2pm – 10pm. Saturday the early shift is covered 6am - 2pm and Sunday is a day off.

Week 3

Following the shift cycle into the third week Monday and Tuesday are two late shifts in the afternoon 2pm – 10pm. Wednesday and Thursday of this particular week are covered by two consecutive shifts early shifts 6am – 2pm. The following three day Friday, Saturday and Sunday are days off.

Week 4

The forth and final week in the shift cycle are covered by a week of seven nights 10pm – 6 am. That concludes the shift cycle and the roster starts at week one again and continues throughout the three hundred and sixty five days of the year.

Gardai Shift Cycle (continued)

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
1	F	F	L	L	E	L	L
2	E	E	F	F	L	E	F
3	L	L	E	E	F	F	F
4	N	N	N	N	N	N	N

F = Free day off

E = 6am – 2pm

L = 2pm – 10pm

N = 10pm – 6am

The shift cycle is the same below for clarification.

To prevent confusion the format or lay out as described is the same as Poolbeg Power Station for clarification

Gardai Shift Cycle (continued)

Week	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
1	O	O	E	E	D	E	E
2	D	D	O	O	E	D	O
3	E	E	D	D	O	O	O
4	N	N	N	N	N	N	N

O =Day off

D = 6am – 2pm

E = 2pm – 10pm

N = 10pm – 6am

Shifts worked in the four weeks cycle is equal to $20 \times 8 = 160$ and divided by $4 = 40$ hour week. (39 hour week Social Partnership Agreement)

Nurses Shift Roster

“Self-rostering at work” Tara Horan

Horan gives a good insight into the difficulties of managing and working in a volatile environment where change is inevitable for best practice. She highlights the necessity for dialogue through cooperation as she invariably includes collaboration of forces to move forward in health care while trying to ameliorate the problem of shiftwork in a modern society capable of providing a better service to patients and find a win win solution.

Rosters are prepared in the nursing office for wards or work areas. The director of nursing usually approves a roster. Staff usually have a roster and know in advance where they will be working. Team-based self-rostering appears to be flexible and helps teamwork as perceived.

“However staff rostering is a difficult task that demands careful balancing of the need of patients and staff alike. It is an operational responsibility that can take up enormous amount of time and energy at the highest levels of nursing management”

(Horan, T. 2004)

The senior nurses want to hold on to this area of controlling rosters in the best interest of the patients. To change this method while modernising staff rostering operation would require trust in their opinion. The Health management supports the development of staff and creating a support mechanism that supports best practice in rostering of staff in the best interest of patient care.

“ An imperative for Progress was published by the OHS following research and a pilot programme, to enable healthcare organisations to implement best practice in the rostering of staff” (Horan, T. 2004)

To improve the quality of working lives of employees participative management has evolved empowering staff at all levels. In conjunction with practical experience and innovation two workshops in March and September 2002 was organised and funded by the OHS. It may be best described as a meeting on minds and conducted by the staff of the Centre for the Development of Healthcare Policy and Practice at the University of Leeds, together with the North Western Health Board. The participation fostered feedback and thus acknowledged local practices varied greatly. There was

some electronic system of rostering by a progressive self-directed workforce. While it was clear others needed modernising, it was a start recognising the need for local workshop and feedback. A survey was carried out on rostering practice in the Irish health service as part of a project in March 2003.

"A total of 125 responses were received covering acute hospitals services, care of older people, psychiatry, services, learning disabilities, public health/ community care and other services". (Horan, T. 2004).

Primarily organisations continue to use fixed rostering while there is a move towards empowerment-based and ward-based. A wide range of rostering appears to be in use and there are different approaches. There would appear to be little use of electronic rostering though it is thought this will increase. With changing circumstances there are rapidly variable approaches of ward-based rostering.

"While centralised approaches to rostering may be familiar and relatively straight forward to administer, they disengage staff from an active part in the management of patient care. Devolving rostering responsibility to frontline staff should have the two fold benefit of improving staff morale and manager development". (Horan, T. 2004)

Self-rostering at work

Beverley Broden is practice development unit leader in the Renal Dialysis Unit, in Mayo General Hospital. As an advocate she believes it is *"the key to a harmonious balance between work and home life"* (Brodén, B. 2004). In other words it has possibilities to ameliorate the problems of shiftwork. In essence her practical perception of a safe delivery quality patient care is high on her agenda. Resource utilisation of nurses and job satisfaction can only work best in an environment that is harmonious between work and home life. She has a practical and progressive perspective and can relate historically to the friend or foe element detailing for rosters or refusing to facilitate requests.

"Hospital management are also scrutinising that the ward is run cost effectively, making the balance between service needs and the nursing staff very difficult."

(Brodén, B. 2004).

"Shift-work is not naturally beneficial to family and social life, but with imagination, hard work and some compromise, it can be highly flexible and much more acceptable." (Wedderburn, A. 1993 p.35).

Wedderburn's foresight is acknowledged in the following piece and great credit to his thought process and hope for the future. While encouraging compromise never lost sight of the goal to further the aim or to ameliorate the problem of shiftwork for families. He encouraged imagination to find new ways to dispel old problems of shiftwork for the future and always with the hope for mankind to have a better quality of life.

"At this time the unit was operating with long days – 13 hours shifts, three days a week. This was due to five staff who covered six days." (Broden, B. 2004).

Self-rostering in the Renal Dialysis Unit

This was a pilot project and could be regarded as a forerunner for best practice in the future. Particular considerations were debated before attempting to run with the idea.

- *"Support to implement the scheme among nursing staff"*
- *The effect on patient care delivery from different perspectives, e.g. quality system, absenteeism, staff retention, equity and fairness for team members*
- *Mutual benefits for stakeholders"* (Broden, B. 2004).

A dignified approach with consensus was applied in a democratic way. This satisfactory foundation attempted to complete the exercise in hand. It was essential to have ground rules and this was described as "critical success factors" to reach a common solution. It was decided to run the pilot project for six months with an evaluation and review. It was a huge success and all stakeholders agreed the roster was working well and were satisfied with it. Staff morale increased with the consequent benefit and ability to integrate work patterns with home life. More progress was made when it was decided through the review to reduce the shift from 13 hours to 12 hours due to an increase in patient numbers and care which had the corresponding effect of increasing the staff.

"Thus staff were reduced to a 36 hour week for three weeks, and 48 hours for one week, totalling 156 hours each calendar month. The unit is still self-rostered, delivering quality care in a happy, cost-effective way" (Broden, B. 2004).

Research Findings

The findings move in a positive direction towards change in the future from an economic and social perspective in the European Union. Hahn's illustration of the overlapping of socially effective leisure on family life has a direct bearing on the quality of life. The parent, working husband or wife or partner does have an effect on the family relationship in the home. The research of the European Foundation is very rich and very positive towards a resolution to ameliorate the problem of shiftwork.

The family, education, and social aspects all aim in the same direction to find ways to ameliorate the problem of shiftwork on family life.

Shiftworkers themselves must show a positive interest to pursue means to ameliorate the problem of shiftwork for themselves. Show imagination and look at alternative shift systems, e.g. twelve hour shifts or alternative eight hour cycles. The "consequential indirect shift system" and the effect on family life is a reality. Parental authority as investigated by Koller is an ongoing problem particularly when one parent is meant to deal with a situation when the other parent is either working, preparing for work, sleeping before going to work, or actually on night work. The effect of the shift cycle on the rhythm of the child is a reality, but a lot of the time it is hidden from society. It is particularly noticeable when young children are travelling early in the morning to a crèche to facilitate the parents on their way to work. Shiftwork is often taken on as a necessity to make a living and provide for the family. Remuneration for shift to create more of an opportunity for the family regarding education is indeed a myth. Leonard et al. 1991 in his findings clearly indicates children of shiftworkers do less well proportionately in education.

"It is always tempting, but perhaps too early, to generalise from what amount at the moment to fairly small and isolated studies. On the other hand, if there really is a general and serious deficit in the quality of children's upbringing caused by having shift working parents, many of the effects are likely to be hard to detect, because they may be as Gadbois (1991) put it, "not immediate, nor easily discerned, and may therefore pass unrecognised." It certainly looks like the kind of problem that is worth some demographic and educational research on a national or European Community scale." (Wedderburn, A.1993 p.16)

Brian Lenihan has embarked on an examination, of the following articles that impact on children.

Article 40, Personal rights

Article 41, The Family

Article 42, Education

and 15 and 28. National Parliament and government

Pressure Group

The Children's Rights Alliance is a coalition of eighty non-governmental organisations concerned with the rights and welfare of children. As regards Competitive Europe - Social Europe the Irish government have a very positive approach to their role in European affairs. There is no way of knowing presently what the outcome of such investigations or examination may change in the future. Speculating one way or the other, will be of immense interest to the general public. No doubt Children's Rights Alliance will continue their research and there is every possibility of a constitutional amendment in the future. What form that will take will very much depend on consultation with various representative bodies of which Children's Rights Alliance will very much be a part of that process.

Comparison of the Gardai, the Nurses and ESB Shiftworkers

The Gardai shift cycle was summarised and the Nurses shift cycle investigated and debated earlier. For simplicity the Gardai have a thirty-nine hour week and the nurses have the same although their cycle will be reduced close enough to the ESB cycle 37.1/3 within this year 2007. Both the Gardai and nurses hours have been reduced through the social partnership and that is how there cycle is thirty-nine hours. The point of this research is to look at the unsocial aspect of shiftwork and ameliorate the problem of shiftwork. The unsocial aspect affects each category the very same way because in effect regardless of their job they are all working shift, with families that are affected in the very same way. Therefore there is common ground to ameliorate the problem of shiftwork. The Poolbeg example can be easily transferred and similar research can be done with nurses and gardai. It would be interesting to compare results and in so doing help to resolve the problems of shiftwork through research methods. Nurses may work thirty-six hours and make up the difference with training hours or an additional shift at the end of the month. It is questionable whether twelve-hour shifts are better or worse than an eight-hour day. Which cycle suits the particular industry and maintains best practice is their decision.

The question remains outstanding in this research, how do you ameliorate the problem of shiftwork? It is an ongoing question with many opportunities to resolve it in the future.

Social Partnership

The possibilities are for the continuation of the social partnership negotiations and make it a priority in negotiations to reduce the working week. In doing so eventually ameliorate the problems of shiftwork over a period of time. The partnership agreement is the most democratic way to achieve that goal and create a win win situation and a solution to ameliorate the problem of shiftwork and a better quality of life for shiftworkers and their families.

CHAPTER 4

Conclusion

These are the problems of shiftwork.

Referring back to ESB Poolbeg Generating Station shift cycle and the effects of the “quick change over” one may now relate to the necessity for change to ameliorate problems for shift working arrangements. The cycle is fast moving and cuts through social effective leisure time and has its effect on family life. The consequential shift cycle is a reality for the family home and shiftwork scars leisure visibly particularly at weekends. The shiftworker is out of phase within society simply because of his or her schedule of working time. Different times of the day are not equivalent and therefore synchronising family meals is not possible within particular times of the shift cycle. There are natural rhythms within society and shiftwork runs contrary to the norm. The vast majority of society works an eight-hour day and retires to a consistent sleep pattern. That pattern does not exist for a shiftworker but an alternative shift cycle of reduced hours would ameliorate some of those outstanding problems for example the “quick change over.” An alternative system of twelve hours is also a possibility for the future for Gardai, nurses, and ESB Shiftworkers.

European Union in the 21st century

It is a challenging time for the European Union in the 21st century. The work done at the XIV International Symposium on shift work was very challenging. The work of Hornberger, Knauth, Costa and Folgard are numerous? within the European Foundation for the Improving of Living and Working Conditions. The Social Charter is very important for workers in the European Union. Social justice was and is necessary for a civilised democratic European Union. To strike a balance between the employers on the one hand and better working conditions for employees is an honest aspiration.

In a modern European Union, European law supersedes national law therefore the social action programme is a method of obtaining rights for workers. David Lea, 1989 Assistant General Secretary of the British TUC addressed European Law and collective agreements. The article in the Irish Industrial Review gave a running commentary on what was happening around this period and he saw the Charter as an opportunity in

law to make things different for workers in a progressive European Union. It was very disappointing to find the ministers meeting in closed session within the Council. Derogations appeared resulting in a retrospective backward movement within what was to be expected to be a watershed similar to the breakthrough of the forty-hour week. It is important to be competitive in Europe but it is also very important that justice is done or seen to be done regarding the European Union on the Social Charter.

Nation at Work

Robert Reich wrote about the three jobs of the future in his book "The Work of Nations." He broke them down into categories of work into three areas' production services, in person services, and symbolic analysts. The later are highly desirable in industry and their services come at a high premium. They cover a wide spectrum of individual professions like public relations, bankers, lawyers, engineers, and accountants.

"Symbolic analysts often can draw upon established bodies of knowledge with a flick of a computer key. Facts, codes formulae, and rules are easily accessible what is much more valuable is the capacity to effectively and creatively use the knowledge. Possessing a professional credential is no guarantee of such capacity. Indeed a professional education which has emphasised the rote acquisition of such knowledge over original thought may retard such capacity in later life". (Reich, R. 1991 p.182).

No one has a monopoly on the thought process and everyone needs to respect that there are other opinions and may be better ways of approaching problems. The rote acquisition of knowledge is not a guarantee that you know best and in fact it may get in the way of thinking outside the box. Therefore structures that are useful should be put into motion regardless of who thought of it. That is what is important and therefore if management and workers collaborate to find better ways to resolve their problems everyone will be a winner.

The production services or the manufacturing industry has taken a down turn and products are being produced in third world countries where labour is cheaper. The service industry is vibrant and growing and includes hairdressing, the hotel industry, taxi service and others. In business today the focus is on talent whether it is

restructuring or creating a new business the emphasis is forthright in obtaining the right people to do the job. The Garanti Bank in Turkey is a good indication of their preparation and cultural approach to what they perceive as an opportunity and to be prepared for change in the European Union whenever that happens in the future.

“At Garanti, every customer is a star” (Kanter, R. 2002 p. 4).

The strategy of Akin Onger the Chief Executive of Garanti Bank may be illustrated within the framework of McKinsey 7-S model. Downsizing has become part of a strategy to formulate a plan to change and to survive in the global market. Henry Mintzberg's organisational configuration model illustrates the downsizing of an organisation reducing middle management and creating a flatter management structure. The University of Michigan Strategic Human Resource Planning much similar to the 7-S of Mc Kinsey stress the necessity to change and create “best practice. The headings come under the following, Leadership Structure Staffing Communication Measurement Reward and Development. (Brockbank, W.1999).

Leadership is very important in transformation of an industry and the Leadership Grid incorporates a study by Useem in 1996 while Robbins and Coulter have similar findings in their research and refer to it as “charismatic-visionary” Leadership. The leader is capable of displaying an imaginary ---“that taps into peoples emotions and inspires enthusiasm to pursue the organisations goals.” (Senior, B. and Fleming, J. 2000 p. 261)

To return for a moment to Robert Reich having surveyed the above theories it is important for individuals to think outside the box and be more imaginative.

“Possessing a professional credential is no guarantee of such capacity”. (Reich, R. 1991p.182).

My findings recognise the world continues to change and if you don't change you become extinct. The realisation having observed the above transformation of society and industry the war on talent has surely arrived and here to stay. Talent is at a premium and shiftwork is no different in that respect so therefore ways have to be found by management to hold onto the people they have trained and recruit personnel they want. So in due course of events it is only a matter of time before working time is reduced and in that way ameliorate the problem of shiftwork for shiftworkers and their families.

The combination of the rote acquisition of knowledge combined with original thought would appear to be part of the element of talent that Reich is talking about and therefore “effectively and creatively use the knowledge” learned. (Reich, R, 1991).

To encourage an entrepreneurial spirit within society and create wealth for the overall good would be a positive economic objective. In Lewin’s theoretical explanation as the old management structures is unfrozen and movement takes place and frozen again in the new hands on management structures and thus will be in a position to compete successfully in the market place.

“The future is bright the future is Orange” (Senior, B. and Fleming, J. 2000 P. 71).

Orange a mobile phone business realises the future is unknown 13.5 million customers around the world and they still have to maintain their competitive edge because the world is changing so rapidly. They must attract workers to work for them. Therefore benefits come at a very high premium to maintain their advantage in a competitive market. Flexible responsive graduates serve the highest bidder and join Orange because the organisation is upbeat and very attractive. To survive in this highly technical globalisation economy you need to invest in capital management. Organisations must observe their competitor, talent is always at a premium and you only have to look at football and the competitive nature of the game and business is just the same. This means that ESB is no different to any other employer and they need to hold onto their competitive edge with best practice. They have to attract personnel in the very same way as explained above and they are no different in that respect. The Gardai or nurses for that matter are no different either when it comes to holding personnel in their ranks.

Social Europe and Economic Thought

It is important to recognise the necessity to be competitive and to acknowledge that there is the social aspect also within society. To create the right balance is also very important and remember why the common market was created in the first instance. It was created out of economic necessity to cooperate and make Europe a safe place to live and raise a family. In the past Europe had been torn apart and after World War two people wanted peace after the hardship of war. People felt they were entitled to a job, a home and a basic education. Two of the most influential philosophers that

contributed to economic thought were Plato and Aristotle. Plato contributed to the discussion about the division of labour. He recognised specialisation as a currency system for an individual to exchange for their needs. He was of the opinion that the individual should be subordinate to the state and communal ownership should exist. Aristotle studied economic activity “true or genuine wealth “ and “unnatural wealth.” Thomas Aquinas contributed to the common ground and Christian principles and how they coexisted in the economic life of his day. With the mercantilists wealth was in gold and silver and the passing of the feudalism and its barter system came commercial activity. Later the Physiocrats brought about the birth of the phrase and doctrine of Laissez-faire. Proceed without interference from the state, Quesnay and Turgot were such believers in this philosophy. Then came the classical economists, Smith, Ricardo, Malthus, Say, and Mill their economic thought dominated Europe and American economic activity during the period 1780 – 1880. They also believed in laissez-faire policy and along with that the market mechanism were prices moved up and down and maintaining equilibrium between supply and demand.

Adam Smith Economic theory

“At the basis of Smith’s economic theories was the belief that the division of labour was the principle means of increasing wealth” (McCarthy, D. 1985 p.181).

In 1776, Smith published his book “An Inquiry into the Nature and Cause of the Wealth of Nations.” His provoking exercise changed the perspective of economic thinking in business and organisations. Stating, the division of labour was the principle means of increasing wealth.? He also recognised talent and skill and that the individual could become bored with the loss of satisfaction in specialised work. Smith developed the “*Theory of Value i.e. the value of an object is equal to the quantity of labour which it can demand in exchange for itself.*” (McCarthy, D. 1985 p.181). Smith favoured free trade and felt that individuals could best serve the state through self-interest and motivation. He didn’t favour government interference and thought countries should specialise just like individuals.

Conclusion of my Findings

To ameliorate the problem of shift-work has broader aspirations for society as a whole. Economic thought and human capital are very important factors of contributions of society and for society. It is sufficient to state we are moving in a

knowledge society. Therefore it is necessary for ordinary citizens of the European Union to keep informed on issues that concerns them and their families. Only through democracy your democratic right is protected to create a better quality of life. Education is the key to create a clear understanding of economic thought in a learning society. Thus ensuing a balance is maintained for a competitive Europe with social values.

“Employees who design, construct, and manage shift work systems are often not shiftworkers themselves, and may not be fully aware of the potential negative effects of shift-work on social and family life. They may understand the point of view of shiftworkers, but will not feel the strength of the experienced shiftworker’s instinctive reactions” (Hornberger, S, et al, 1991).

My findings would coincide broadly with those sentiments as a person who worked shifts.

Christmas and a wearing shift cycle takes on the family relationship

Looking at ESB Poolbeg Generating Station shift cycle you can see it is a fast forward moving cycle. Fast forward means in the process of the shift cycle the shift worker moves from day work, to night work, on to evening shift. Three days off follow in sequence to give some quality time off. While starting back on day shift creates some normality but the shift cycle itself can be wearing particularly the “quick change over.” The Christmas festive season magnifies family difficulties around this period. Not only is the individual shift worker on shift duty but the family is on a consequential shift as well. While the person on shift is trying to get a sleep during the day it requires the children to be quiet and it is almost an impossible situation. Household domestic chores are put on hold and noise kept to a minimum to try and facilitate the shiftworker. The sleep pattern may be very disturbed and with the loss of quality sleep the shiftworker may have to return to his job of work on shift, ill prepared tired and with the possibility of fatigue and a long night shift.

“Sleep disorder can also occur, making it difficult during off duty to go to sleep, stay a sleep or experience a high quality of sleep. About 63% of nightworkers complain of sleep disturbance. Sleep length of night workers may be only 4-6 hours compared to day and afternoon workers who average 7-9 hours. This loss of sleep can become a “sleep debt” that robs an officer of energy and alertness” (Swenson, D. 1999 p.2).

We live in a changing society and there are more women working shift hours

particularly in the nursing profession. The consequence of a parent regardless of gender has the same effect placing the family on a consequential shift system.

“One effect of having a shift working father (parent) is to put the whole family on what might be described as a consequential indirect shift system” (Wedderburn, A. 1993 p.14).

The festive season makes it all the more difficult when the family receives friends, visitors or relatives and the shiftworker is between night shifts. In between nights means the person finished his first night shift and is due in again at midnight. It is not that the individual is anti social but that the individual is working anti social hours preparing for work and there is a significant difference. It is not free time between two night shifts it is rest time. That time is imperative for the shiftworker to function in a safe reliable and efficient manner in the course of his job. Therefore rest time is very important and what is particularly important is that there is an understanding of that situation in the immediate family and extended family. Shiftwork is not beneficial to the family and is increasingly so particularly around a festive occasion. It can have an effect on social events and without understanding it can create difficulties in my estimation of my findings.

“Shift-work is not beneficial to family and social life, but with imagination, hard work and some compromise, it can be highly flexible and much more acceptable”. (Wederburn, A.1993p.35).

Family and Shift Design

The problem is not the family but to convince those individuals who design, and construct shift cycles of the necessity for change. It is often the case that they have never worked shifts and cannot understand the sentiments of a shiftworker explaining that type of situations. There is indeed a case to be made about imagination and try and ameliorate the problem of shiftwork.

“Employees who design, construct, and manage shift work systems are often not shiftworkers themselves, and may not be fully aware of the potential negative effects of shift-work on social and family life. They may understand the point of view of shiftworkers, but will not feel the strength of the experienced shiftworker’s instinctive reactions.” (Hornberger, S. et al,1991)

My findings on the eleven-hour break would appear to disqualify most people in essential services. It just did not make sense at all it was a missed opportunity once

and for all to do something positive and worthwhile and ameliorate one of the major problems of shiftwork and do away with the “quick change over” As far as my findings are concerned it was a lost opportunity to change shiftwork.

“The 11 consecutive hour interval between shifts is required for reason of health and safety to ensure that employees have a minimum period of sleep. From a health and safety point of view, it is dangerous for employees to miss out on a minimum number of hours sleep and then report for work. Therefore, when any variation of the 11 consecutive hours statutory rest is permitted under the Act, the employer should ensure that the health and safety requirements for adequate compensatory rest are sufficient in the circumstances pertaining in that employment. This is equally applicable to the weekly rest provisions. Consideration should also be given to such issues as distance from home and employment in order to ensure that adequate rest is obtained.” (Organisation of Working Time Act, 1997 p. 10)

Particular personnel in certain job description are exempt from the above legislation it is illustrated as “exempted activities” in the following section.

General Exemptions

The Organisation of Working Time (General Exemptions) Regulations. 1998 (S.I. No 21 of 1998) prescribe, in accordance with Section (3) of the Organisation of Working Time Act, 1997, that persons employed in the following activities shall be exempt from the applications of sections 11, 12, and 13 of the Act which deal respectively with daily rest, rests and intervals at work and weekly rest:

(Organisation of Working Time Act, 1997 p.16 -17)

The “Organisation of Working Time Act, 1997” appears in itself to be a very fine document. But it excludes the very institutions that need to be reformed. It would appear to follow the example of the derogations within the European Union. It does not make sense to have such directives and yet there is a clear contradiction in terms attempting to prevent change that has clearly been identified on health and safety grounds. The possibilities are there in theory but economically the probability or cost factor is preventing change. Colligan’s 1978 study (cited in Swenson 1999, p.1) demonstrates that *“As early as 1978 concerns over the effects of shiftwork led the*

Institute of Occupational Safety and Health to issue a warning that shiftwork and rotating shifts posed a significant health risk to workers”

“While centralised approaches to rostering may be familiar and relatively straight forward to administer, they disengage staff from an active part in the management of patient care. Devolving rostering responsibility to frontline staff should have the two fold benefit of improving staff morale and manager development”. (Horan, T. 2004)

Shiftwork is not beneficial to family life and this is highlighted particularly around a festive occasion when a shiftworker has to continue his or her shift cycle throughout festivities. It is not possible to do away with all the problems of shiftwork but with a little thought process it could make shiftwork a little more tolerant for those engaged at the coalface.

“Shift-work is not naturally beneficial to family and social life, but with imagination, hard work and some compromise, it can be highly flexible and much more acceptable.” (Wedderburn, A. 1993 p.35).

Self-rostering at work

The self-rostering at work would appear to be a positive way to ameliorate the problems of shiftwork. Beverley Broden is practice development unit leader in the Renal Dialysis Unit, in Mayo General Hospital. As an advocate she believes it is *“the key to a harmonious balance between work and home life”* (Broden, B. 2004). In other words it has possibilities to ameliorate the problems of shiftwork. In essence her practical perception of a safe delivery quality patient care is high on her agenda. Resource utilisation of nurses and job satisfaction can only work best in an environment that is harmonious between work and home life. She has a practical and progressive perspective and can relate historically to the friend or foe element detailing for rosters or refusing to facilitate requests.

“Hospital management are also scrutinising that the ward is run cost effectively, making the balance between service needs and the nursing staff very difficult.”

(Broden, B. 2004).

The parent, working husband or wife or partner does have an effect on the family relationship in the home. The research of the European Foundation is very rich and very positive towards a resolution to ameliorate the problem of shiftwork.

The family, education, and social aspects all aim in the same direction to find ways to ameliorate the problem of shiftwork on family life. Shiftworkers themselves must

show a positive interest to pursue means to ameliorate the problem of shiftwork for themselves. They could show more imagination and look at alternative shift systems, for example twelve hour shifts or alternative eight hour cycles. The “consequential indirect shift system” and the effect on family life is a reality. Parental authority as investigated by Koller is an ongoing problem. The effect of the shift cycle on the rhythm of the child is a reality, but a lot of the time it is hidden from society. It is particularly noticeable when young children are travelling early in the morning to a crèche to facilitate the parents on their way to work. Shiftwork is often taken on as a necessity to make a living and provide for the family. Remuneration for shift to create more of an opportunity for the family regarding education is indeed a myth. My findings coincide with Leonard that children do less well proportionately in education. *“It is always tempting, but perhaps too early, to generalise from what amount at the moment to fairly small and isolated studies. On the other hand, if there really is a general and serious deficit in the quality of children’s upbringing caused by having shift working parents, many of the effects are likely to be hard to detect, because they may be as Gadbois (1991) put it, “not immediate, nor easily discerned, and may therefore pass unrecognised.” It certainly looks like the kind of problem that is worth some demographic and educational research on a national or European Community scale.”* (Wedderburn, A.1993 p.16)

The Irish government have a very positive approach to their role in European affairs and Brian Lenihan’s investigations into Articles 40, 41 and 42 of the Constitution would appear to be a progressive move on children’s rights.

Gardi, nurses and ESB Shiftworkes in my findings have common ground and it would appear the unsocial aspect affects each category the very same way because in effect regardless of their job they are all working shift, with families that are affected in the very same way. Therefore there is common ground to ameliorate the problem of shiftwork. The question remains outstanding how do you ameliorate the problem of shiftwork. The possibilities are for the continuation of the social partnership negotiations and make it a priority in negotiations to reduce the working week. In doing so eventually ameliorate the problems of shiftwork. The partnership agreement would appear to be the best way to achieve change in the future as I have found.

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