Master of Commerce and Administration

Economic History Research Essay

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An application of information quality theories to an historical example: The Union Steam Ship Company of New Zealand and it's joint venture with William Holyman & Sons and Huddart Parker Limited, 1904 to 1935.

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ABSTRACT

Scholars concerned with an information-based view of an economy make an implicit assumption that firm efficiencies are based on information of good quality. To date there has been little attempt to develop theories of information that explain the importance of qualitative factors. In this firm-specific study an explanation of the importance of information quality is given by utilising and extending Casson's diagrammatic methodology for representing information flows. This has been done by measuring aspects of the information flows through Wm. Holyman & Sons Ltd and Holymans Ltd, in the period 1904 to 1935.

Wm. Holyman & Sons Ltd and Holymans Ltd were both Tasmanian-based joint venture companies. The joint venture partners were the shipping firms of Union Steamship Company of New Zealand (USSCo.), Wm. Holyman & Sons Ltd (Holyman's), and Huddart Parker Company Ltd (HP). The two joint venture companies were registered in 1904. In 1924 they were rationalised into one joint venture company, Wm. Holyman & Sons Ltd, which continued trading successfully until 1975.

The years 1904, 1919, 1920, 1924, and 1935 have been chosen for detailed examination. This has been undertaken by applying a Content Analysis methodology to the Head Office records of USSCo., which have survived from these periods. The results have provided a way of extending Casson's diagrammatic methodology and in so doing, added to Casson's own contribution to the theory of the firm.

The evidence from the archives suggests that a high quality of information underpinned the joint venture and ensured success for a seventy-year period. Furthermore, the research findings support the thesis that information of high quality contributes in a significant way to firm efficiencies. Finally, the results from this research essay will assist future researchers in finding concrete evidence of information quality in similar research case studies.

Chapter One: Introduction

In recent years there have been a number of scholars who have taken a variety of approaches in their examination of the importance of information and knowledge to an economy. Casson, for example, examines the process of intermediation and argues that information is the lifeblood of an economy. North, in his argument, that institutions are the cornerstone on which economies are built, rates the importance of information just as highly. Boyce and Ville, on the other hand, take a different approach and are interested in the structure within which firms operate. From their empirical research, they provide evidence to demonstrate that information is the key to explaining the success of firms that operate within network structures.[1]

Significantly, these researchers agree that good quality information is a key to understanding how firms achieve cost efficiencies within the economic exchange process. In other words, information *per se* should not be the focus of our study, but rather, the quality of information that underpins an information-based view of an economy.

Yet, scholars to date have done little to explain or study what quality information consists of. Secondly, there is little understanding of the degree to which it is important, and finally, how information quality can be measured. Without this level of explanation, we have no way of knowing how important qualitative factors are. Unlike existing studies, our research, based on a firm-specific example, does not begin with an implicit assumption that quality information is important, but rather attempts to establish why it is important. Some measurement methods are used to help explain the importance of information quality and how quality information underpins the economic exchange process.

To make this possible, we firstly examine current theories of information and how existing theory treats qualitative factors. We examine information types, specifically strategic and 'inside' information where previous researchers

have found evidence of high quality information. Some specific measures are then used to determine where evidence of quality information can be found. Three aspects of quality information are measured: accurate, timely information and information diffusion.

The second part of our study explains the methodology we will use for analysing the firm archives under study. The methodology employed is a version of Content Analysis. This allows us to analyse the archival material in a structured and consistent way and from which a set of measures can be drawn.

The third part of our study is to provide the historical narrative of our case study research. This shows changes over time. The archives of the joint venture between USSCo. (a New Zealand based company) and Holyman's and HP (both Australian-based companies) from 1904 to 1935, are the focus of our case study research. In particular, the years 1904, 1919, 1920, 1924 and 1935 have been chosen for detailed examination. Every document that has survived in the Head Office records of USSCo. has been recorded in accordance with our content analysis methodology.

Current theories of information quality are then applied to our research results. In this way, we are able to determine under what specifications the joint venture operated and the performance standards that were developed. Secondly, we examine how these standards were monitored and, finally, how the joint venture principals controlled the venture.

The final part of our study utilises the information types and measures to demonstrate how significant and important information quality was to the joint venture. These conclusions contribute to the existing body of theory that focuses on an information-based view of the economy. In so doing we can move from the present position of implicit assumption to an information-based view that is cognizant of the importance of qualitative factors.

Notes: Chapter One

[1] Refer to:

Casson, Mark, (1997), Information and Organisation, Clarendon Press, Oxford.

North, Douglas Cecil, (1990), Institutions, institutional change, and economic performance, Cambridge University Press.

Boyce, Gordon, (1995), Information, mediation and institutional development, Manchester University Press (Manuscript copy).

Ville, Simon, (1991),"The Development of a Private Business: The Growth of the Firm in the Pre-Corporate Era", ISSN 0113-0013, No. 82.

Chapter Two: Theoretical Framework

To enable us to move from implicit assumption to cognizance of information quality, we use as a foundation current scholarly views, as they relate to an information-based view of an economy. Our starting point is the view that information is asymmetric. We take this starting point from Williamson who is a leading authority on the significance and role asymmetric information plays in a firm's decision taking and co-ordination of resources.

Information is asymmetric within an economy because entrepreneurs have different types of information available to them, in addition to possessing information that covers different ranges and depths of subject matter. Furthermore, these entrepreneurs gather, disseminate, and process information in different ways and to different degrees. As this process takes place humans have to deal with the information-related problem of bounded rationality. Bounded rationality arises when the quantity of relevant information is great relative to the ability of humans to deal with the information. Furthermore, we are concerned with the way information may be distorted when people are dishonest, giving rise to opportunism. When both bounded rationality and opportunism are present uncertainty affects the way information is available, and may, in turn, affect a firm's processing capabilities.

The complexities associated with asymmetric information has turned some scholars' attention to the importance of firm knowledge and its links to information. One side of the argument is that the two cannot be separated, that knowledge is nothing more than processed information, and that information should remain our focus. However, there is an alternative view that calls for the uncoupling, under certain conditions, of information and knowledge. Furthermore, different types of information and knowledge have qualitative implications. In particular, we are interested in strategic and 'inside' information. Strategic information is the link between environmental opportunities and a firm's ca-

pabilities, that allow it to seize those opportunities. 'Inside' information, on the other hand, focuses on information associated with preference and reputation, *that is,* based on inside reputation as opposed to reputational information available in the market. In both cases, strategic and 'inside' information can be sources of rich and good quality information.

To assist in dealing with these issues we utilise general systems theory as a way to examine the information flows through an organisation and the firm culture that shapes transmission and dissemination. Of particular interest is communication, its various means of transmission, and how communication underpins a firm culture of co-operation and trust. Finally, so that we can develop responses to these issues, measures of accuracy, timeliness, and information diffusion are used to find evidence of information quality.

Information and Knowledge

According to Fransman, two views of information have emerged among scholars who undertake research into information and the firm. The first begins with an implicit definition of the firm as a response to information-related problems. A second view is of the firm as a repository of knowledge[2]. The first view, the firm as a response to information-related problems, enjoys the support of a number of scholars. For example, Alchian and Demsetz's theory of the firm as joint production team,[3] and Jensen and Meckling's theory of the firm as a nexus of contracts between principals and agents, 'are derived directly from this definition and assumption.'[4] Fransman also argues that Coase's approach to the firm is essentially an approach based on information-related problems in that it is grounded in the assumption that information is unevenly distributed among economic agents, *that is,* there is asymmetric information.[5]

Williamson however challenges this assumption. He argues that it is opportunism, rather than asymmetric information that should be the focus of our concern.[6] If people were honest, information would not be distorted. However,

people do not always 'tell the truth, the whole truth, and nothing but the truth'. Fransman, on the other hand, argues that asymmetric information is the cause of opportunism and believes that 'if information were symmetrically distributed, opportunism could not arise.'[7] Carlos and Nicholas's empirical research into the early trading companies supports this view. They found that when the culture of the firm was changed opportunism was reduced. Information asymmetry became the focus of the firm's principals.[8] In the same way that scholars have become increasingly interested in the effects of opportunism, the information-related problem of bounded rationality has received similar attention.

Herbert Simon, who argued that both human beings and organisations are essentially information processors, first promoted the concept of bounded rationality. Williamson later gave bounded rationality a central place in his approach to the problems caused by asymmetric information. The problem of bounded rationality arises when the quantity of relevant information is great relative to the ability of humans to deal with information. Since humans cannot deal with the entire set of relevant information, they have no alternative but to deal with only a subset. 'In this sense their decisions are 'bounded', based on the processing of only a subset of all the relevant information.'[9]

Crémer develops this view and argues that the role of time should be stressed in any discussion of bounded rationality. The cost of communication, argues Crémer, is determined by the time spent by the parties which are transmitting and receiving information. Furthermore, the storing of information that reaches the eye or the ear is modified by time. As new information is generated over time, it is both added to the stock of information already stored and brings about reflection that, in turn, generates new knowledge. The significance of this is twofold. Firstly, the quality of the decision taken by an individual will depend, among other factors, on the stock of information already stored. Second, the stock of knowledge (processed information) is the main component of human capital. Because our ability to add new knowledge over time to the existing stock

of knowledge depends on human capital, we should also be concerned with the link between human capital and bounded rationality.[10] 'Without bounded rationality, there would be no need for human capital, as an individual could relearn very fast all he needs whenever it is useful.'[11] Time is a key factor in this link; decisions are based on the timeliness of information added to existing knowledge while bounded rationality means humans are restricted by time from learning what is useful.

Added to the problems bounded rationality poses for humans and organisations are the complexities associated with information. Barnard argues that understanding complexity is important, because it appears to modify the quality of the elements that constitute organisations.[12] These problems of complexity have shifted the attention of some scholars from viewing the firm as a response to information-related problems to viewing the firm as a repository of knowledge. A number of scholars (Teece, Nelson and Winter, Penrose, Fransman and North) make a variety of contributions to this view.

Nelson and Winter argue that organisational knowledge is stored in the firms routines and that routines are the source of difference among firms.[13] Teece agrees that organisational knowledge is stored in the firm's routines. He also argues that for this knowledge to be utilised effectively, individuals in a firm must not only know the firm's routines, but all members must know it is appropriate to perform certain routines.[14] Penrose, on the other hand, is more interested in how knowledge affects firm growth.

She is critical of economists who have 'for the most part found the whole subject of knowledge too slippery to handle with even a moderate degree of precision, and have made little attempt to analyse the effect that changes in the traditional economic variables have on knowledge.'[15] Penrose argues that an analysis of the firm cannot afford to ignore knowledge, because resources available to a firm and the productive services they can yield are functions of knowledge. For example, there is a close connection between the type of knowledge possessed by

the personnel of the firm and the services available from its material resources. The possibilities of using services change with changes in knowledge. As this adds to experience, productive services from a firm's resources also change. Finally, unknown and unused productive services are of considerable importance because the belief that they exist acts as an incentive to acquire new knowledge, which helps shape the scope and direction of the search for further knowledge. For Penrose then, an important source of firm growth is to be found in the firm's stock of knowledge.

While these scholars (Teece, Nelson and Winter and Penrose) are primarily concerned with firm knowledge, they make an implicit assumption that knowledge is processed information. Fransman, on the other hand, is interested in the causal link between processed information and knowledge. He argues that knowledge must be 'freed' from total dependence on processed information. This is because knowledge functions separately from the processed information that is its makeup. Under certain circumstances the two can be uncoupled. Uncoupling information and knowledge may become important because of two problems that arise from a tight coupling. Firstly, under conditions of incomplete information, it may be impossible to generate unambiguous knowledge from the information set used by an agent. The second problem is related to the nature of information and knowledge. Whereas information refers to data regarding states of the world and state-contingent consequences thus meaning that information refers inherently to a closed set of data, knowledge is essentially open-ended.[16]

Fransman uses the example of the 'IBM paradox' to support his view that information, under certain conditions, should be uncoupled from knowledge. IBM clung to the mistaken belief in 1991 that the mainframe computer would sustain its profitability, size and growth. This belief was contradicted by information that IBM had processed regarding the increasing performance-cost ratio of the microprocessor which eventually undermined the market for mainframes. The growing disjunction in IBM between information the company had proc-

essed and its knowledge-belief is reason enough, argues Fransman, for considering knowledge as separate from information. 'While belief is influenced by information processed by the believer, belief is not necessarily wholly determined by processed information.'[17] However, although Fransman makes a case for separating the two, he does not clearly spell out the reasons for the disjunction. After all, the information being received appears to have been of a high quality. This may suggest possible irrationality, a misplaced hope or a belief system among the IBM executives that filtered and processed information into a mistaken store of knowledge. In summary, the IBM paradox highlights that both the quality of the information received is important, in addition to the quality of processed information, stored as firm knowledge.

Whereas Fransman argues for a conceptual separation of information from knowledge, so that the two can be better understood, North, on the other hand, tightly couples information and knowledge. While he draws our attention to the important differences between communicable, tacit and learning-by-doing forms of knowledge,[18] information and its cost underpins the acquisition of knowledge, whatever its form. North is interested in extending Coase's widely accepted argument - that firms exist because of their lower transaction costs than market alternatives - to recognise that 'costliness of information is the key to the costs of transacting.'[19] Furthermore, if we accept that information costs underpin firm existence, we must be aware that the gathering and dissemination of quality information will involve additional cost. This is a paradoxical fact of firm existence. While there are measurable costs associated with quality, 'the producers who can guarantee constant quality will be favoured.'[20] In other words, we are interested in all costs associated with information gathering, processing, disseminating and storing, including the additional costs of ensuring quality standards are maintained. On the other hand, we wish to demonstrate that costs associated with quality ultimately lead to lower transaction costs.

In summary, we can view any discussion of the firm as either being a response to information-related problems, or as a repository of knowledge. Furthermore, we can see that both viewpoints rest on the fundamental assumption that information is asymmetric. We have also seen that Williamson and Casson are two economists who directly address the problems associated with asymmetric information. Williamson does this through two key assumptions of bounded rationality and opportunism. Casson, on the other hand, stresses the importance of intermediation, synthesis, volatility and information cost.[21] North is also concerned with the problems of asymmetric information and challenges the 'rational actor' model embedded in the neo-classical economists' view. He argues that 'this version has simply led us astray. The actors frequently must act on incomplete information and process the information that they do receive through mental constructs that can result in persistently inefficient paths'.[22] Any analysis of the firm, then, cannot ignore the reality of asymmetric information.

We are particularly interested in how firms deal with problems of asymmetric information in relation to the shipping industry of the late-1800s and early-1900s - the focus of our research case study. Because of the vast distances communications were carried over, we want to know how firms involved in shipping found ways of addressing problems of asymmetric information. One way is to examine the systems within which firms in the shipping industry operated and the way in which these systems may determine information quality.

The Systems Approach

General systems theory is one framework we can use to examine these systems. It also allows examination of the nature of information flows through the firm and provides a framework for examining linkages, processes and relationships between information interfaces. These linkages, processes and relationships are to be found in the way and to whom information is transmitted, disseminated, stored and retrieved. Further-

more, based as it is on a model of control and feedback, systems theory provides a way for us to measure information quality. Firstly, however, we need to explain the relevance of general systems theory to our study.

We begin by viewing all economic exchange activity within a systems framework. Firms and markets, for example, can be viewed as discrete systems. Furthermore, a process of intermediation underpins a market economy (a discrete system) where products move through and create an economy by a process of arbitrage and speculation, integrating markets over space and time. 'A simple way of summarising is to say that firms are specialised intermediators. In a very general sense firms intermediate between households as factor owners and households as consumers.'[23] An information-based view of an economy, underpinned by interacting business systems, suggests that the essence of intermediation is the organisation of trade, rather than the outputs of production that result from its organisation. Casson's diagrammatical representation can be used to illustrate the information-based view in the following way:[24]

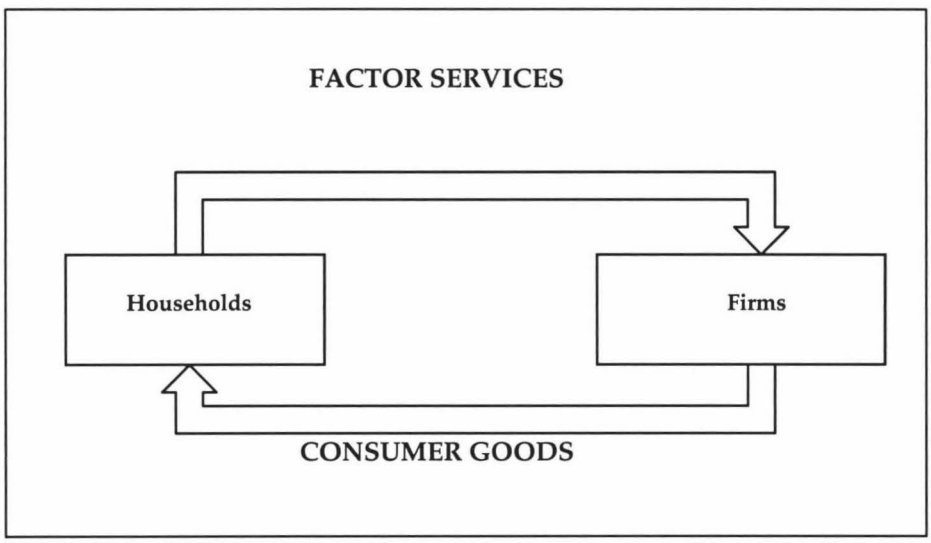

FIGURE ONE A: MATERIAL VIEW OF AN ECONOMY

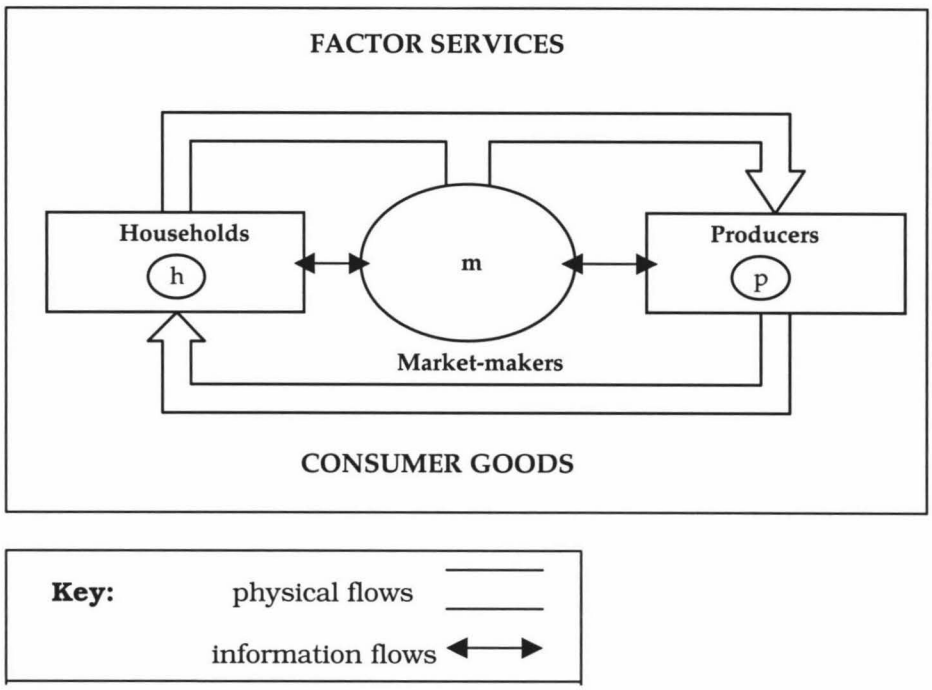

FIGURE ONE B: INFORMATION-BASED VIEW OF AN ECONOMY.

By viewing a micro-economy as a discrete system, interacting with an external environment of producers, suppliers, customers and the macro-economy, we can analyse the information flows that sustain the process of intermediation. Casson argues that the transaction costs associated with markets can be reduced through intermediation and is one of the most important sources of added value in the entire economy.[25] However, a process of intermediation on its own does not add value, it is the quality of the information that creates additional value.

Furthermore, systems theory helps us identify these quality factors. This is because at the heart of systems theory is a process of control. Systems have acceptable levels of performance, called standards, against which actual performances are compared. Activities too far above or below standards should be noted so that adjustments can be made. The ability to make this judgement will depend on how good the information is. In other words, if standards have been established, by way of clearly defined specifications, and are then monitored and supported by a system of feedback, decisions and actions to be taken will only be as effective as the quality of the information making up the feedback. For this rea-

son, our interest is in examining the quality of the information supporting the standards-feedback-control process.

If we accept that the quality of information is a key to an effectively operating standards-monitoring-feedback-control process, what is it that ensures information is of a high quality? Our argument is that the answer is to be found in a firm's culture. Furthermore, the stronger the co-operation and trust between economic agents, the more likely the information will be of a high quality.

Culture of Co-operation and Trust

Crémer is one scholar who argues that the presence of a strong corporate culture improves the efficiency of internal communication and of decisions which in turn drives down firm transaction costs. Crémer takes a 'cognitive' view of firm culture, which involves focusing on culture to explain the firm. North and Barnard, on the other hand, take a behavioral view. This involves examining aspects of human behaviour so as to explain firm culture. However, both North and Barnard share Crémer's viewpoint that a corporate culture of trust and co-operation underpins the achievement of firm efficiencies. Furthermore, they consider that a firm culture of trust and co-operation is an important means of addressing information asymmetries. In his theoretical analysis of institutions and institutional change, North, for example, argues that the evolution of institutions occur because of an economic need to 'create an hospitable environment for co-operative solutions to complex exchange'.[26] Barnard also argues that the most important attribute of an organisation is co-operation. Underpinning his co-operative model of the firm is communication. Communication is also fundamental to Penrose's view of the firm. For Penrose, the boundary and shape of the firm are determined by 'authoritative communication' (formal) and sustained by informal communication.[27] Barnard takes this view further and argues that the formal and informal means of communication cannot exist without the other. He argues that the lifeblood, and indispensable function of informal organisation, and its rela-

tionship to formal organisation, is communication. That is to say, the link between co-operation and communication is symbiotic.

This dependence can be illustrated by utilising game theory. The prisoner's dilemma, from game theory, demonstrates how escape depends on co-operation and the key role communication plays.[28] However, game theory only highlights the dependence. 'What is left unexplained is how players communicate to forge an initial co-operative contract and signal that they observe an indefinite time horizon'.[29] Communication is the key to explaining sustained co-operation. Boyce, for example, argues that communication 'sustains all forms of contracting'.[30] Barnard also argues that communication occupies a central place in sustaining co-operation, because 'the structure, extensiveness, and scope of organisation are almost entirely determined by communication techniques'.[31] Helper also argues that an extensive communication system facilitates a rich flow of information needed for a "let's work things out" approach to overcoming information asymmetries. She, like Crémer, argues that despite the costs associated with building such systems, the resultant information flows require and engenders a high degree of commitment to the relationship.[32]

If communication is vital to sustaining co-operation within the firm, what is it that links the formal and informal structures together? For North, the key lies in the transmission of information. 'Co-operative behaviour is usually observed when individuals repeatedly interact, when they have a great deal of information about each other.'[33] It is important that transmission is not disrupted, because it is the processes of transmission that are at the heart of the firm's formal and informal communications which assists in sustaining a flow of good quality information. Penrose illustrates this best when she argues that 'if the processes for the transmission of knowledge are not perfect, different groups of individuals may possess knowledge in different degrees.'[34] She also argues that any imperfection in the knowledge received is not inherent in the nature of the knowledge itself, which by its very essence is transmissible to all on equal terms.

Rather the problem lies with the 'communication system' (or means of transmission). If we accept this argument, the degree to which information is of a 'high' or 'low' quality depends on transmission and the communication infrastructure that facilitates transmission. We can see, then, that communication sustains firm co-operation and that the means of transmission binds the formal and informal structures of the firm together. However, there must be something that ensures the communication and its means of transmission support information of good quality. Three scholars, Vincent, Crémer and Boyce, argue that it is 'firm culture' that is the key.

Boyce argues that culture 'shapes the scope and imagery of communication'.[35] Furthermore, it is a culture of trust that ensures continued co-operation. This is significant because, without a culture of trust, the firm will not be cost-efficient.[36] Vincent's research of Eastern Airlines, for example, serves to highlight how a lack of trust limits economic possibilities and can lead to cost inefficiencies.[37] Vincent was able to demonstrate that a lack of trust, rooted in an unwillingness to share information, lay at the heart of the firms inability to develop into a new, unified organisation for Eastern Airlines.

Furthermore, Crémer argues that it is the firm's culture that 'enables it to respond to the information it receives'.[38] Emphasising culture draws attention to the various facets of communication. 'At once, differences in information types, variations in asymmetry, degrees of specialisation and problems involved in transmitting knowledge are seen to be important in shaping contracts.'[39] Without a culture of trust, a firm is ill-equipped to deal with the problems associated with information and more importantly, may make flawed strategic decisions that are grounded in information of poor quality.

In summary, a firm culture of trust and co-operation is an important means of addressing information asymmetries. Furthermore, a strong corporate culture improves the efficiency of internal communication and decisions, which in turn drive down transaction costs. Whereas communication is the lifeblood of

sustained co-operation, it is the transmission infrastructure that binds the formal and informal structures of the firm together.

Types of Information

Because our research is based on finding evidence of information quality, we focus on information types as a way of establishing this evidence. In particular we are interested in strategic- and 'inside'-types of information. From their empirical research, Boyce, Zuboff, Yates and Ville all found these types of information to often be rich sources of high quality information.

Strategic information is used to make decisions regarding firm strategy. In turn, strategy arises as firms recognise a way to apply their internal capabilities to seize environmental opportunities. 'Inside' information operates in a similar manner. In the same way that the firm uses strategic information to seize opportunities, 'inside' information draws on preferential and reputational sources to assist in the decision making process.

i) Strategic Information

We have seen, then, that strategic information provides an important linkage between an external environment that presents a firm with opportunities, and the firms internal capabilities that allow it to seize those opportunities. Strategic information facilitates the process of a firms matching environmental opportunity and internal capability. Furthermore, where internal capability effectively supports the exploitation of opportunities, and the outcomes are successful, we are likely to find the information of a high quality underpinning the process. A note of caution is, however, necessary. Successful outcomes may not necessarily mean good information. As we have seen from the IBM paradox, high quality information was available to the executives of IBM, yet they made flawed strategic decisions. Our focus will rather be on the attention given by the firm to the gathering of good quality information, and how well they used it. Such a process re-

quires an understanding of both the context within which strategic information was gathered and the strategic requirements a firm has.

Mintzberg defines strategy as a consciously intended course of action to achieve some goal or objective. He argues that a strategy is made in advance of actions to which it applies and is often stated explicitly in a formal document known as a plan.[40] However, Mintzberg suggests four other contexts in which strategy may apply. Firstly, a 'ploy', which can be defined as a specific manoeuvre, intended to outwit an opponent or competitor. Second, a strategy is any viable 'position', whether or not directly competitive, *that is* occupying a niche in the environment. Third, a strategy may be a 'pattern' in a stream of actions displaying a consistency in behaviour, whether or not intended. Finally, it may be a 'perspective' which is a commitment to a way of acting and responding.

If we accept that a firm strategy may arise from any one, or a mix of these attributes, strategy does not necessarily follow a fixed set of routines or actions that cannot be varied. Plans are based on conjectures about the future state of the world, many of which will be incorrect. What is a key characteristic of a deliberate strategy is that it provides active guidance for information adaptive searching processes, *that is* that the reaction to unforeseen events does not have to be unplanned. In our research case study, an application of Mintzberg's definition of strategy allows measurement of firm success and how the use of strategic information contributed to that success. We can also demonstrate how the resultant adaptive process from strategic planning ensured future efficiencies. Empirical studies of this nature have provided economists in the past with useful insights into the importance of information for the setting of firm strategy.

Such studies have found, for example, that successful strategy is dependent on the information that underpins it. Boyce concluded from his empirical research of the British shipping industry between 1870 and 1919 that the direction of the industry's growth was dependent on the configuration of shipowner's information channels.[41] Firms of the late nineteenth- early twentieth-century ap-

preciated the importance that information played in a firm's success. In her empirical research into tracing the origins of linkages between information and strategy, Zuboff found that the importance of information and its quality began to receive concentrated focus with the work of Taylor and the scientific management movement. One contemporary interpreter of scientific management outlined how the movement's foundations were based on 'quality of knowledge.' Although the scientific management movement was more concerned with functional efficiencies, and their dependence on quality information, a new conception of managerial responsibility had developed with the rise of the movement.[42] At the heart of this new level of responsibility was information and its quality as a strategic management tool.

The harnessing and utilisation of information for strategic purposes also helped determine the success of both the vertically integrated firms of the late nineteenth- early twentieth-centuries and the more outward-looking firms, represented by the networking British maritime sector between 1870 and 1919. Boyce, for example, argues that 'corporate development in shipping did not fit Alfred D. Chandler jr.'s pioneering paradigm wherein firms improve efficiency by internalising transactions and exerting centralised control over operations. Shipowners relied heavily on externally oriented channels to build some of the world's largest maritime enterprises by 1919.'[43] Furthermore, while the focus of these firms was different, what these institutions did have in common was a dependence on communication channels and the information they generated. This enabled both institutional forms to maintain a strategic advantage over competitors. So important was this process of communication, Boyce argues, that 'information and business development are dynamically related.'[44] Similarly Zuboff concluded from her research at Global Bank that 'information, rather than money, was now recognized as the bank's most valuable commodity.'[45] Strategic thinking moved from an emphasis on loans to an emphasis on the development

of new technology-based products and services, with information as the focus of value to the bank.

In her empirical research into vertically integrated firms that have been successful, Yates concluded that in the case of the Illinois Central, Scovill and Du Pont, information also lay at the heart of the management's efforts to control their businesses more effectively. At Du Pont, for example, the three cousins and the team they brought with them came determined to reap the benefits of operational as well as financial consolidation. Their goal of linking a strategy of vertical integration to a control system of monitoring and feedback was achieved by building a new communication system through which to achieve efficiencies that had eluded the previous generations of du Ponts.[46] This emphasis on systems, however, was found on its own not to be enough. Both Scovill and Du Pont realised that there is a vital link between the formal and informal organisation and realised that it was important to counter the depersonalising effects of system with some communication mechanisms aimed at humanising the work place. Scovill found the in-house magazine an effective medium for personalising relations. At Du Pont managerial meetings were used to speed up the transmission required by management. These meetings allowed upper management to monitor the introduction of new methods that meant they could respond to problems as they arose rather than after they had reached crisis point. In each case, the emphasis was on efforts to improve the quality of information and its processing for strategic purposes.

ii) 'Inside' Information

We are interested in two forms of information that give rise to the term 'inside' information. The first is information that derives from a firm or person's reputation and can be judged as 'inside' if it arises from first-hand observation, as opposed to indirect impressions obtained in a public or market context. The second is preferential information, information that is not uniformly or widely distrib-

uted but rather available to a select group of players only. It is our argument that both forms of inside information derive from, and sustain, network structures. We can only understand inside information by placing it within the context of the network structure.

Granovetter and Powell are two scholars interested in the nature of network structures. Powell provides a useful definition that we can apply to our firm-specific study. His stylised comparison of forms of economic organisation (Table One below) provides a way of judging the degree to which the joint venture operated as a network structure. Whereas Powell is interested in the nature of networks, Boyce and Ville, on the other hand, are two scholars interested in how information flows are affected by inter-firm structures. They argue that networks

	Forms		
Key Features	*Market*	*Hierarchy*	*Network*
Normative Basis	Contract – Property Rights	Employment Relationship	Complementary Strengths
Means of Communication	Prices	Routines	Relational
Methods of Conflict Resolution	Haggling – resort to courts or enforcement	Administrative fiat – Supervision	Norm of reciprocity – Reputational concerns
Degree of Flexibility	High	Low	Medium
Amount of commitment among the parties	Low	Medium to High	Medium to High
Tone or Climate	Precision and/or Suspicion	Formal/bureaucratic	Open ended, mutual benefits
Actor Preferences or Choices	Independent	Dependent	Interdependent
Mixing of Forms	Repeat transactions Contracts as hierarchical documents	Informal; organisation Market-like features: profit centres, transfer pricing	Status Hierarchies Multiple Partners Formal rules

TABLE ONE: STYLISED COMPARISON OF FORMS OF ECONOMIC ORGANISATION.[47]

are the framework through which inside information flows and are an important means of lowering costs associated with communication. For example, in his analysis of the shipping industry of the nineteenth century, Boyce argues that

early steam operators used inside information to reduce the cost of devising contracts. They operated within networks, 'as bands of individuals bound by interpersonal knowledge (knowledge gained through kinship, religious ties or local presence).'[48] Furthermore, their networks were based on their reputations. Trust and co-operation were developed with repeat contracting based on reciprocity. In his firm-specific study of the White family, Ville argues that information benefits accrued to members of the network, due to a common set of values, overlapping interests, and kinship connections that built up considerable trust.[49] In shipping, where capital requirements were high, Boyce argues that men who possessed information about a trading opportunity, but lacked the means to exploit it independently, contracted through networks to 'mobilise the required resource set (knowledge, capital, and physical assets).'[50] These entrepreneurs were called 'managing agents' and were contracted to use specialised knowledge on behalf of other network members who lacked similar information but owned assets. Preferential information sustained these network forms. Furthermore, the reputations of the network members acted as a guarantee that information was reliable and of good quality.

Reputational information was derived over time. Reputation, argues Boyce, was a form of implicit communication that conveyed judgements about a person to other people who lacked first-hand knowledge of the subject. 'Reputation became a valued intangible asset that reduced the cost of contracting in the midst of asymmetric information and extended a businessman's contracting possibilities.'[51] Furthermore, an individuals' reputation deterred him from being opportunistic. Networks based on reputation also provide an added benefit of co-operation among its members while the access to inside information has the effect of sustaining this co-operation. For example, in the Furness group, relations between the managing directors of the wholly and partly owned units within the group were shaped by the use of inside information. Access to inside information improved the ability of the group leaders to make deals involving several units.

Where co-operation broke down between units, as was the case of Richardson's Westgarth (an engineering unit supplier to the Middleton Shipyard), Furness 'armed with inside cost data' punished the uncooperative unit in 'typical' network fashion and gradually reduced the group's investment in to convey a reinforcing signal to its manager.

In summary, evidence that quality information is often derived from 'inside' information is supported by research undertaken by scholars such as Boyce and Ville. However, concrete evidence of reputation and co-operation is not always easy to find. To assist in overcoming this difficulty our research applies Content Analysis methodology to establish evidence of 'inside' information and allow judgements about the quality of information arising from inside sources. See Chapter Three.

Measuring Quality

We have seen that economists concerned with the role of information in an economy understand the value and significance of good quality information. Casson, summarises this best when he argues that 'better information leads to better decisions, in turn, to better use of resources, and hence to higher social welfare.'[52] North takes the argument a step further and stresses that, because the cost of gathering information underpins economic exchange, we require ways of measuring the information gathering process. We do this by applying three measures in our research case study; they are accuracy, timeliness and the measurement of information diffusion through the firm.

i) Accurate and Timely Information

In the same way that the quality of inside information underpins firm success, accurate and timely information is a further necessary component for firm success. It was for this reason, according to Johnson and Kaplan, that accurate information was the focus of early management accounting systems. [53]They point

to the early success of the railroads as the best example of the effectiveness of accurate information that flowed from the development of management accounting systems. New procedures were developed for the receipt and disbursement of cash, as well as the development of extensive summaries of internal operations and performance. For example, measures such as cost per ton-mile were created and reported for each major segment of operations. Other comparative measures were developed to determine the profitability of various segments of business, as well as an evaluation of the performance of managers. With the development of large distribution enterprises, management accounting systems were created to promote efficiency in the key operating activities of the organisation. Further advances were made with the development of the scientific management movement and were specifically designed to aid managerial decisions.[54] An important feature of the scientific management movement was its emphasis on processes and procedures as a way of ensuring accuracy of data creation and dissemination. In our firm-specific study, adherence to processes and procedures is a noticeable feature of their operations. These processes and procedures conform to Cowen and Foray's view of codified forms of knowledge or information.

Cowen and Foray argue that the importance of the process of knowledge or information evolving and spreading through the economy is that as information changes its nature from tacit to codified forms communication costs are lowered.[55] Cowen and Foray argue that there are three important aspects to codification. Firstly, the process by which knowledge is transformed into information involves a process of *message* creation. The objectives of this process may vary from a drive to decrease costs, commodify knowledge or reduce information asymmetry. Secondly, codification involves the creation of *models*. 'Codification typically entails transformation in the way knowledge is organised, so the codified knowledge-base cannot exactly cover the tacit knowledge-base for which it tries to substitute.'[56] Finally, an infrastructure has to be developed to allow the process to take place. This consists of *language* development. Different types of

knowledge demand different types of languages, for example, music or mathematics require different languages associated with their codification. Languages must be developed before messages can be written and the relationships between the three attributes of codification are complex although it can be represented simply as Figure Two below illustrates. For accurate information to have meaning within the codification process, however, it must also be timely.

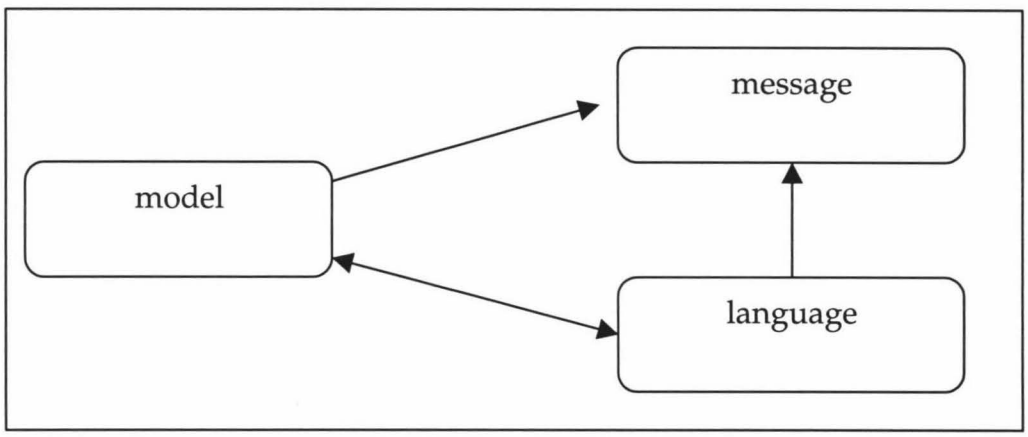

FIGURE TWO: THE RELATIONSHIP AMONG THE MODELLING ASPECTS OF CODIFICATION.

We have already seen from our discussion of bounded rationality the importance time plays in the transmission of information. Scott Morton is one scholar who rates the importance of time highly. The ability to compress time, has, he argues, greatly enhanced a firm's ability to collapse the effects of distance.[57] For example, the telegraph, along with the railroad that was expanding through the U.S. in the nineteenth century, profoundly reduced the importance of distance in market interactions. Before the impact of telegraph and railroad, markets were, with few exceptions such as cotton, generally small and regional. Firms or individuals too far away from a given market centre were at too great a disadvantage to want to compete in most markets. The new, high-speed mode of communication enabled regional stock and commodity markets, for example, to consolidate into national markets. 'The New York Stock Exchange became the

node for an emerging national market of commodities futures made feasible by telegraph.'[58] Undersea cables of subsequent decades allowed interactions among the markets of different nations to develop as well. Not only must information be accurate to be of good quality, but it must also be timely.

If we accept that accurate and timely information are important measures of information quality, their importance, however, is only significant within the wider context of the community it serves. In other words, measures of accuracy and timeliness would be meaningless without a point of reference. The point of reference is the environment in which the firm operates. As the environment changes the relevance of measures of accuracy and timeliness will also change. For example, Johnson and Kaplan, commenting on current accounting practices, call for changes to cost accounting methods because of an environment of changed circumstances for large-scale corporations. They argue that a return to principles of accounting accuracy, pioneered by the scientific management movement, and Church (a member of the movement) in particular, will be enough to address contemporary cost and management accounting problems. They argue that currently cost and management accounting is 'no longer providing accurate signals about the efficiency and profitability of internal management transactions.'[59] A lack of quality information has meant that the 'visible hand' required to effectively manage a myriad of transactions in a complex hierarchy 'has been severely compromised.' Inaccurate information, Johnson and Kaplan contend, has meant large-scale corporations have become vulnerable to competition from smaller and more focused organisations.

Ezzamel, Hoskin and Macve are three scholars who agree with Johnson and Kaplan that the issue is a lack of quality information, but shift their reference point to accounting's increasing development and sophistication as being at the heart of accounting's problems. They argue that attention to human capital factors is what is needed, rather than techniques *per se.* As accounting has become a powerful performance measure and created an enhanced climate of accountabil-

ity, it is the behavioural and human capital elements of the firm that requires attention, not the accuracy of the accounting information.[60] Ezzamel, Hoskin and Macve compare the case of General Motors in the U.S. with Matsushita of Japan to support their argument. On the one hand, General Motors effectively separated top management from the operations of the company in its bid to focus on strategic decisions. In the short- to medium-term this was highly successful. However, the price paid was a loss of loyalty to the corporation as a whole. By contrast, Matsushita view their employees as the critical resource of the company and much effort is spent emphasising corporate ethos and improving staff development. In short, the information, as measured by accuracy and timeliness, is dependent for its quality on the firm culture it serves.

ii) Information Diffusion

If we can isolate and measure accurate and timely information, what can we say about the diffusion of information through a firm? It is our argument that the diffusion process has important qualitative elements and is a process that can be measured. Tacit, learning-by-doing and information contagion are all forms of information diffusion we are interested in. Tacit and learning-by-doing forms of information are both knowledge-based concepts. Young's learning-by-doing model, for example, supports the observation that there are spillover effects in the development of knowledge across industries. For example, drawing on the work undertaken by Jaffe, Young found that the number of patents a firm received was increasing, not only because of its own R & D efforts, but also because of the R & D efforts of its technical neighbours.[61] Whereas scholars interested in the effects of tacit and learning-by-doing forms of information focus on a firms stock of knowledge, scholars dealing with information contagion focus more on the effects of information diffusion on economic agents.

The term information contagion is taken from research undertaken by Arthur and Lane.[62] Their interest is in how information transferred between eco-

nomic agents affects product choice. Subsequent research by Narduzzo and Warglien concluded that 'when agents have to choose on the basis of other people's experience, rather than relying on their own direct observations, information externalities arise that drive towards the emergence of the arbitrary, stable dominance of one product over the competing one.'[63] Their concern was the measurement of quantitative effects of information contagion. For example, Narduzzo and Warglien argue that 'the information contagion effect is based on the fact that, if agents can only sample previous adopter's experience with a product, the single product that has been chosen more in the past has a larger probability of being in the agent's sample and the agent is more likely to privilege the product on which they have more information.'[64] What is of concern to us, however, are the qualitative attributes of information diffusion.

In a different context to the present study, the USSCo. itself provides an example of the relationship between information diffusion and quality. They were found to have innovated more confidently with the adoption of Oil Propulsion after 1933 because 'they possessed such good information which they analysed with such effectiveness that their decision-makers could very accurately assess the degree of prevailing risk.'[65] In short, the degree to which information was diffused had direct qualitative effects. For this reason, information diffusion is important to our study.

Conclusion

A number of issues arise from any examination of an information-based view of the firm. The objective of our research case study is to address these issues. At the heart of our enquiry is the economist's definition of the firm in terms of a response to information-related problems and as a repository of knowledge. Furthermore, it is their implicit assumption that information is asymmetric between economic agents that is the primary focus of our research. Because firm efficiency depends on minimising the problems associated with asymmetric information

we can utilise general systems theory to examine the linkages and processes underpinning the different views of information. These linkages and processes are to be found in the way information is transmitted, disseminated, stored and retrieved. Furthermore, our emphasis moves toward the quality of those linkages and processes, because it is the quality of information rather than information *per se* that contributes to firm efficiency. Using the framework of general system theory, then, allows us to examine information-types. Specifically we are interested in strategic and 'inside' information where previous researchers have found evidence of high quality information.

Finally, we have developed, and will utilise, a set of measures to find evidence of information quality. By measuring accuracy, timeliness, and effective diffusion of information through the firm, we can focus on how quality information is important for achieving firm efficiencies.

Notes: Chapter Two

[2] Fransman, Martin, (1994), "Information, Knowledge, Vision and Theories of the Firm", Industrial and Corporate Change, Volume 3, Number 3, pp. 714-715.

[3] Alchian, A. and H. Demsetz (1972), "Production Information Costs, and Economic Organization", The American Economic Review, 62, pp. 777-795.

[4] Jensen, M. and W. Meckling, (1976), "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure", The Journal of Financial Economics, 3, p 714.

[5] Fransman, op. cit., p. 714.

[6] Williamson, Oliver E., (1975), Markets and Hierarchies: Analysis and Antitrust Implications, New York.

[7] Fransman, op. Cit., p. 714.

[8] 'In these early, large-scale firms, information asymmetries gave rise to hidden action. The principals at home could not determine whether their managers (agents) abroad acted opportunistically by failing to use their better information in the way best calculated to serve the principal's interest. To enable the principal to monitor their managers and minimise opportunism, the trading companies created information by requiring written records of decisions and notifications of compliance to orders from home and by implementing rules and regulations that regularised actions. Furthermore, systems were established to monitor behaviour of managers who promised in their contracts to work hard and in the interests of the principal.' Carlos, Ann M. and Stephen Nicholas, (1990), "Agency Problems in Early Chartered Companies: The Case of the Hudson's Bay Company", The Journal of Economic History, Vol.L, No. 4 (Dec), p. 406.

[9] Fransman, op. cit., p. 715.

[10] Poot, Jacques, "Restarting New Zealand's Engine of Growth", Victoria Economic Commentaries, Vol 9, No. 1, March 1992, p 51.

[11] Crémer, Jacques, (1993), "Corporate Culture and Shared Knowledge", Industrial and Corporate Change, Volume 2, Number 3, 1993, p. 361.

[12] Barnard, Chester I., (1970), The Functions of the Executive, Oxford University Press, London, p. 95.

[13] Fransman, op. cit., p. 738.

[14] Teece, David J., (1982), "Towards an Economic Theory of the Multiproduct Firm", Journal of Economic Behavior and Organization 3 (1982), p. 44.

[15] Penrose, Edith (1959), The Theory of the Growth of the Firm, Basil Blackwell: Oxford, p. 77.

[16] ibid., p. 717.

[17] Fransman, op. cit., p. 755.

[18] North, op. cit., p. 74.

[19] ibid., p. 27.

[20] ibid., p. 64.

[21] Casson, Mark, (1997), Information and Organisation, Clarendon Press, Oxford, pp. 111-112.

[22] North, Douglas Cecil, (1990), Institutions, institutional change, and economic performance, Cambridge University Press, p. 8.

[23] ibid., p. 5.

[24] This is one example of Casson's diagrammatical methodology used by Casson to represent inter-firm information flows. This example is expanded in Appendix Eight in addition to a further example. For full reference and explanation of this technique see: Casson, op. cit.

[25] Casson, op. cit., p. 6.

[26] North, op. cit., p. vii.

[27] Penrose, op. cit., p. 20.

[28] See Eatwell, John, Murray Milgate and Peter Newman, (eds) (1990), The New Palgrave: Allocation, Information and Markets, McMillan Reference Books for explanation of game theory and the prisoner's dilemma in particular.

[29] Boyce, op. cit., "Communicating and Contracting", p. 2.

[30] ibid., p. 4.

[31] Barnard, op. cit., p. 91.

[32] Helper, Susan. (1990), "Comparative Supplier Relations in the U.S. and Japanese Auto Industries: An Exit/Voice Approach" Business and Economic History Second Series, Volume Nineteen, p. 154.

[33] North, op. cit., p. 12.

[34] Penrose, op. cit., p. 53.

[35] Boyce, op. cit., p. 4.

[36] Casson, Mark, (1991), The Economics of Business Culture, Clarendon Press, Oxford, p. 3.

[37] In the spring of 1989, the Airlines and its disparate unions failed to come to a crucial and mutually beneficial agreement with its new employee-owners. 'The failure resulted from Eastern management's reluctance to share information during the takeover period by opening Eastern's books to the unions for their scrutiny and by the lack of union trust to operate without such disclosure.'

Vincent, David R. (1990), The Information-Based Corporation, Dow Jones-Irwin, p. 250.

[38] Crémer, Jacques, (1993), "Corporate Culture and Shared Knowledge", Industrial and Corporate Change, Volume 2, Number 3, 1993, pp. 354-355.

[39] Boyce, (1995), Information, mediation, op. cit., p. 368.

[40] Mintzberg, Henry and James Brian Quinn, (1991), The Strategy Process: Concepts, contexts, cases, Prentice Hall (2nd ed).

[41] Boyce, Gordon, (1995), Information, mediation and institutional development, Manchester University Press (Manuscript copy), p. 368.

[42] 'Instead of depending upon judgement, 'scientific management depends upon knowledge in its task of administration.' Essential to this 'knowledge repository' was the careful and systematic collection of data. The purpose of this collection was that management would have available a knowledge base of high quality processed information that could be drawn on whenever a problem was presented to management. One industrial engineer, addressing a conference at Dartmouth University's Amos Tuck School of Management in 1912, highlighted how important high quality information was. He explained that 'the scientific management approach rests on complete knowledge of materials, equipment, routing, job assignments, tools, task organisation, time standards, and performance methods. Information, which even in the *systematized* plant is supposed to be furnished by knowledge of the workman or the gang-boss or foreman, is bought back to the planning room and becomes part of the instruction card.' The significance of this heightened emphasis on information gathering was that a new conception of managerial responsibility had developed. There was an emphasis on coordinating and controlling the complexities of the factory as it entered the era of mass production'. Zuboff, Shoshana, (1988), In the Age of the Smart Machine: The Future of Work and Power, Basic Books, Inc., New York, p. 44.

[43] Boyce, Gordon, (1995), "Communication and Contracting: A Link between Business and Social History", Business and Economic History, Vol. 24, No. 1, p. 1.

[44] ibid., p. ii.

[45] Zuboff, op. cit., p. 15.

[46] Scott Morton, Michael S. (1991), The Corporation of the 1990s, Oxford University Press, p. 273.

[47] Powell, Walter W., "Neither Market nor Hierarchy", Research in Organisational Behavior, Vol. 12, p. 300.

[48] Boyce, (1995), Information, op. cit., p. 4.

[49] Ville, Simon, (1991),"The Development of a Private Business: The Growth of the Firm in the Pre-Corporate Era", ISSN 0113-0013, No. 82.

[50] Boyce, op. cit., p. 4.

[51] ibid., p. 4.

[52] Casson, op. cit., p. 4.

[53] Johnson H. T. and Robert S. Kaplan (1987), Relevance Lost, Harvard Business School Press.

[54] As we have seen, accurate data collection and interpretation were fundamental to the aims of the movement. The final developments in the management accounting systems took place in the early decades of the twentieth century to support growth of the evolving M-form organisations. The Du Pont Powder Company exemplified how accounting information formed a key element of the success in this new organisational structure. The most enduring informational innovation of the Du Pont era was the return on investment (ROI) measure. Because decentralisation became necessary for the M-form to operate effectively, through the use of the ROI measure, information was condensed and played a key role in permitting the internal market for managers and for capital to function.

[55] Cowan, Robin and Dominique Foray, (1997), "The Economics of Codification and the Diffusion of Knowledge", Industrial and Corporate Change, Volume 6, Number 3, p. 595.

[56] ibid., p. 604.

[57] Scott Morton, op. cit., p. 72.

[58] ibid., p. 73.

[59] Johnson H. T. and Robert S. Kaplan op. Cit., p. 205.

[60] Ezzamel, Mahmoud, Keith Hoskin and Richard Macve, (1990), "Managing It All By numbers: A Review of Johnson & Kaplan's 'Relevance Lost', Accounting and Business Research, Vol. 20, No. 78, pp. 153-166.

[61] Young, Alwyn, "Learning by Doing and the Dynamic Effects of International Trade", The Quarterly Journal of Economics, May 1991, p. 371.

[62] Arthur, B. W. and D. A. Lane, (1993), "Information Constriction and Information Contagion", Structural Change and Economic Dynamics.

[63] Narduzzo and Warglien, op. cit., p. 113.

[64] ibid, pp. 114-115.

[65] Boyce, Gordon,, "Union Steamship Co. of New Zealand and the Adoption of Oil Propulsion: Learning by Using Effects:, Unpublished Paper.

Chapter Three: Research Questions and Methodology

The objective of this research case study is to extend Casson's work on the theory of the firm.[66] In particular, the focus in this case study is to test the thesis that information quality underpins the successful achievement of firm efficiencies. We do this by an investigation of the firm-specific joint venture of Wm. Holyman Limited that operated between 1904 and 1975. By applying issues raised from our theoretical framework to our investigation of the joint venture, we want to identify evidence of information quality. We begin by examining how the principals addressed problems associated with asymmetric information, bounded rationality and opportunism. These problems, it will be argued, were most effectively dealt with when the principals insisted on good (quality) information. Secondly, a systems view of the venture allows us to determine what specifications and standards supported the venture. Where feedback consisted of high quality information, the principals were able to compare operations against standards and where appropriate, amend or change standards to suit changed environments and circumstances. Thirdly, we develop an understanding of the culture that underpinned the venture. Where culture of high trust and co-operation is in evidence, the likelihood that quality information existed, is greater. Finally, by adopting some specific measures, qualitative judgements about the information that sustained the venture can be made.

Our research is based on the archives, that have survived, from the USSCo. Head Office between the years 1904 and 1975. In particular, we focus on the years 1904, 1919, 1920, 1924 and 1935 for detailed research. Our research is based on the theoretical framework discussed in Chapter Two above, and from which we have chosen to examine two information-types, strategic and 'inside'. These information-types are often found to be rich sources of quality information. In addition, we use a set of measures, so that quality information can be identified. The measures we have chosen to use are, firstly, accuracy and timeli-

ness. Where both exist we may find this to be a further source of quality information. Such judgements, however, rest on understanding environmental factors within which the venture operated. Without a specific point of reference, measures of accuracy and timeliness have no meaning. Secondly, our focus moves to how effectively information was diffused through the venture. Where there is evidence of tacit information being exchanged, a strong uptake of learning-by-doing effects or contagious information, there is good reason to believe that the information used was of high quality.

To ensure creditable and acceptable outcomes we have utilised the established methodology of Content Analysis. This is necessary because we cannot observe first hand the events of 1904, 1919, 1920, 1924 and 1935, but rather have to rely on the archives that have survived. Because our argument is that a firm culture of trust and co-operation underpins a flow of quality information, evidence of co-operation and the links to specific communications are our primary focus. For this reason, we have adopted the subjective terms of 'high' trust and 'low' trust information exchanges to identify evidence of co-operative behaviour. Where there is evidence that there was a desire or motivation to co-operate closely, we make a subjective judgement that the content under analysis is high as opposed to low trust.

It is important that this be undertaken in a consistent manner because the researcher utilising content analysis is held accountable for the process leading to his or her findings. To ensure this is done the conditions under which data are obtained must be described. Secondly, justification for the analytical steps taken must be given. Finally, the process must not be biased in the sense that it favours one kind of finding rather than another. Explicitness about the process is required so that others may evaluate the researchers work, replicate the process, or qualify the findings.[67] Making value judgements about information and its quality in a historical setting requires a process of inference in an unobservable domain. Krippendorf argues that when historians infer events from documents

they are, by definition, involved in content analysis.[68] Such a process helps decrease uncertainty and create a web of relationships that may ultimately answer the questions originally posed.

Krippendorf defines content analysis as a research technique for making reliable and valid inferences from data to their context.[69] If we accept this definition, our research technique must be objective and systematic. This requirement is met if we can demonstrate that the inferences made from the data are replicable. To be replicable, the rules that govern our research techniques must be explicit and applicable equally to all units of analysis. The methodology adopted for analysing the USSCo. files dealing with the USSCo.-Huddart Parker-William Holyman joint venture follow these requirements. To this end, all data was entered into a spreadsheet. An extract can be found in Appendix Three. Each document is referenced in the spreadsheet. For example, the first entry in the Appendix Three extract is 297, 22(1), 27/7/04, Letter. This refers to Archive Box 297, file 22(1), and was a letter dated 27/7/04.

The information extracted from each document includes firstly, the average number of words that make up the document (487 from the letter dated 27/7/04). Secondly, who was the source (transmitter) of the exchange (Aiken, Head Office GM for USSCo.). Thirdly, who the document was addressed to or who the information is directed to (the transmittee, in this example James Mills, MD of USSCo.). Fourthly, based on the document's content, a judgement has been made as to whether or not an exchange was conducted in an environment of 'high' or 'low' trust (in our example, high). Fifthly, each word was analysed and where there is evidence of keywords or phrases that express 'high' or 'low' trust, numbers have been recorded (11 high; 9 low). Finally, the nature of the information exchange has been recorded as TPS (Transaction Processing System), MIS (Management Information System) or DSS (Decision Support System)(in our example it is DSS). TPS information is information that is routine and recurring and is found in documents such as regular financial reports. By contrast, MIS in-

formation assists managers in decision making and problem solving while based on information of a routine and recurring nature. MIS may draw on data stored as a direct result of transaction processing, but they may also use other information. DSS information on the other hand assists managers to make decisions based on non-recurring information and is often not highly structured. All exchanges from each file examined are recorded.

We are interested in the information flows of each exchange, because we wish to establish the quality of the information that underpinned the joint venture. It is our argument that 'inside' information that flows within a 'high' trust environment is inherently of a high quality. By adopting a method of classifying document content as 'high' or 'low' trust we can better make the judgement that information that is 'high' trust represents better quality that 'low' trust. Furthermore, we analyse the content as a whole, independent of keywords and phrases. In this way we are able to refine the results of our research. The objective of this approach is to identify the environment in which communication takes place. Specific words used are recorded so as to have two different ways of analysing outcomes of an information exchange. As we have seen, this is necessary for establishing a point of reference in any measurement of accuracy and timeliness. For example, in a letter from Appleton to James Mills, dated 6th July 1904 (Refer to Appendix One), the document context has been judged to demonstrate a high level of trust between the parties to each information exchange, despite there being more 'low' trust words than 'high' trust words.[70] Appleton agrees to accept Mill's invitation to join the joint venture and summarises his position: 'It seemed to the Chairman and myself that your negotiations with Holyman, resulting so favourably in the present Agreement, provided values are fairly reliable, were the outcome of good sound policy, and this being the case we have felt bound to join with you, trusting to the future to bring about a maintenance of the amicable relations which have now existed for a considerable period.'[71] However, Appleton had used the opportunity to complain of not having been kept in-

formed of negotiations and to air 'niggles' about recent dealings between themselves and USSCo. The outcome is thirty six 'low' trust keywords and phrases versus twenty six 'high' trust ones (refer to Table Two A below). On the one

High Trust Keywords/Phrases	
Glad if I would discuss	*Saw him*
What you told me	*When promised*
I am glad to say	*He gave me full information*
Able to place these before	*Give me advice*
Which I was asking	*Your invitation to take a third*
We are willing to do so	*As Holyman has accepted this*
We were much interested	*Again, we are interested*
Catering strongly	*Our right and privilege*
Come to a larger understanding	*Embracing*
Resulting so favourably in the present agreement	*Good sound policy*
Felt bound to join with you	*Trusting to the future*
Amicable relations which have now existed for a considerable period	*The best method*
She will meet the demands	*Previous communication*
Low Trust Keywords/Phrases	
Unfortunately	*Not got*
Much disappointed	*I gathered little or nothing*
Possibly this was because Henderson was with him	*He was very reticent*
Who had been unable	*Consider the price rather high*
We do not feel inclined	*The payment should be met by you*
I cannot say that I was very pleased	*Spring on me so suddenly*
Such short notice	*A position of much delicacy*
Were we to fail in a mutual understanding	*Clashing of interests*
Not consulted	*Did not consider we were interested*
The restrictions imposed upon us	*Resulted to our great disadvantage*
Attacked by others	*Securing, to our loss*
More entitled to than they	*Lead to retaliation*
Altered conditions	*Competition*
Questionable	*Your difficulties*
Submitted to some loss	*Our hands cannot be tied too tightly*
We shall be compelled to burst the bands	*The boats to be displaced*
Failing any other suitable service	*Hardly likely to find employment*
Expensive little ship as she is	*Have to wait a while longer*

TABLE TWO A: LETTER DATED 6/7/04 HIGH TRUST AND LOW TRUST WORDS AND PHRASES

hand the information exchange environment is 'high' trust, whereas the keywords and phrases used are more expressions of 'low' trust than 'high' trust.

In a further example (Appendix Two), in a letter from Johnson (the Devonport Branch Manager) on the 19th May 1904, this letter has been judged to reflect a high level of trust, despite Johnson reporting that 'I had an interview with Captain W. Holyman Jr last evening but his values are somewhat in excess of what I anticipate.' After dealing with a number of negotiation points, Johnson concludes (and reports to Head Office) that 'Holyman appears to be fairly keen to come to terms, and there should be no great difficulty in bringing his price down.' The tone of the exchange having been recorded in our spreadsheet as 'high' trust, is also supported by a ratio of thirty two 'high' trust words and phrases to fifteen 'low' trust words and phrases (refer to Table Two B below).

High Trust Keywords/Phrases

Had an interview

He asked me to submit the following proposals to you
He is prepared to fix up
At any reasonable time
The Orion is making a lot of money for us
A new company to be formed
This service will also belong to the new company
Ellerker to act as agent at Melbourne
An option of allowing Ellerker to acquire £ 1000 interest
Must first be offered to Union Co. at reasonable market value
Other agencies to be retained

Launceston management to be under control of Capt. Wm Holyman
Union Co. to guarantee not to interfere

Union Co. to have sole right to lighter all cargo from out ports
Amy is presently paying her way

An increased value on her would compensate

Under what I consider would be the most favourable conditions
I am certain his present proposals could be reduced
If the Directors are in favour
There would be considerable gain
Which would be considerable gain to us
Other trades are paying remarkably well
Payments being made after 12 months for loyal support
So as to give Ellerker an interest in trade
It may have a beneficial effect

His salary would be an inducement for him to retain it
Conducts the business as energetically as in the past
I think his salary would be well earned

The advantage of combination as suggested would be greatly to advantage
He looked forward to a considerable amount of trade
Holyman appears to be fairly keen to come to terms
With no restrictions she would pay much better

Low Trust Keywords/Phrases

His values are somewhat in excess
Considering he should receive something in the shape of goodwill
This I told him was absurd
I wanted to strike it out
The Australian is somewhat of a loss to us

Present Holyman Company to be bound
We cannot well avoid
I do not know how you will view this

It may give Ellerker an insight
I do not think he will agree to less

The advantage Holyman has over us
Gives him considerable advantage over us
Merely a bait thrown out to try to get us to make a cut for business
Object of forcing rates down
His anxiety to ask large price first

TABLE TWO B: LETTER DATED 19/5/04 HIGH TRUST AND LOW TRUST WORDS AND PHRASES

In addition to the importance attached to understanding the culture of the joint venture by a classification of 'high' and 'low' trust, we require a further set of classifications to establish how well the joint venture performed. The better the venture performed against standards, the better the quality of the information. To enable us to do this we draw on general systems theory and its underlying concept that systems work best when they are 'in control'. To be in control means operating within tolerable performance levels which are determined by standards. By categorising information into TPS, MIS and DSS we can better measure information quality. The closer to a pre-defined standard the better the information quality. For example, TPS-based procedures are aimed at improving routine business activities on which all organisations depend. When Johnson wrote to Head Office that 'the statements, which I am forwarding herewith are not satisfactory in as much as they do not show detailed working of each steamer and that the cumbersome system which has been adopted means a considerable amount of work for this to be dissected',[72] an improvement in line with a USSCo. standard was expected, and was the outcome, as Johnson went on to report: 'I have arranged that a book will be kept with detailed expenditure of each steamer's earnings and disbursements will be entered each month.' For TPS information measures of accuracy and timeliness enable us to judge the quality of the information.

Whereas TPS systems are operations oriented, by contrast MIS systems assist managers in decision making and problem solving. When, for example, joint venture agreements were 'fairly complete' Aiken judged that 'Holyman seems to have displayed something in the nature of reluctance, and has required careful handling, necessitating something of a "give and take" policy on our part.'[73] To resolve any final issues, further information was sought to be added to the TPS information already gathered. This included further consultation with Holyman's solicitors, preparation of a separate letter dealing with outstanding matters in the agreement, further consultation with Appleton [Managing Director of

HP], inspection of the vessels *Wareata* and *Orion*, to be taken over by the joint venture, and transfer of the *Waeatea* port of registry from Hobart to Melbourne to avoid payment of stamp duty levied in Tasmania.

In summary, to assist in resolving some of the issues that were holding up final agreement, Aiken drew on a number of 'information systems', including USSCo.'s own TPS providing financial information. As an extension of TPS information our measures of accuracy and timeliness are important for measuring MIS information. In addition, evidence of inside information and how effectively information was diffused assist in drawing conclusions as to the quality of the information.

In contrast to MIS systems, that deal with well-structured decision situations and where typical information requirements can be anticipated, DSS systems assist managers to make decisions that are not highly structured. A decision is considered unstructured if there are no clear procedures for making the decision and if not all the factors to be considered in the decision can be readily identified in advance. They are decisions that are non-routine and non-recurring. A key factor in the use of DSS systems is determining what information is needed. For example, when Holdsworth wrote to Mills 'our agreement with Holyman's expires in February next year, and it is not too early to consider what is then to be done'[74], there was little other information to draw on for making decisions. Broad options were put forward so that an information gathering process could begin. If the present agreement continued 'it would be difficult to avoid friction and even if they were disposed to fix rates and run fairly, it would be difficult to establish confidence.' On the other hand if 'we adopt Henderson's suggestion to fight Holyman, the cost of doing so and the possibility of success should be considered. I am still doubtful of our ability to crush an economically run service such as Holyman's. I think also that the cost to us would be very heavy. Assuming, that at heavy cost to ourselves we were to permanently cripple or ruin Holyman, the question arises, what would his trade be worth to us? My

impression is that we could not make the trades from which we dislodged him payable.'[75] To then aid USSCo. management in the decision making process Holdsworth enclosed 'a list of Holyman's fleet, with such particulars as I have been able to get.'[76] In addition to the DSS information recorded, we are interested in how the principals utilised preferential and reputational 'inside' information and how effectively information was diffused when information of a strategic nature was documented. This is because the principals relied strongly on the quality of the information that existed within their networks. How effectively strategic information was diffused was also important in achieving successful outcomes for decisions of a strategic nature.

Summary

To ensure a systematic and consistent analysis is achieved from our research, we apply a methodology based on Content Analysis. It follows a set of steps required when undertaking a process of inference, by judging an information exchange as 'high' or 'low' trust in an unobservable domain. Inferences have to be made because we cannot observe first hand the events of 1904, 1919, 1920, 1924 or 1935, but rather rely on the archives that have survived. This process allows us to reduce uncertainty about the nature of the information flows and helps create a set of relationships that addresses our interest in the quality of information. Furthermore, our spreadsheet technique allows replicable and valid inferences from the data to be made, objective and systematic in application. The explicit and consistent applicability to all the documents available for analysis fulfils the requirement for replicability. If we accept the validity of the methodology, our theoretical framework can be used to examine and test the results of our research.

Notes: Chapter Three

[67] Refer: Casson, Mark, (1997), Information and Organisation, Clarendon Press, Oxford.

[67] Krippendorf, Klaus (1980), Content Analysis: an introduction to its Methodology, Sage Publications, p. 49.

[68] ibid., p. 24.

[69] ibid., p. 21.

[70] Union-Holyman Archives Box 297, 22, 6/7/04 , Letter, Appleton to Mills. A copy of this letter is provided in Appendix One.

[71] ibid., p. 4.

[72] Union-Holyman Archives Box 299, 22^2, 10/5/05, Letter, Johnson to Head Office.

[73] Union-Holyman Archives Box 296, 22^1, 27/7/04, Letter, Aiken to Mills.

[74] Union-Holyman Archives Box 297, 118, 8/3/04, Letter, Holdsworth to Mills.

[75] ibid., p. 3.

[76] Refer Table Four.

Chapter Four: The History of the Holyman-Union Steamship-Huddart Parker Joint Venture: 1904 to 1935

The Union Steamship Company of New Zealand (USSCo.) was founded in 1873 and Huddart Parker Company Limited (HP) in 1876. Both companies grew out of early trading opportunities associated with the gold rush years of the late 1800s. Founded in 1882, Wm. Holyman & Sons Limited (Holyman's) developed into a viable family shipping business serving the coastal communities of Tasmania. All three firms prospered and over time developed working agreements to regulate the Tasmanian trade routes. However, these were loose arrangements, which led to conflicts and tensions. By 1904, the USSCo. faced the option of either becoming competitors on the existing trade routes, or find a way to tighten current working agreements. The latter course was chosen. By the end of the year the three firms had entered into a joint venture, based on the registration of two limited liability companies which was to last for the next seventy years.

Early History of Holyman's

William Holyman of Barton in Lincolnshire, England arrived in Launceston, Tasmania, in 1854 as an apprentice on the barque *Elizabeth Ratcliffe*, which had brought cargo and rails for the Northwest railway then under construction.[77] In the same year, he had completed his maritime service articles after a seven year apprenticeship.[78] Shortly before his ship was due to sail in 1855, Holyman deserted and married a woman who had emigrated on the same vessel. He settled at Devonport, Tasmania, and worked on barges owned by his father-in-law. In 1861, he returned to active command in the ketch *Cousins*. Ten years of profitable trading on the north coast of Tasmania encouraged him to buy the paddle-steamer *Annie* in 1871. This venture was not a success and she was sold in 1873, an occasion which discouraged Holyman from further using of steamships for many years. All his sons (Thomas Henry 1856-1933, William 1858-1921 and James 1862-1944) qualified as master

mariners and in turn commanded ships which were added to the fleet of the family company. In 1882, the company registered their ships as the White Star Line (independently founded and operated from the UK shipping line of the same name). In 1883, Holyman's only daughter, Susannah, married Harry Wood, a shipbuilder at Devonport. This added an important service to the Holyman company, as it subsequently bought several ships for enlargement and renovation at Wood's shipyard. Holyman retired from the sea in 1886 and in 1900 the management of the company was revised with William, the second son, who assumed management of the company from his father and transferred its head office to Launceston.

Early History of the USSCo.

Across the Tasman, in the South Island of New Zealand, small entrepreneurs had been developing profitable trade routes around the waves of gold prospectors on their way to the Dunstan goldfields. James Mills had joined the payroll of one of these entrepreneurs, Johnny Jones, in 1862.[79] Among his diverse interests, Jones small coasters maintained regular communications with Dunedin. On the death of Jones in 1869, Mills was appointed an executor of his vast estate. Over the next two years many of the assets were disposed of. Mills, however, realised that the shipping business held the brightest potential for development. After a series of astute moves, including the development of a strong network of influential businessmen, Mills and his partners issued the prospectus of the Union Steamship Company of New Zealand (USSCo.) in 1873. During the next twenty years, USSCo. grew into the largest shipping business in New Zealand.

Early History of Huddart Parker

Like the USSCo., the seeds of HP's foundation are found in the Victorian gold rush of the late 1800s. Thomas Parker had established himself as

an importer and merchant while Captain Peter Huddart appears in a Geelong Directory of the 1850s as "Shipbroker and corn agent, Yarra Street".[80] Next to food, the commodity in most general demand was coal. No coal was available in Victoria at the time. It had to be imported from New South Wales and a busy trade quickly sprang up with Newcastle. Captain Peter Huddart was one of the first to engage in the trade. In 1876, Peter Huddart joined Thomas Parker, Mr Traill and Captain Webb, forming the firm Huddart Parker & Co., coal importers and merchants at Geelong. The Tasmanian trade opened up in 1889 when the Tasmanian Woolgrower Agency Company requested Huddart Parker to carry a cargo of valuable stud sheep from Launceston to Melbourne for the owners of some of the largest flocks in Tasmania.[81]

Early Amalgamations and Ventures

In 1891, the USSCo. purchased the vessels and trades of the Tasmanian Steam Navigation Company. This extended the USSCo.'s routes from Tasmania to the southern ports of Victoria and New South Wales.[82] At the end of 1896, USSCo. also bought the vessels and trade of T.A. Reynolds & Co. which had steamers employed in the coastal trade between Strahan and Melbourne and other Tasmanian ports. T.A. Reynolds & Co. had bought out United S.S. Co. in 1894 which had been working the Launceston to N.W. Coast route, the same route Wm. Holyman & Sons operated on. At this time the larger share of this company was held by William Holyman, the company founder. However, his brother James had joined earlier to form the firm Holyman Bros., of which William owned two-thirds and James one-third.

The Joint Venture Agreements of 1904

The three firms prospered during the 1880s and 1890s and had over time developed working agreements to regulate the Tasmanian trade among themselves. Bach argues that 'a complex web of agreements and

concessions enmeshed the activities of most of these firms; until 1910, these agreements, with their spheres of influence and cargo allocations, had not been legally challenged and were regarded as a normal part of the industry'.[83] One of these was the registration, in the State of Victoria, of two joint venture companies in 1904. One of these companies was owned by the USSCo. and Holyman & Sons. The other was owned by USSCo., Holyman & Sons and HP. Johnson (USSCo.'s Davenport Manager) had written to Mills (the Managing Director of USSCo.) on the 20th July, that verbal agreement had been reached with Captain Holyman, Managing Director of Holyman & Sons, on the formation of a joint venture between the two organisations.[84] Negotiations had begun four months earlier between the directors and management of USSCo. and Holyman & Son for the formation of two limited liability companies to operate trade between Launceston and ports on the N.W. Coast of Tasmania; between Melbourne and ports on the N.W. Coast of Tasmania, and between Melbourne and Launceston. The formalisation of the relationship between USSCo. and Holyman grew out of an existing "working" agreement that regulated the running of Holyman's steamers so as to interfere as little as possible with USSCo.'s operations.[85] Under the terms of this agreement between Launceston and Melbourne, Huddart Parker & Co. also joined with USSCo. in chartering Holyman's steamers. USSCo. guaranteed Holyman fixed earnings while the steamers were run on USSCo.'s account.

The first company, William Holyman & Sons Ltd, was registered with a capital of £ 16,000. The objects of the company, as described in the Articles of Association, were to acquire, purchase and take over from the existing owners of Wm. Holyman & Sons the steamers *Orion, Warrentinna, Dorset, Amy,* and *Star* plus the goodwill of the trade or business as Shipowners and Carriers of Wm. Holyman & Sons. This trade included routes to and from Launceston and the NW Coast ports of Tasmania, to and from the NW Coast ports of Tasmania and Melbourne, to and from

Launceston, the NW Coast ports of Tasmania and the Islands situated in Bass Straits and finally, between ports on the NW Coast of Tasmania.[86] The shareholders were the USSCo. (50%) and the Holyman family (50%). Refer to Figure Three below.

The second company was registered Holyman's Limited with a capital of £ 6,504. The shareholders were USSCo. (one-third), Huddart Parker Ltd. (one-third) and the Holyman family (one-third). This company was to operate the Launceston-Melbourne trade and purchased the steamer *Wareatea* from the USSCo., a condition being that the Holyman family dispose of the *s.s. Australian* which had been losing money for some time. Refer to Figure Three below.

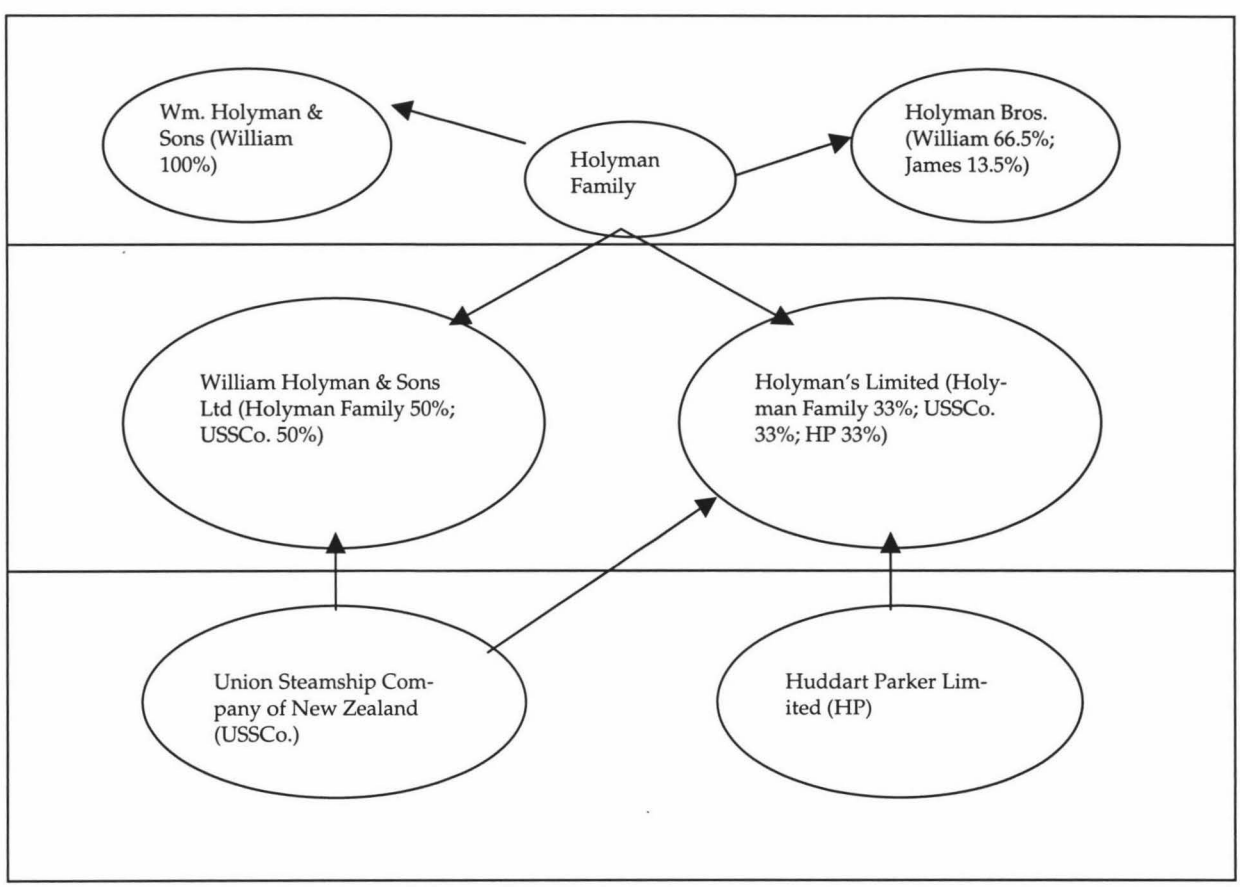

FIGURE THREE: JOINT VENTURE OWNERSHIP TIES

Methods Used to Gain a Favourable Agreement

The management of the USSCo. utilised a number of methods to gain a favourable agreement. Firstly, they used their personal knowledge of Holyman's Managing Director, Captain William Holyman, developed through the period 1902 to 1904 when the two companies operated the Tasmanian coastal trade through working agreements. Johnson, the Davenport Manager, for example, had recognised that Holyman could be 'crafty' and recommended to the USSCo. management that any proposal for the formalisation of their relationship should 'come from him.' Johnson suggested that 'dropping the occasional hint as to what was likely to be acceptable' could influence any proposal.[87] From first hand experience of dealing with Holyman, he did not believe Holyman would place much value on the Launceston-N.W. Coast trade, but rather that USSCo. should pursue the lucrative trades which operated between Melbourne/Launceston-N.W. Coast.

A second method used by the USSCo. was to identify sources of inside information by finding key influences on Holyman and then extracting information from those sources. In one example, the views of Ellerker (a shipping agent based in Melbourne who brokered with USSCo., Holyman's and Huddart Parker) were viewed as being useful for gathering information about Holyman. On the 23rd March 1904, the General Manager of USSCo. wrote to the Strahan Manager that 'as you are aware, Holyman and Ellerker confer pretty freely but it is difficult to ascertain whether they are entirely in each other's confidence – I am inclined to think they are not – but it must be borne in mind that Ellerker and Huddart Parker are in partnership in one of the coastal trades from Melbourne, and it is probable Ellerker would disclose negotiations to Appleton [Managing Director of Huddart Parker]'.[88] Throughout the negotiations which took place during most of 1904, the managers of USSCo. took every opportunity to gauge the relationship between Holyman and

Ellerker, factoring in the reputational knowledge they gained about Ellerker, into the way they approached Holyman.

A third, and more direct method of gaining information, was to use USSCo's. own managers, who were then encouraged to report back to Head Office. For example, the General Manager wrote to the Strahan Manager that 'it is probable that there is no great hurry for dealing with Holyman, and that if he was "rushed" at this stage he would be inclined to stand out for high terms. You will therefore understand that in writing to you now, we merely wish you to familiarise yourself with the whole situation, and report. If a favourable opportunity of finding out Holyman's view occurs, there will be no harm in your sounding him as if it came from yourself.'[89]

A fourth, and highly rich source of information, came from talking to individuals deep within Holyman's own network. While there is little evidence to support the view that USSCo. were able to penetrate Holyman's own staff or management in any way, USSCo. were successful in gaining information from Holyman's 'professional' network. For example, Aiken wrote to Mills during the final stages of negotiations that 'our Banker advised us confidentially that Holyman's firm was worth £ 20/25,000 in addition to which the individual members were possessed of house properties and are practically working without an overdraft. As this has all been made out of the N.W. trade, it may be looked on as a reassuring fact in view of our present investment.'[90] Such a rich source of information helped satisfy the directors of USSCo. that they were entering into a joint venture with a firm with a successful track record of good management, sound credit and significant assets. They were also satisfied that any joint venture, based on the N.W. trade, would be a profitable one.

Reason for the Joint Venture

There were a number of reasons why USSCo. wanted to enter into a joint venture with Holyman. At the heart of their reasons was an acceptance that cooperation with their competitors was a more successful strategy than 'fighting'. Early in negotiations with Holyman, Holdsworth argued that

> 'I am doubtful of our ability to crush an economically run service such as Holyman's is, particularly when so many members of the firm are working partners in it. The cost of fighting would be very heavy for us. Assuming, at heavy cost to ourselves, we were to permanently cripple or ruin Holyman, the question arises, what would his trade be worth to us? My impression is that we could not make the trades from which we dislodged him payable, that it is almost certain that small cheap steamers would commence running between Melbourne and the northern ports of Tasmania, and that if this was delayed for a time, ketches would again secure the rough cargo from Melbourne and depreciate the rates on return cargo from Launceston. I am inclined to the view that it would pay us to secure an interest in Holyman's trade, and to avoid jealousy, probably to arrange for Huddart Parker & Co. to have a share also'.[91]

Subsequent events confirmed the views of the USSCo. management that it would have been difficult to compete against Holyman. Thirty years further on in the relationship, USSCo. were still finding their costs relatively higher than Holyman. In writing to the Melbourne manager, Souter, the general manager of USSCo. made the following observation;

> 'Referring to previous correspondence in this connection, we enclose herewith a copy of a memo dated 6th instant from the Comptroller of Accounts commenting on the labour costs of our vessels operating between Melbourne and Tasmania as compared with those of Messrs. Huddart Parker Ltd. and Holyman & Sons. It is very remarkable that our own costs should be so consistently higher than those of our confreres in the trade'.[92] (Refer Table Three below)

For the half-year ended 30th September 1932, the average labour expenditure on £ 61,129 of freight by Holyman steamers was 3 shillings and 4.53 pence (3/4.53) for each £ 1 of freight.

On the USSCo. vessels the cost was 5 shillings and 10.6 pence (5/10.6) for each £ 1 of freight.

Holyman's

	Freight Earned	Labour Cost	Per £ of Freight
Laranah	12981	2108	3/ 2.98
Marrawah	11203	2389	4/ 3.19
Wareatea	10799	1662	3/ 0.93
Lutana	9515	1784	3/ 9.00
Lanena	8565	1743	4/ 0.84
Colliboi	2309	95	9.87
Tambar	5757	541	1/10.56
	61129	**10322**	**3/ 4.53**

USSCo.

	Freight Earned	Labour Cost	Per £ of Freight
Talune	51488	13128	5/ 1.20
Koranui	26956	9439	7/ 0.02
Ngakuta	13401	4441	6/ 7.60
	91845	**27008**	**5/10.58**

TABLE THREE: COMPARATIVE LABOUR COSTS 1933

There was then a recognition of Holyman's probable permanence on the Tasmanian routes. USSCo. also accepted that Holyman was best restrained through agreement than fighting, and that the best way 'to keep outsiders out it is just as well to have the trade under control through Holyman'[93]. However, McLean argues that there were other reasons for USSCo. to reverse what had been a long-standing policy of steering clear of feeder services.[94] Money played a part. USSCo. reserves mounted up steadily from the late 1890's. Freed from the financial restraints of the past, and with plenty of cash in hand, Mills, Holdsworth and Aitken felt like experimenting. Technology also played a part. By the turn of the century new advances in naval architecture and marine engi-

neering had produced a new breed of steamer which was able to compete more successfully with USSCo.'s bigger ships on the growing secondary ports trades. These ships, owned and managed by enthusiastic, expansionist provincial petty capitalists (such as Holyman) posed a renewed threat to USSCo.'s near-monopoly position. Consequently, the acquisition of an important, if not controlling interest in them, came to be seen as a way of channelling their growth into areas that complemented rather than competed with the interests of USSCo.

However, for the respective customers of USSCo., Holyman and HP, it was important to have a competitive choice. USSCo., Holyman and HP made every effort to keep up the illusion of competition. Mills, for example, impressed on Appleton, during the negotiation stage of the company formation that 'I am strongly of the opinion that in arranging matters in connection with these two subsidiary companies every effort should be made to keep our mutual connection with them from the knowledge of the public as far as possible, as if an impression gets abroad that Holyman's are controlled by you and ourselves, the success of the arrangement will be jeopardised'.[95] The venture partners seem to have been successful. For example, a subsequent commentator (Warden) writing on the life of the Holyman shipping dynasty argues that at the time the three competitors were in close co-operation, it was a time of "intense competition" between Holyman's, the USSCo. and Huddart Parker. He, like the public of the time, appears unaware that the USSCo.-Holyman-HP joint venture existed in the highly co-operative manner that was to lead to success for all the joint venture partners.[96]

Reflecting on this success at the time the relationship was formally dissolved in 1976, the then General Manager of USSCo. made the observation that 'Holyman ship owning activities do not compete in any way with Union Company and Holymans have no effect whatsoever on our Seaway Services. To this extent, and with the same consideration in the Trans Tasman, they are, "part of the family", and give us all the assis-

tance they can'.[97] However, throughout the long life of the joint venture the management of the USSCo. remained anxious that others were not made aware of any co-operative relationship. During 1933, for example, the Melbourne manager of USSCo. wrote to the managing director 'it seems to us that any enquiry from Messrs. MacDonald Hamilton & Coy. on Holyman's account, so far as Tasmania is concerned, might just be a torch which sets fire to the fabrication .. it would be fatal if we mentioned the matter in any way to Mr MacKay.'[98] For the principals of USSCo., there were benefits to be had by close co-operation on the one hand, but maintaining the appearance of competition on the other.

USSCo. Strategies

Sustaining co-operation, obscured by the appearance of competition, was the high quality of information that passed between the three companies and which allowed the development of joint strategies to support each firm's own objectives. These strategies consisted of three parts. Firstly, the determination of long term goals. Secondly, the adoption of courses of action to meet those goals and, finally, the allocation of resources to meet these goals. This supports Chandler's definition of firm strategy that, firstly, strategy is the determination of the basic and long-term goals and objectives of an enterprise. Second, the adoption of courses of action that lead the enterprise toward achieving these goals and objectives and, finally, the allocation of resources necessary for carrying out these goals.[99] These points can be illustrated as follows.

The formation of William Holyman & Sons Limited and Holymans Limited was a direct result of USSCo. setting long term goals. In Holdsworth's correspondence to Mills during March 1904, he highlighted the need for USSCo. to establish long term goals for their relationship with Holyman. He wrote, 'Our agreement with this firm expires in February next year and it is not too early to consider what is then to be done.'[100] He then suggested courses of action available to USSCo. that included a

range of options from entering into a structured trading company with Holyman, from a continuance of the working agreement then in place, to 'fighting' Holyman on Holyman's shipping routes. Having determined the need for a long term goal and a consideration of the options available, the final stage in the strategic process was considered by Holdsworth, namely the allocation of resources and how they were to be allocated, necessary for the achievement of USSCo. goals. Included in this important piece of correspondence was his own estimate of the value of Holyman's fleet at that point in time. Refer to Table Four below.

	TON	HP	Length	Beam	Dpth	Blt	Year	Cylinders	Reboil.	Trade	Est. Value £
Australian	362 232	70	160.3	22.5	10.5	Dundee	1879	21 30		Launceston-Melbourne	4,000
Orion	214 114	40	124	21.5	10.2	Lton	1900	15 30		Melbourne-N.W, Coast	6000
Koonoo-karra	165 66	27	110	20	9.6	Sin-ga-pore	1899	14 28	1903	Launceston-N.W. Coast	4,500
Amy	74 38	20	96.5	15	6.5	Syd.	1875			Chartered, Loton-Flinders Island	1,500
Dorset	110 50	32	103	17.8	8.5	Melb	1883	14 29		Launceston-N.W. Coast	2,500
Star	59 40	15	74	18.9	6.1	Lton	1890		1903	N.W. Coast	2,000
Warren-tinna	145 105	32	112	19.5	10.2	Hobt	1884	14 25	1898	Hobt-Launceston v. George's Bay	4,000

TABLE FOUR: HOLDSWORTH'S VALUATION OF THE HOLYMAN FLEET 8TH MARCH 1904

The strategic information Holdsworth gathered at this time also included the possible cost of fighting Holyman should that option be agreed on. While others within USSCo. favoured this course of action, Holdsworth was 'doubtful of our ability to crush an economically run service such as Holyman's.'[101] Holdsworth gathered a range of asset and running cost information of Holyman's steamers to support his own view that a structured agreement was the best way of allocating USSCo. resources. These were forwarded to Mills for consideration. Refer to Table Four above.

Another example of how USSCo. utilised information for strategic purposes concerned the King Island trade. King Island steamers had been formed in 1910 by William Holyman [son of the founder]. A year later, Holyman was being courted by competitors Gunn and Stephenson to purchase the vessels of the company on the death of one of their proprietors, Gunn. Stephenson wrote to USSCo. detailing finances surrounding the King Island trades.[102] Johnson, the Tasmanian manager of USSCo., did not think the King Islands trade to be very attractive, but saw merit in Holyman's Limited taking over the steamers if they could be obtained at a reasonable price. The King Island trade was an example of how a strategic decision arose from an opportunity being presented to the venture's principals.

Another form of opportunity presented itself from the death of Holyman's Managing Director [Captain William Holyman] on the 29th September 1921. Captain Holyman's death was cause for USSCo. to review the future directions the Holyman companies would take and how USSCo. might influence them. Johnson wrote to Aiken, USSCo.'s General Manager, on the 3rd October 1921.

> 'On my arrival in Launceston I got in touch with the Solicitors – Messrs. Law, Weston and Archer and discussed with them business in connection with Wm. Holyman & Sons. They seemed to have a very hazy idea of what the exact posi-

> tion was. However, I was able to make everything quite clear with the Solicitors and Captain James Holyman, visiting the Union Bank and arranging for the necessary signatures as I am now the sole director and took advantage of this and have appointed Captain James Holyman as acting Manager in Launceston.'[103]

After discussing a number of options for various family members to take over the running of the business, Johnson speculates on:

> 'the business being acquired by Huddart Parker and ourselves, or the possibility of Robinson, Manager of the Tasmanian State Government Line, attempting to acquire it. For the moment however I think we cannot do better than just allow the business to run along as usual. I have suggested that Captain James Holyman and Ivan should come across in two or three weeks time and discuss matters generally at Melbourne. By that time I will have received your views of the suggestion.'[104]

William Holyman's death ultimately led to the reorganisation of the joint venture. In 1924, the whole of Holyman Bros. Pty. Ltd. shipping assets were sold to Wm. Holyman & Sons at an agreed valuation, and Holyman Bros. ceased to operate a shipping business of any description. They did however continue to operate several grazing ventures, the leasing of some of the smaller islands off the NW Coast of Tasmania, and other business apart from shipping. The restructured joint venture was owned by William Holyman family groups; 25408 shares (45%); USSCo. 15528 shares (27.5%); and Huddart Parker 15528 (27.5%).[105] The Articles of Association stipulated that the directors of the company were to be three, one each from Holyman's, USSCo. and Huddart Parker.

This basis was varied over the ensuing years, 1976 marking the effective termination of the joint venture when USSCo. acquired all the shares originally held by Huddart Parker and some of the Holyman family interests, also the transfer of Union shares to Trucape Pty. Ltd. By 1976, Trucape held approximately 82% with the balance of the shares owned by the Keith Holyman family company. The ship owning activity

had declined extensively from the period when five or six vessels were employed to when just the *Mary Holyman* was operating the Hobart/Burnie/Adelaide route.[106]

Between the reorganisation of 1924 and the early 1960s the joint venture had been a successful one, paying regular dividends, usually of 10% (refer Table Five below). A sharp reversal occurred in 1961, mainly as a result of a new form of competition from the entry of ANL Unit Loading ships in the Bass Strait area.

Dividend Distribution Half Year Ending	Dividend per Share	Shares Held by USSS Co.	Proceeds	Return on Shares Held
31/03/25	1/- *	20,508	£1,025.80	5.00%
30/09/25	2/-	20,508	£2,050.16	10.00%
31/03/26	1/-	20,508	£1,025.80	5.00%
31/03/27	1/-	20,508	£1,025.80	5.00%
30/09/27	3/-	20,508	£3,076.40	15.00%
31/03/28	2/-	20,508	£2,050.16	10.00%
30/09/28	3/-	20,508	£3,076.40	15.00%
31/03/29	3/-	20,508	£3,076.40	15.00%
30/09/29	3/-	20,508	£3,076.40	15.00%
31/03/30	3/-	20,508	£3,076.40	15.00%
30/09/30	6d	34,180	£854.10	2.50%
31/03/31	6d	34,180	£854.10	2.50%
30/09/31	1/-	34,180	£1,709.00	5.00%
31/03/32	2/-	34,180	£3,418.00	10.00%
30/09/32	1/6d	34,180	£2,563.10	7.50%
31/03/33	2/-	34,180	£3,418.00	10.00%
30/09/33	1/-	34,180	£1,709.00	5.00%
31/03/34	2/-	34,180	£3,418.00	10.00%
30/09/34	2/6d	34,180	£4,272.10	12.50%
31/03/35	2/6d	34,180	£4,272.10	12.50%
30/09/35	2/6d	34,180	£4,272.10	12.50%
31/03/36	3/-	34,180	£5,127.00	15.00%
30/09/36	3/-	34,180	£5,127.00	15.00%
31/03/37	3/-	34,180	£5,127.00	15.00%
Average Dividend Returns 1925 to 1937				10.21%

* 20 shillings to a pound
12 pence to a shilling

TABLE FIVE: DIVIDEND DISTRIBUTION 1925 TO 1937

The nature of business had changed and the costs efficiencies with it. Freight rates were static while the cost of shipping operations increased. Dividends were reduced and were omitted from 1969 until termination in 1976.

Our interest, however, is restricted to those years of expansion and consolidation from 1904, when the joint venture was formed, until 1935. The mid-1930s has been chosen firstly, because this marked a watershed in fundamental changes to the transportation industry on a global scale. Air freight of cargo and passengers was becoming a cost effective and innovative competitor to traditional shipping. In 1934, Holyman's had purchased an aircraft to complement their shipping and land transport businesses, a move that in hindsight was both visionary and a recognition of the significant changes to come for the transportation industry.[107] A second reason is the period between the two world wars and the impact this era had on shipping. The joint venture had successfully weathered the 'great depression', from which shipping had not been immune. Their success is reflected in the consistent profit results throughout. Refer to Table Six below. However, it was the seeds planted in the 1930s that were to mark the profound changes to come. This period marks the trades' subsequent decline. Burley's research found, for example, that 'the long term factor most likely to restrict the supply of tramp shipping was the reduction in the quantity of available cargo'.[108] Both within Australia and internationally, cargoes were tending to decline during this period.

During this time, however, the joint venture prospered. Registered with capital of £ 24,504 in 1904 this had by 1935 grown to £ 72,034 (an annual growth of 7% p.a.). In the early 1930s Fixed Assets had grown from £ 20,504 in 1904 to £ 106,647 in 1935 (an annual growth of 14% p.a.). Operating results from 1924 through 1935 demonstrate how successful the joint venture continued to be. Each year the accumulated net profit from the vessels operating increased in excess of 50% over the pre-

vious year. Operating profits grew from £ 34,492 at the end of 1924 to a total of £ 369,058 by the end of 1935.

Calender Year Ended	Net Profit	Accumulated Net Profits	% Increase on previous year
1924	£16,076		
1925	£18,416	£ 34,492	46.61%
1926	£25,420	£ 59,912	57.57%
1927	£27,992	£ 87,904	68.16%
1928	£32,413	£120,317	73.06%
1929	£38,640	£158,957	75.69%
1930	£20,092	£170,049	88.78%
1931	£24,167	£203,216	88.11%
1932	£35,988	£239,204	84.96%
1933	£34,607	£273,811	87.36%
1934	£40,291	£314,102	87.17%
1935	£54,956	£369,058	85.11%

TABLE SIX: OPERATING NET PROFITS 1904 TO 1935

Conclusion

The Holyman-USSCo.-Huddart Parker joint venture is a story of modest beginnings culminating in growth and prosperity. When the decision was reached in 1976 to "wind down" the long standing partnership between these three successful firms, the observation by the then General Manager of USSCo., Mr Cole, that Holyman's were considered "part of the family" reveals the underlying explanation for the ventures long period of success.[109] Throughout, the relationship was one of deep trust and consistent co-operation between all the parties. From 1924, following the sudden death of William Holyman in 1921 (who negotiated the original agreements in 1904), the venture took on a more formalised and "professional" way of operating. William Holyman had been at the helm of the

venture since its foundation. While unexpected, and a shock to the principals, his sudden death opened the way for new blood and an opportunity to review operations. The archival evidence supports this. Regular company minutes, and timely and regular operating cost accounting reports became a consistent routine from this time on. However, it was the underlying relationship of trust and co-operation that sustained and nurtured the joint venture. Even during times of disagreement and personal animosities, there were never any serious breaches of trust or evidence of anything other than a commitment to work closely together to resolve difficult or contentious issues.

But what lay behind the success of the joint venture? How was it that the strong bonds of trust and co-operation continued uninterrupted for such a long period of time? It is the argument of this research case study that a primary reason is to be found in the high quality of information that flowed between the joint venture partners and sustained the high levels of trust and co-operation. This will be elaborated upon in the next chapter.

Notes: Chapter Four

[77] Bach, John, (1976), A Maritime History of Australia, Book Club Associates, p. 248.

[78] Naine, Bede and Geoffrey Serle, (1983), Australian Dictionary of Biography, Melbourne University Press, p. 416.

[79] McLean, Gavin. (1990), The Southern Octopuss: the rise of a shipping empire, New Zealand Ship & Marine Society, p. 21.

[80] Huddart Parker, (1926), Huddart Parker Limited: 1876 – 1926 (Company Publication), p. 3.

[81] ibid., p. 7.

[82] Union-Holyman Archives Box 300, $22^{(27)}$, 29/6/40, Letter, A.J. Souter to J.N. Greenland, p. 1.

[83] Bach, John, (1976), A Maritime History of Australia, Book Club Associates, p. 248.

[84] Union-Holyman Archives Box 297, 22, 20/7/04, Letter, Johnson to Mills.

[85] ibid.

[86] Union-Holyman Archives Box 296, Unnumbered File "Articles of Association, Wm. Holyman & Sons Ltd", The Companies Act 1869, pp. 3-4.

[87] Union-Holyman Archives Box 297, 118, 21/4/04, Letter, Johnson to Head Office.

[88] Union-Holyman Archives Box 297, 22, 25/3/04, Letter, General Manager to Strahan Manager.

[89] ibid.

[90] Union-Holyman Archives Box 296, 22^{1}, 10/8/04, Letter, Aiken to Mills.

[91] Union-Holyman Archives Box 297, 22, 8/3/04, Letter, Holdsworth to Mills.

[92] Union-Holyman Archives Box 296, 22^{18}, 24/4/33, Letter, Wheeler to Soutar.

[93] Union-Holyman Archives Box 297, 22, 6/7/04, Letter, Aiken to Mills.

[94] McLean, op. cit., pp. 159-160.

[95] Union-Holyman Archives Box 297, 22, 23/7/04, Letter, Mills to Appleton.

[96] Naine and Serle, op. cit., p. 354.

[97] Union-Holyman Archives Box 296, Unnumbered Files, 6/10/76, Letter, Cole to Smythe.

[98] Union-Holyman Archives Box 296, 22^{19}, 22/8/33, Letter, Soutar to Aiken.

[99] Chandler, op. cit., p. 11.

[100] Union-Holyman Archives Box 297, 22, 8/3/04, Letter, Holdsworth to Mills.

[101] ibid.

[102] Union-Holyman Archives Box 297, 22, 12/7/11, Letter, Stephenson to General Manager.

[103] Union-Holyman Archives Box 296, 22^{7}, 3/10/21, Letter, Johnson to Aiken.

[104] ibid., p. 4.

[105] Union-Holyman Archives Box 296, 22^{11}, 7/8/24, Letter, Captain J. Holyman to USSCo. Head Office.

[106] Union-Holyman Archives Box 296, Unnumbered Files, 6/10/76, Letter, Cole to Smythe.

[107] The Weekly Courier, Thursday, October 6, 1932 (Launceston local paper), Vol. XXXII – No. 18, p. 36.

[108] Burley, Kevin, (1968), British Shipping and Australia, Cambridge University Press, pp. 111-112.

[109] Union-Holyman Archives Box 296, Unnumbered Files, 6/10/76, Letter, Cole to Smythe.

Chapter Five: Information Flow Analysis

Problems associated with asymmetric information arise from the nature of the shipping industry. The industry has to communicate over vast distances, exaggerating the difficulties associated with bounded rationality and opportunism. Holyman's local knowledge of the Tasmanian shipping routes, for example, coupled with strong personal networks, put competitors such as USSCo. and HP at a disadvantage. Furthermore, breaches of contract under the working agreement structure before 1904 had led to conflict and tension between Holyman's, USSCo. and HP. From 1904 the three firms had two options, either compete aggressively, with no working agreements, or tighten existing arrangements and introduce contractual standards that would ensure the mutual benefits to be gained from greater trust and co-operation. The parties chose the latter option.

USSCo. resolved to create two joint venture companies with competitors Holyman's and HP, supported by contractual specifications that were as clear and tight as possible. The performance standards that were defined in the contracts were supported by sets of procedures and processes that ensured compliance to these standards. By effective monitoring and control, USSCo. ensured a rich flow of high quality information. This in turn helped maintain a culture of trust and co-operation that underpinned the venture's success. Our objective in this chapter is to examine how the venture achieved this.

Dealing with Asymmetric Information

As we have seen any analysis of a firm cannot ignore the reality of asymmetric information. Furthermore, in addressing the problems associated with asymmetric information, the twin problems of bounded rationality and opportunism are two key assumptions giving rise to asymmetric information. For a firm to successfully address these problems, standards are established which economic actors have to adhere to. These standards are usually in the form of contractual and

procedural specifications and are used to monitor and control information flows. By a process of feedback, deviations from the standard can be dealt with and, where appropriate, modified. The better the standard-monitoring-feedback-control process, the higher the quality of the resultant information.

We have seen that the shipping industry has always operated in an environment of asymmetric information, due to the distances separating economic actors. Minimising the costs associated with asymmetric information was one of the objectives of the joint venture principals. Holdsworth, for example, had highlighted this desire to Mills [Managing Director of USSCo.] early in 1904. USSCo. was anxious to find ways of driving down the transaction costs associated with the competition between themselves and Holyman's. One way was to ensure tightly specified contracts established clearly understood performance standards. Not only would this make it easier to monitor more effectively the behaviour of the partners to the agreement, but it also minimised the possibility of contractual breaches. By focusing on ways to build a greater degree of trust between themselves and Holyman's, the USSCo. hoped to address these problems.

A significant portion of the costs related to asymmetric information arose from difficulties of bounded rationality. USSCo. had limited knowledge of the Tasmanian trade, and a lack of local networks hampered their ability to effectively compete against Holyman's. The option of competing directly was not favoured, because it was thought to be 'dangerously costly and without any guarantee that others would not enter vessels at some future date. Also there was the possibility that Tasmanian public opinion would develop to USSCo.'s disadvantage.'[110] A joint venture with Holyman would take advantage of Holyman's local knowledge. In addition Holyman possessed superior experience and knowledge from twenty years of utilising smaller vessels, at lower costs than USSCo. could achieve.

Minimising opportunistic behaviour also had to be thought of, at both the pre- and post-contract phases. Earlier price-fixing agreements prior to 1904 had,

to a point, achieved this. However, the looseness of the agreements continued to give rise to conflict, tension, breaches and mistrust among the principals. As a result, thought and effort were thoroughly applied during the pre-contract phase. During the contract negotiations over consolidation of the joint venture companies in 1924, for example, the General Manager of USSCo. wrote to Jeffreys [Melbourne Branch Manager]: 'If it is found necessary to do this the matter should be very carefully stated in the agreement between the companies to prevent any hitches or misunderstandings. You will need to satisfy yourself that everything is in order, particularly from the legal standpoint, so that no trouble will be likely to crop up later.'[111] Prior to the final registration of the two joint venture companies in 1904, almost twelve months of negotiations had taken place between USSCo., Holyman's and Huddart Parker in an effort to ensure tightly specified contracts were in place.

The extensive nature of the negotiations is reflected in the documentation that has survived. Some sixty seven thousand words can be found in over two hundred documents which directly relate to these negotiations. Contract iterations were extensive. Of these, 73% of the information exchanges were in the form of letters or cables, seeking to clarify and define the contractual relationship to follow. The resultant contracts agreed on what assets were to be taken over, and the capital amount that would represent these assets in addition to what trade routes would be taken over. Voting rights, levels of management remuneration, anti-competition clauses and an agreement to set up other contractual standards, such as sales agreements and Articles of Association, are further examples of the rigour applied to establishing clearly defined and detailed standards for performance. Refer to Appendix Four for draft contract example.

During the post-contractual phase, parties to the joint venture closely monitored any breach of contract and addressed opportunistic behaviour by way of financial compensation. The outcome reflected the degree of trust that existed between the firms, any 'breaches' taking the form of a procedure to be agreed

and reconciled with no penalties attached or intended. In one example, from the earlier working agreements, seventeen breaches are recorded as having been incurred by Holyman's and five by USSCo. A file note comments that 'where Holyman's have cut rates, USSCo. and Huddart Parker followed suit'.[112] Efforts to curb and address problems associated with opportunism were not hidden. Rather the venture partners put their effort into fostering good quality of information. They did this by following a transparent procedure for recording and reconciling contract breaches. In addition to procedures for dealing with contract breaches, there was a number of other performance standards.

One example was the insistence on adherence to established book-keeping procedures. One of the agreements stated:

> 'That a proper system of bookkeeping will be adopted and statements of steamer' earnings and disbursements be handed to "The Firm" (Holyman's) and "The Company" (USSCo.) at the end of each month, and a balance sheet at the end of every half year. (Clause 22)
> That a half yearly audit by a competent person shall be made of the books and accounts. (Clause 23).'[113]

In a letter from the Managing Director to the Tasmanian Manager, this requirement was reinforced explicitly: 'The books must be properly kept, even if it means a little more expenditure in getting a competent bookkeeper. We shall probably arrange that Mr Aiken [General Manager] shall inspect the books on each of his trips to Tasmania.'[114] In another exchange of correspondence, Johnson reports to the Managing Director that 'I have impressed upon Holyman the necessity of getting all returns included in the statement, both receipts and expenditure.'[115] The principals of the joint venture had an established set of bookkeeping standards, which they insisted on being maintained. To ensure this happened, systems of monitoring and regular returns operated throughout the group. As the examples illustrate, where standards were not maintained satis-

factorily systems of feedback and control were used to rectify and ensure compliance.

In the same way that the contracts outlined the need for proper bookkeeping and auditing standards, agreements between the principals specified how the joint venture would operate. From one of the interim agreements, signed in June 1904 – see Appendix Four - a set of standards can be seen to be emerging. Table Seven below provides a summary of what these were:

STANDARD	CLAUSE	SPECIFICATION
Sale and Purchase	1, 9	Sale and Purchase of Vessels
Company Structure	2	Agreement to set up two companies
Operational	3, 12	Appointment of Directors
Operational	4, 12	Appointment and remuneration of Directors
Operational	4, 13	Appointment and remuneration of Manager
Operational	5, 10, 11, 25, 26, 34	Debarred from competition
Financial	6, 15	Rate and schedule fixing
Financial	6	Bonus payments
Financial	7, 24, 33	Compensation
Operational	8, 18, 31, 32	Trade taken over
Operational	14, 17	Agency agreements
Company structure	16	Transfer of asset ownership
Financial	19	Insurance
Financial	20	Collection of monies and disbursements
Financial	20	Dividends
Sale and Purchase	21	Sale of Shareholding
Financial	22, 23	Bookkeeping and Auditing
Financial	27	Expenditure liability
Operational	28	Subject to approval
Company Structure	29	Objections
Legal	30	Definitions

TABLE SEVEN: CONTRACT STANDARDS AND SPECIFICATIONS SUMMARY

The interim agreement had been negotiated by the local Tasmanian branch manager of USSCo. It established three company structural standards, (1) two sales and purchase, (2) six operational and (3) eight financial. Structural standards defined share ownership, asset ownership and the procedure for the handling of objections. Sales and purchase standards were established for both vessels and shareholding. As far as operating the venture was concerned, the contract specified how directors and managers were to be appointed and remunerated. Secondly, the regulation of competition was tightly specified, detailing both trading routes and which firms were debarred from competing with whom. Finally, what trades were to be taken over by the new venture were specified, in addition to how agency agreements were to operate. In the same way that operational standards were defined, financial specifications were laid out in the agreement. These included, how rates and schedules were to be fixed as well as how bonus payments were to be made. Furthermore, they addressed how compensation arrangements would operate. There was a commitment to keep all vessels insured and payment to be made in proportion to shareholding. How, and by whom, monies were to be collected, including disbursements, were documented. In addition, how dividends were to be paid, was defined. As explained above, bookkeeping and auditing standards were also specified. Finally, how liability for any unforeseen expenditure was to be borne was linked to firm shareholding. Significantly, this presupposes that forecasting and budgeting standards existed, although clear evidence is difficult to find.

From an examination of the joint venture contracts, then, we can see a determined pursuit of establishing tight specifications and high standards. While our example is based on emerging standards (the interim agreement signed in June 1904 preceded the final agreement signed in December), the principals, stressing adherence to tight specifications, were focused on making them as tight as possible. For example, during negotiations the Managing Director reiterated the importance of maintaining legally high standards. 'Tedious things are neces-

sary when they get into the hands of lawyers but it is very necessary in a transaction of this character, which provides a working agreement that may last us the whole of our lives, that all details are well thought out. In the view of it, therefore, it is better to take ample time for the consideration of every point.'[116] By developing detailed specifications, the joint venture assured itself a greater chance of success with the opportunity for disagreement minimised.

However, no matter how well or how closely specified contracts might have been, they did not operate in a vacuum. Monitoring of agreed standards was essential if they were to be maintained. The joint venture employed a number of monitoring methods. One way was for managers from both Head Office and branch offices to visit other branch offices and the offices of other joint venture partners. A second means was insisting on routine reporting from branch managers and, finally, as the frequent and rich flows of information from and to the branch office level of the organisational hierarchy highlight, standards were kept high by an empowered branch management structure.

The archives demonstrate that visits to other locations by the venture's principals were frequent. Each trip had a clear purpose and every opportunity was used to review standards. In one example, Aiken travelled from New Zealand to the Tasmanian branch to check Holyman's books and methods of keeping financial records. This trip followed concerns expressed over the adequacy of Holyman's bookkeeping. On receiving news of Aiken's visit, Holdsworth wrote to Johnson, 'I am glad to hear Mr Aiken was on the whole satisfied that the books were well kept. I hope he had time to audit.' In the event, Aiken had carried out an audit and apart from some minor issues was satisfied that standards were being maintained. Furthermore, such opportunities were used to improve existing processes and procedures. In one example, Holdsworth reported that, 'probably Holyman's suggestion for a different method of keeping the cash journal would make this simpler.'[117] In another example, the Melbourne Manager reported to Head Office that 'we beg to hand you the report from Mr Gray, who

has been across to Launceston inspecting Holyman's books. This is very satisfactory, as except in one or two small matters everything appears to be correct.' In the same report, new ideas are encouraged for the improvement of procedures: 'He mentions that with passengers the Chief Officer issues any tickets necessary, and the stewardess collects them. I have arranged with him in future the officer issuing the tickets shall give the Master a list of passengers travelling and where they paid, and this in addition to the tickets being collected by the stewardess should be a better check than has been done in the past.'[118] From these examples we can see that the purpose of regular visits to other locations had two objectives. Firstly, it served to review adherence to existing standards and, secondly, to suggest improvements.

A second means of keeping control over standards was in the regular submission of information to other parts of the organisation. This information was transmitted in two routine forms, TPS and MIS. As we have seen, TPS (transaction processing systems) are defined as routine business activities that pertain to the processing of business transactions. MIS (management information systems), on the other hand, are defined as information that draws on data stored as a result of transaction processing, in addition to using other information if necessary.[119]

Typically, TPS information is made up of a high number of transactions such as are found in financial records. Secondly, each transaction is similar. Third, the procedures for processing the transaction are well understood and can be described in detail. Finally, few exceptions to the normal procedures occur.[120] In our research into the TPS information that flowed within the joint venture, regular cost accounting reports conform to this definition of TPS. From the five years studied, a detailed monthly report - there was an average of 11.2 reports per annum - of every vessel's revenue, direct costs and overheads were submitted from Holyman to USSCo. Head Office (see Table Eight below):

	TPS	MIS
1904	2	41
1919	11	22
1920	17	14
1924	9	16
1935	17	42
TOTAL	**56**	**135**

TABLE EIGHT: DOCUMENT TOTALS[121]

The other routine form of information reporting (MIS) is typically information prepared in a pre-designed form presented in a predetermined format. An example from the joint venture was the way in which cost accounting statements were presented. They carried an analysis and comment on what the results meant for the business. While TPS information provided an important monitoring tool, the use and analysis of this information (from MIS sources) was more important to the venture (135 MIS-type documents *vs* 56 TPS Table Eight above). In one example, a financial forecast is taken from recent returns for the *Laranah* and projected onto different scenarios for running the Melbourne/Hobart trade using a different vessel, *Wainui.* This followed Johnsons concern that 'with regard to your remarks re *Laranah* I have been all through of the opinion that £ 1400 a month charter was far too high, in fact that is borne out in a letter I wrote him some months ago suggesting that it should be £ 1000.'[122] Costs per day and per month, with and without stewards, were calculated. The resultant information was then utilised to re-route the *Wainui* trade routes in order to achieve better margins.[123] Table Nine below highlights Johnson's financial justifications. While there is little evidence in the archives to suggest formal forecasting was used by the venture, it does illustrate the principals use of MIS-type information.

	With	Stewards Per day	Without	Stewards Per day
Wages	523.00	17.20	436.00	14.33
Overtime	91.00	2.99	73.00	2.40
Victualling with 40% of wages	209.00	6.87	174.00	5.72
Gatley Coal	8.00	.26	8.00	.26
Repairs 287 days	836.00	2.91	836.00	2.91
Stores 287 days	1288.00	4.49	1288.00	4.49
Insurance	66.00	2.19	66.00	2.19
Protection	6.00	.20	6.00	.20
Cost per day		**37.11**		**32.50**
Cost per month	**1129.00**		**989.00**	
Overhauls	213.00		213.00	
Depreciation	61.00		61.00	
Interest				
TOTAL	**1403.00**		**1263.00**	

TABLE NINE: APPROXIMATE COST WAINUI MELB/HOBART TRADE SAME CONDITIONS AS LARANAH

In a further example, following the submission of the half yearly accounts (as at 31st March 1920), Johnson wrote to inform Aiken that 'Captain Holyman raised the question of his salary, and on his representation that this is insufficient, the fact that he is much more than covered by the Commission earnings which he undertakes at Launceston, it is decided to increase this to £ 600 a year.'[124] Effective monitoring of standards allowed appropriate amendments to be made.

There are three significant aspects from the MIS information that provides an explanation of the success of the joint venture. Firstly, the systems in place provided important and regular information, sufficient for the principals to make decisions of a financial nature. An increase in salary was grounded in the

belief by Captain Holyman that the joint venture could afford a greater level of remuneration, given current financial performance (as extracted from the ventures TPS systems). Second, this represented an amendment to the initial agreed contract remuneration levels, and highlights the feedback mechanism at work. The fundamental standard remained intact, *that is*, that the manager of the joint venture will be remunerated for the role, but feedback is used to monitor and amend aspects of the standard. Finally, the significance of this decision was not the raising of Holyman's salary, based on routine financial reporting, but the degree to which branch managers were empowered to run the business of the joint venture. We have already seen that delegating the negotiations and authorisation of interim agreements signals a high level of confidence in the branch management. In matters of managing and operating the agreement, this high level of confidence was sustained. Herein lay the joint venture's most important mechanism of control.

The branch management structure existed to ensure adherence to corporate standards. We have seen that the joint venture had a number of established standards, such as bookkeeping and business contracts. There was also a number of monitoring methods in operation to ensure standards were adhered to. These occurred through such means as regular visits to branches, on-going reviews and corrections to existing systems and regular submission of TPS- and MIS-type information. Yet, without adequate controls, standards could not be maintained and improved. Branch management empowerment was a key to achieving control throughout the joint venture. An examination of information flow density helps illustrate the pivotal role branches played.

Density flows have been measured in two ways utilising the methodology discussed above. Firstly, information flows have been measured flowing both in and out of each node, each node being represented by a level within the USSCo. hierarchy. The results are summarised in Figures Four A to Four D below. For example, in 1904 33.5% of all information flows, in and out of each communica-

tion node, occurred at the branch level. This compares with 53% for 1919/20, 58% for 1924 and 55% for 1935. One would expect that from archives held by a Head Office information flows would be dominated by the central role Head Office would be expected to play. In each of the years studied, however, information flows (to and from each node) show relatively significant transmissions to and from the branch level. Furthermore, transmission to and from Head Office was more by way of informing Head Office of decisions taken or seeking ratification. Rarely were branch managers left in a hiatus waiting for decisions or action from Head Office. By the time Head Office were informed, decisions had already been made and actions taken. Significantly, Head Office stood behind these decisions, just so long as they operated within the specifications of the joint venture.

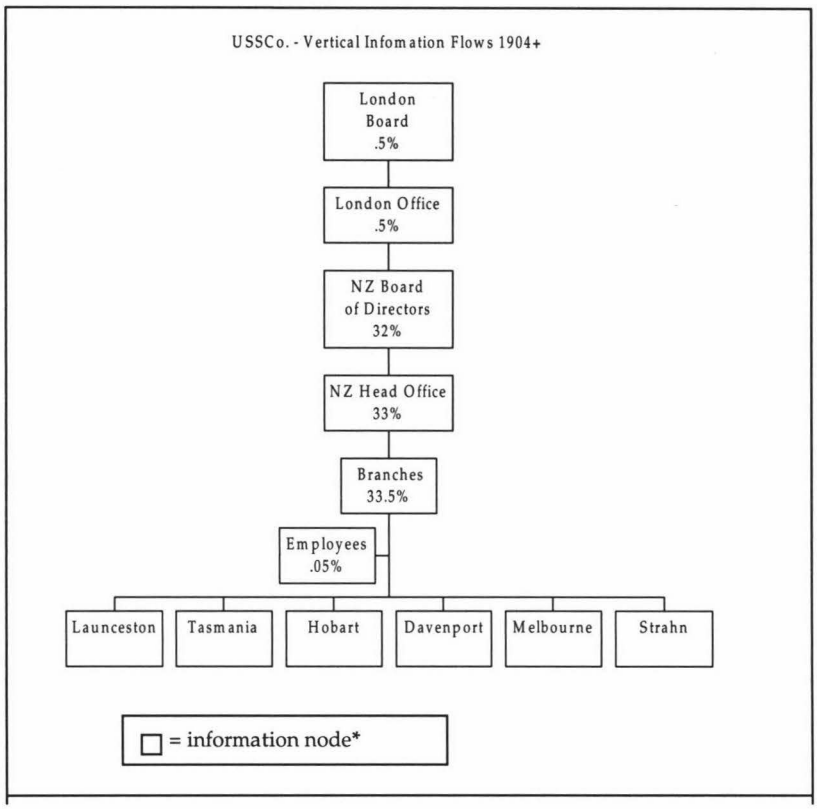

FIGURE FOUR A: 1904 DENSITY OF VERTICAL INFORMATION FLOWS BY PERCENTAGE

(* Each box represents a node through which information either flowed into or out of. For example, the branch node of 33.5% is the percentage of the total flows measured measured for 1904 that either went into or out of a branch office
+ Measures flows going either up or down the hierarchy)

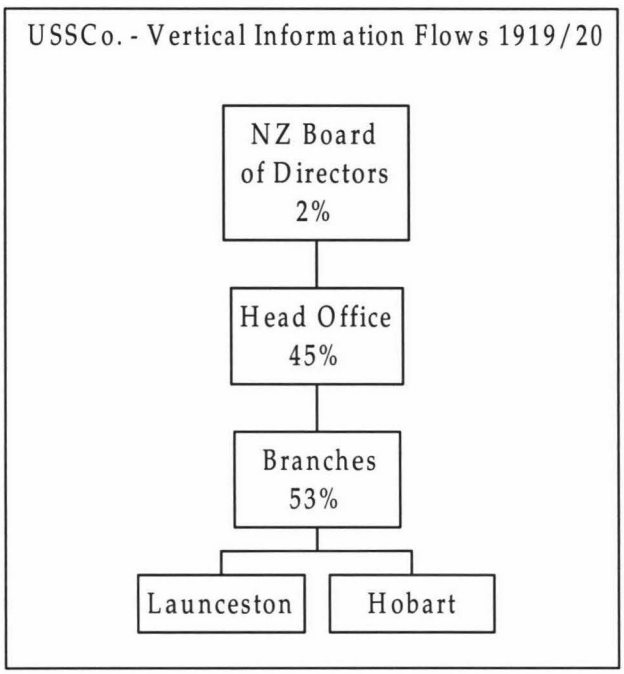

FIGURE FOUR B: 1919/20 DENSITY OF VERTICAL INFORMATION FLOWS BY PERCENTAGE

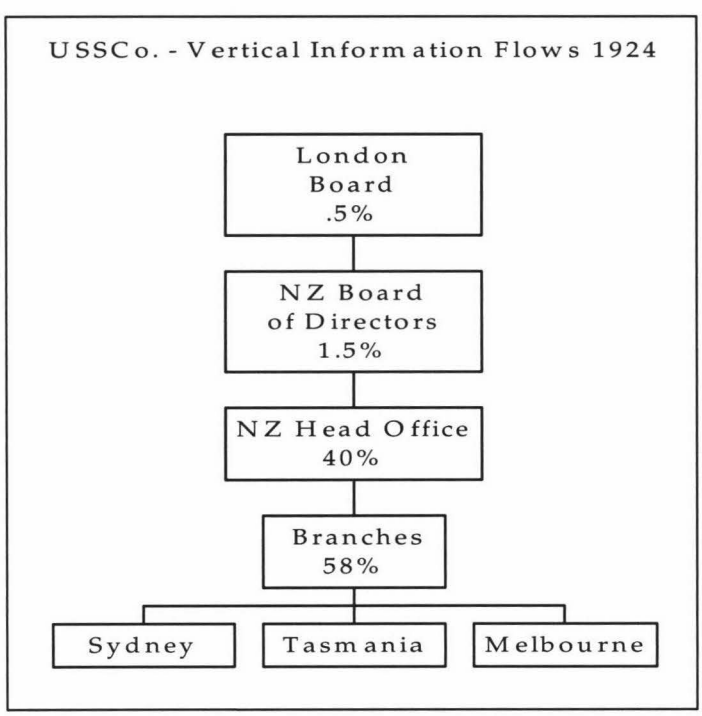

FIGURE FOUR C: 1924 DENSITY OF VERTICAL INFORMATION FLOWS BY PERCENTAGE

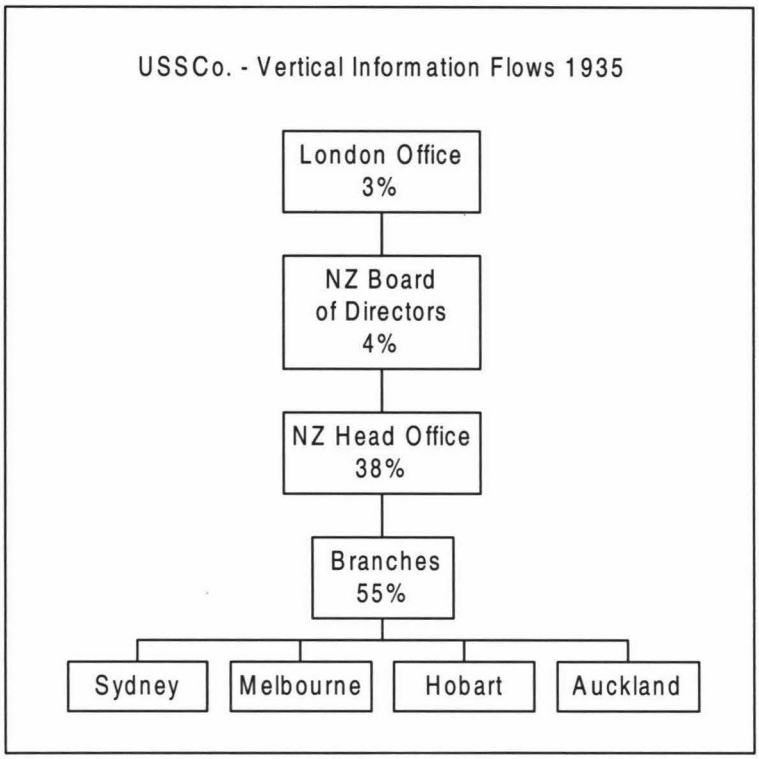

FIGURE FOUR D: 1935 DENSITY OF VERTICAL INFORMATION FLOWS BY PERCENTAGE

The second representation of the same information flows is given in Figures Five (A to D) below. Here we represent the density of information flows between each node, regardless of the frequency with which the information flows occurred. For each year studied, we see that the flows are thickest at the branch management level.

TO	London Board	London Office	NZ Directors	NZ Head Office	USSCo. Branches	Holyman Co's	HP	Other External
London Board								
London Office								
NZ Directors								
NZ Head Office								
USSCo. Branches								
Holyman Co.'s								
HP								
Other External								

KEY:	***Information flows to and from branch level***
	Information flows to and from all other nodes

FIGURE FIVE A: DENSITY OF VERTICAL INFORMATION FLOWS 1904

TO	London Board	London Office	NZ Directors	NZ Head Office	USSCo. Branches	Holyman Co's	HP	Other External
London Board								
London Office								
NZ Directors								
NZ Head Office								
USSCo. Branches								
Holyman Co.'s								
HP								
Other External								

FIGURE FIVE B: DENSITY OF VERTICAL INFORMATION FLOWS 1919/20

TO	London Board	London Office	NZ Directors	NZ Head Office	USSCo. Branches	Holyman Co's	HP	Other External
London Board								
London Office								
NZ Directors								
NZ Head Office								
USSCo. Branches								
Holyman Co.'s								
HP								
Other External								

FIGURE FIVE C: DENSITY OF VERTICAL INFORMATION FLOWS 1924

TO	London Board	London Office	NZ Directors	NZ Head Office	USSCo. Branches	Holyman Co's	HP	Other External
London Board								
London Office								
NZ Directors								
NZ Head Office								
USSCo. Branches								
Holyman Co.'s								
HP								
Other External								

FIGURE FIVE D: DENSITY OF VERTICAL INFORMATION FLOWS 1935

The significance of the heavy density of information flows to and from the branch management level, is that it addresses one of the most visible problems of asymmetric information, inherent within the shipping industry. Namely, the difficulties associated with communication over vast distances. Enacting managerial control in Hobart to deal with Hobart-related business, will be more effective than trying to exercise such managerial control from Dunedin. Moreover, delegation of responsibility and authority to branch management ensured that problems of distance did not hamper the decision-making process.

A greater degree of success in monitoring corporate standards is another reason why we see a greater clustering of information interfaces at the branch management level. We have already seen one example of where the contractual standards related to remuneration (Holyman's salary increase[121]) were managed at a branch level, rather than through Head Office. In a further example, we see the regulation of trade routes emanating from the branch level. Johnson [Tasmanian Branch Manager] reported to Head Office that 'negotiations with regard to Holyman's Ltd in particular are rather complicated as we only have one-third interest in the steamers, and when we have a meeting at which Messrs. Holyman [MD of Holyman's] and Appleton [MD of HP] are present we cannot dominate the position, although usually we have managed to get acceptance of our views with regard to these steamers.'[125] It would be unlikely that such acceptance would follow if negotiations were being covered over distances where time and space were key issues to gaining timely agreement.

In addition to using branch managers to monitor corporate standards and exercise control over operational aspects of the business (regulation of trade routes), branch managers worked closely with each other to ensure corporate controls were maintained. In one example, the Sydney Branch Manager insisted that the Melbourne Manager should not provide financing arrangements for a third party, without the

authority of the director's approval. The Sydney Branch Manager, following a meeting of the directors, reported to Head Office that 'I made it clear at the meeting that Holyman & Sons in Melbourne, as agents regarding the collection of fare, & c, for the Airways, could hardly be expected to finance large amounts and such payments should not be made by Holyman & Sons, Melbourne, without the authority of the Directors of Holyman & Sons. I think the attention which has been called to this matter will be all that is necessary to keep matters quite in order in the future.'[126] It is significant that the Branch Manager, without having to seek approval, had the freedom to monitor and control operations from the branch level, for events taking place in another branch.

In summary, our focus in this section has been on how the joint venture addressed problems of asymmetric information against the criteria set out in our theoretical framework. This included dealing with minimising opportunistic behaviour and overcoming difficulties associated with bounded rationality. Opportunistic behaviour was addressed at both the pre- and post-contract phases. At the pre-contract phase, the principals took time and concentrated effort over ensuring that tightly specified contracts were in place. At the post-contract phase a number of methods were used to ensure compliance to standards. These included on-going monitoring of standards where breaches of contract, for example, occurred, they investigated and managed in a transparent fashion. A further method was the regular visitations of the venture's principals to branch offices with the intention of reviewing compliance. Routine reporting from branch level to Head Office was also an effective means of monitoring and control in addition to providing the principals with feedback. Finally, venture standards were maintained by empowering Branch Managers.

The significant outcome of the establishment of tight specifications, and an effective standards-monitoring-feedback-control process, is that the venture nurtured a rich flow of high quality information. But

what explanation is there for the consistency and sustained success of the standards-monitoring-control-feedback mechanism? After all, the venture survived for seventy years. To help answer this question we turn to an examination of the ventures organisational culture.

Firm Culture

We have seen in our theoretical framework that a firm culture of trust and co-operation is an important means of addressing problems associated with information asymmetries. Furthermore, a strong corporate culture, based on trust and co-operation improves the efficiency of internal communication, and drives down infrastructure costs. In this case study we find evidence that the success of the joint venture was grounded in a firm culture of trust and co-operation. Relationships between principals and agents sustained, nurtured and gave shape to the culture of the joint venture. Table Ten below illustrates the degree to which the firm culture was based on a high degree of trust. Every communication interface and keyword has been recorded against the recipient of the exchange and, on average, demonstrate a higher tendency toward a high level of trust. In the case of USSCo. (as the source), for example, an 84% 'high' trust interface and 63% high trust keywords and phrases, has been recorded; Holyman's 79% and 58%; HP 92% and 64% and external parties 98% and 58%. As a total of all interfaces and keywords, the joint venture enjoyed, on average, 86% of all interfaces as 'high' trust and 60% of all keywords as 'high' trust. If we accept that this demonstrates a culture of high trust, we are interested in what specifically defined this culture. We can do this in two ways. Firstly, by finding the cognitive elements of the corporate culture in existence and, secondly, by finding evidence of the belief systems, based on observations of human behaviour, that shaped firm culture.

	1904		1919/20		1924		1935		Average	
	I	*K*	*I*	*K*	*I*	*K*	*I*	*K*	*I*	*K*
USSCo. Internal	88%	59%	85%	62%	88%	61%	72%	50%	83%	58%
USSCo. to Holyman	83%	62%	100%	58%	90%	64%	84%	62%	89%	62%
USSCo. to HP	93%	67%	75%	56%	85%	65%	89%	76%	86%	66%
USSCo. to external	78%	68%	100%		100%	100%	33%	33%	78%	67%
Holyamn to USSCo.			36%	49%	89%	63%	100%	79%	75%	64%
Holyman internal	100%	88%				20%	100%	100%	100%	69%
Holyman to HP					33%	44%	100%		67%	44%
Holyman to external	100%	7%	50%	67%	50%	50%	100%	100%	75%	56%
HP to USSCo.	83%	49%		29%	71%	63%	67%	64%	74%	51%
HP to Holyman		8%			83%	38%	100%	83%	92%	43%
HP internal	100%				100%	100%			100%	100%
HP to external					100%	69%	100%	50%	100%	60%
External to USSCo.	87%	57%	100%	82%			83%	77%	90%	72%
External to Holyman		8%	100%	75%	100%	63%	100%	60%	100%	52%
External to HP					100%	44%			100%	44%
External to external					100%	64%			100%	64%
Average	**90%**	**47%**	**81%**	**60%**	**85%**	**61%**	**87%**	**70%**	**86%**	**60%**

I* = *High trust interfaces
K* = *High trust keywords

TABLE TEN: PERCENTAGE OF HIGH TRUST INFORMATION INTERFACES AND KEYWORDS

The cognitive elements of corporate culture, which form the basis of Crémer's argument, operated throughout the joint venture. For example, when Holyman arranged for delivery of the *Marrawah*, the trust placed in the firm's human capital was in evidence: 'This steamer left Dundee on the 13th inst. in charge of Captain M. H. Ransom [a USSCo. Captain] and we now enclose a copy of our letter of instruction to him, together with a copy of letter giving the terms

on which we engaged him and a copy of his letter of acceptance. We have agreed to pay his wife £ 10 per month out of his wages until his return to the U.K. and while making no promise, we have told Captain Ransom that if he delivers the ship in good order and condition and to your satisfaction, the Company will doubtless give him a bonus, as on former occasions.'[127] The firm trusted Captain Ransom to deliver the vessel in good order, a belief supported by contractual commitments and unspecified incentives for delivery in good order. In turn, Captain Ransom set sail in the belief that he would be looked after by his employers in the same way as previously. That he accepted an unspecified incentive indicates a high level of trust that USSCo. would make good on their promises.

In another example of how a high level of trust existed we can examine the levels of financial commitment to the venture. Over the period studied not only did the joint venture continue its business growth through the accumulation of profits, but the joint venture partners at no time took out of the venture any

Balance Sheet Item	1904	1919/20	1924	1935
Fixed Assets	£ 20,504	£ 34,936	£ 45,960	£ 106,647
Investments		£ 1,270	£ 1,795	£ 46,344
Working Capital	£ 2,000	£ 17,794	£ 16,012	£ 22,966
Capital (not incl. Accum. Profits)	£ 22,504	£ 22,504	£ 22,504	£ 124,290
Accumulated Net Profit		£ 29,110	£ 40,443	£ 49,530
Liabilities		£ 2,386	£ 820	£ 2,137
Balance	**£ 0**	**£ 0**	**£ 0**	**£ 0**

TABLE ELEVEN: JOINT VENTURE BALANCE SHEET[128]

more than dividends declared and issued. Refer to Table Eleven above. When a capital injection was made in 1935, it went directly into building up the business by way of fixed assets, investments and working capital.

In summary, these cognitive indicators of firm culture help illustrate the high trust between principals and agents. Furthermore, this view is strengthened when we examine the beliefs and values of the venture. These are to be found

embedded in belief systems within the organisation that underpinned the joint venture.

Belief systems are based on observations of human behaviour. Furthermore, scholars such as Barnard and North argue that belief systems define the culture of the organisation. There is strong evidence that such a culture went to the heart of the joint venture's success. In one example, a year after the formal creation of the joint venture (1905) the USSCo. Tasmania Manager [Johnson] 'complained to Holyman that things were not as satisfactory as expected.' However, rather than focus on unsatisfactory results, Johnson demonstrated a desire to support Holyman through what was:

> 'by far the worst year he has experienced. He is really suffering more than we are in as much as part of the steamers are idle and he is debarred from seeking any other trades in Tasmania. Altogether Holyman seemed rather depressed, when I saw him, and apart from the above business he has not been having the best of luck as collision between *Koonookarra* and *Breone* at Hobart will cost him about £ 200 and the ketch, *Helen Moore*, which he recently purchased from Risby Bros. for £ 800, left Tasmania for Kents Group a month ago and has not since been heard of'[129].

There are a number of possible explanations for Johnson's concerns. For example, there may have been a concern that Holyman would breach the terms of the joint venture agreement or worse, become a financial liability to be carried by the other partners. There is also recognition that USSCo. and Holyman's are enjoying different levels of success. However, of most significance is the real concern expressed for Holyman. Rather than focusing on the unsatisfactory results, Johnson's attitude is one of support and personal concern. This is an attitude that is in evidence whenever issues of human capital arise.

In another example, Holyman reported that:

> 'at the present time we have a very good mate, who is practically acting as purser as well as mate. We give him a copy of the manifest each week from Melbourne made up without the freight for his own guidance in delivering cargo. I think it better for us to see how this acts before trying a purser. As far as Cyril is concerned, my reason more than anything was that he was not kept fully employed, there was too much idle time especially for a young fellow. He is getting along splendidly with Currie, who informs me he is well satisfied with the lad. It is his intention, as soon as he has secured his ticket, which will take him eighteen months, to have a look around the world.'[130]

In the same way that this culture of support and concern sustained the firm's human capital, the joint venture partner's had applied their values in ways to resolve human capital problems and encourage the people in their employ.

In a further example, when Johnson advised Head Office that there had been some friction with the Holyman family following the sudden death of the Managing Director, [William Holyman], Hughes [Tasmanian Branch Manager] was able to report that:

> 'I am glad to say the friction with the Holyman family has been satisfactorily adjusted. I had letters from Mrs Holyman and the two sons independently, from which it was evident that they were inclined to resent Capt. James Holyman having an active part in the management and thought that Ivan Holyman, one of the late William Holyman's sons, should be a Director and Manager. I wrote them each pointing out that those interested in the Companies would naturally feel more confidence, for the present at least, in dealing with Capt. James Holyman rather than place the management in the hands of Ivan Holyman. I mentioned that, while he was very energetic and ambitious, he lacked the broader experience that was necessary and that this would come in time, so that for the present they should be content to leave the reins in Capt. James Holyman's hands. I am glad to say that I have since heard from them that they accept this view and matters are likely to go along more smoothly in the future. I have since had a note from Ivan in which he expresses his thanks and advice I have given and his intention to be guided by it.'[131]

Hughes confidence was well founded, Ivan went on to become the Managing Director of Holyman's group of companies, including the founding of the Holyman's Airline in the early 1930s.

In a further example of the high degree of trust that existed between the principals, the management of USSCo. was prepared to support Captain Holyman's appointment of a previously dismissed USSCo. officer who 'it was noticed on arrival at Hobart on his first trip was under the influence of liquor which our enquiries here confirmed, as a result of which his services were dispensed with.'[132] Despite Hughes [Melbourne Branch Manager] misgivings that 'I did not consider you would approve Jarvie remaining in that vessel', Aiken [General Manager] was prepared to support Holyman's recommendation. 'Had we had an opportunity of expressing an opinion on the matter, we would have discouraged the appointment of Jarvie, but in view of Capt. Holyman's strong recommendation and Mr Appleton's acquiescing thereto, that Jarvie should be allowed to remain in the ship, we are prepared to accept the position and hope that the present service rendered by him will prove to be a continuant factor.'[133] Genuine concern for others, encouragement of employees at a personal level, personal assistance in family matters, and support for other venture partners decisions, provide a picture of a firm steeped in a belief system grounded in high trust.

In summary, the evidence of an environment in which information sustained a culture of high trust can be found at a number of levels within the venture. Firstly, the venture's principals demonstrated concern and compassion for one another. Secondly, their attitude to employees was one of encouragement and trust. Third, the principals offered help to one another if, and when, appropriate. Fourth, where issues of human capital were concerned, the principals trusted each other's judgement. Finally, the financial stability of the venture was supported in part by the principals willingness not to withdraw funding.

If we accept that a firm culture of high trust is a key to co-operative firm structures (cognitive view of culture) and co-operative behaviour (embedded observable belief systems) what is it that sustains this culture over time? We have seen that scholars such as Boyce, Barnard, Crèmer, Helper and Penrose argue that the key to sustaining co-operation, and the culture that develops, is in the communication between principals and agents. From the USSCo. head office archives alone, we find evidence that communication between all parties was rich and frequent. On average, there was a formal exchange of information every second day, over a distance that covered from Dunedin to Sydney. On each exchange, an average of two hundred and thirty two words were used.[134] Most exchanges were rich in information and provided significant detail. In one letter, for example, thirty three discrete items of information, which would subsequently be processed into knowledge, was provided in one three page letter. Refer to Figure Six below.

Type of Exchange	Letter Extract
Acknowledgements	• We are in receipt of your letter enclosing scrip certificates together with declarations of trust and blank transfers
Instructions	• We note you wish to have the shares put in the name of Joseph Ewing
Information	• We are advised by E.S. & A. Bank that Mr Ewing is leaving London on the 24th.
	• It appears Mr Mayne has the necessary authority under the power of attorney to sign these documents.
	• Mr James Holyman is returning to Launceston today.
	• You will notice the insurance on the *Lutana* has been increased to £ 20,000.
	• In addition to this the vessel is insured for £ 5,000 under a total loss policy.
	• It is anticipated the cost of this vessel including alterations affected to her in order to comply with the Navigation Act will amount to approximately £ 25,000.
	• With regard to Wm. Holyman & Sons entering the Gippsland Lake Trade, we advised you in our letter of 17th ult. That in addition to the amount of £ 1,000 agreed for goodwill, a quantity of gear would also be taken over valued at about £ 36.
	• When an inventory was taken the approximate value was found to be £ 451.
	• Captain Holyman is quite satisfied with the values.
	• Captain Holyman advises as they have now entered the Lakes trade he can see sufficient work ahead for the *Wareatea*.
	• It is expected she will make monthly trips to Hobart with benzine.
	• The *Kowahi* and *Laranah* cannot undertake trips carrying benzine.
	• She can also undertake the occasional trip to Launceston and North West Coast with benzine.
	• The balance of her time will be the Melbourne/Launceston trade.
	• The *Kooringa* has also been fitted to carry benzine below hatches.
	• Mr Green has now been appointed Acting Branch Manager of Holyman's Melbourne Branch at a salary of £ 9 per week.
	• Walker, the former Accountant, has resigned as although Captain Holyman offered him a position in Tasmania, he stated he wished to remain in Melbourne.
	• This Officer's salary was at the rate of £ 7 per week, and Green previously received £ 5/10/-.
	• Captain Holyman, as previously indicated, is satisfied a saving of £ 750 to £ 1,000 will be effected in office administration.
Actions	• Holyman will consult his Solicitor in this connection and advise us later.
	• I have handed Captain Holyman a copy of the Power of Attorney.
	• We also attach copy of letter sent to Captain Holyman by Mr Clark with reference to the insurance on the *Lutana*.
	• We attach further copy of letter from Mr Clark to Captain Holyman suggesting Mr Hall might be made intermediary for the division of shareholdings in W. Holyman & Sons Pty. Ltd.
	• This matter was discussed fully with Captain Holyman.
	• We have given approval to the suggestion.
	• Mr Appleton took up the matter with Captain Holyman and pointed out that he could not expect us to accept £ 36 when the gear was valued at £ 400.
	• Holyman agreed to take over the gear at £ 225.
	• Subject to the value as indicated being approximately correct.
	• Mr Clark has now furnished Captain Holyman with a full statement.
	• The *Wareatea* has recently been fitted to carry benzine below hatches.

FIGURE SIX: COMMUNICATION EXAMPLE 20/10/24[135]

Another way to view rich exchanges of information, such as the example in Figure Six, is to examine the range and depth of the information contained in a document. From our example in Figure Six above, this range and depth is summarised in Figure Seven below:

RANGE	DEPTH
Correspondence	• Acknowledgement of receipt • Insurance matter • Letter from Clark • Letter from Clark
People movements	• Ewing leaving London • Holyman returning Launceston
Legal	• Organised to sign documents • Matters of remuneration • Power of Attorney to Holyman
Financial	• Insurance on *Lutana* increased • Also covered for total loss • Cost of vessel construction • Gippsland trade goodwill • Gear cost • Holymans purchase of gear • Administrative savings
Trade Routes	• Holyman's forecast • Monthly Hobart trip • *Kowahi* and *Laranah* carrying benzine • *Wareatea* • *Kooringa*
People Issues	• Green's appointment • Walker's resignation • Remuneration details • Appointment of intermediary
Approvals	• Of intermediary • Gear value and purchase

FIGURE SEVEN: DOCUMENT RANGE AND DEPTH OF INFORMATION EXCHANGE

The letter dealt with issues that included people matters involving movements, appointments, resignations and remuneration, as well as legal issues, such as appointment of Power of Attorney, the organisation of documents to be signed and issues of remuneration to be resolved. Financial matters were also addressed. These included insurance matters, costs of a vessel construction, matters of

goodwill and gear values as well as administrative savings to be made as a result of changes to one of the offices. Matters of document handling such as acknowledgement of receipt of documents and approvals were also covered. Finally, operational issues covering trade routes of a number of vessels were covered. As a representative example of all the letters scrutinised in the archives, the richness of the information flows through the firm can be seen in the number of items dealt with in each exchange and in the range and depth of subjects covered.

Essential to maintaining this rich level of communication was an infrastructure to support the information flows. The joint venture infrastructure consisted of offices at all main branches where the vessels operated from. Each branch office employed salaried managers and clerical assistants. In addition the three partners, USSCo., HP and Holyman's each maintained a Head Office. There is also evidence to suggest that each branch and head office maintained their own set of files and that all significant information exchanges were documented in predominantly letter and report forms. The heavy reliance on letters demonstrates a commitment to document any important exchange of information. This included documenting outcomes of meetings, submitting reports in line with contractual standards, providing viewpoints and advice, or as a way to overcome the problems associated with information asymmetry. Cables, telephone and typewriters were all forms of office technology utilised by the venture to enable effective communication. The extent to which infrastructure supported the regular communication can be illustrated in two ways.

Firstly, the variety of information exchange types. Refer Table Twelve below. Letters, in which a mixture of information was given, remained the dominant form of communication within the venture. This mixture of information included formal submission of TPS- and MIS-type information, as well as non-routine comment on DSS-type information. Personal observations by the writer were often added and helped provide a rich source of knowledge for the principals. In contrast to letters, cables were used where timeliness was an issue, and

subsequent clarification of content made by letter. Similarly, the occurrence and outcomes of meetings were documented in letters written subsequent to the meeting.

A second way is to extract expenses from management and financial

	1904	1919/20	1924	1935	Average
Letters	45%	60%	49%	59%	**53%**
Cables	28%	1%	21%	5%	**14%**
Meetings	10%		1%	1%	**3%**
Informal Contact	10%	12%	19%	15%	**14%**
Financial Data		11%	3%	6%	**5%**
Other	7%	16%	7%	14%	**11%**
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**

TABLE TWELVE: TYPES OF COMMUNICATION INTERFACES

accounts. For the years 1920, 1924 and 1935 the following were the expense types and relative costs (taken as a percentage of the total expenses) for each form of communication infrastructure used. Refer to Table Thirteen below for summary and Appendix Seven for detailed breakdown.

	1920		Total	1924		Total	1935		Total
	Vessels	Office		Vessels	Office		Vessels	Office	
Salaries		.1263%	.0380%		.3624%	.0198%		.7873%	.0786%
Rent		.0033%	.0010%		.0102%	.0006%		.0427%	.0043%
Office Depr.					.0533%	.0029%		.0138%	.0014%
Advertising	.0031%			.0027%	.0348%	.0036%	.0034%	.0051%	.0038%
Stamps & Telegraph	.0016%	.0127%	.0047%	.0013%	.0313%	.0017%	.0011%	.0178%	.0028%
Stationary	.0005%	.0125%	.0039%	.0001%	.0170%	.0009%	.0001%	.0312%	.0032%
Telephone		.0088%	.0027%		.0332%	.0018%		.0452%	.0045%
Travelling	.0031%	.0061%	.0040%	.0007%	.0125%	.0007%	.0005%	.0252%	.0030%
Wireless				.0328%		.0031%	.0027%		.0024%
TOTAL	.0046%	.7690%	.0710%	.0080%	.7298%	.0475%	.0081%	.9724%	.1044%

TABLE THIRTEEN: COMMUNICATION INFRASTRUCTURE COSTS BY PERCENTAGE OF TOTAL EXPENSES

Without comparative firm data, it is difficult to draw conclusions as to how efficient communication infrastructure costs were. The best we can do is compare years with one another, in addition to relating the document types (Table Twelve) with their relative costs (Table Thirteen). For the years 1920, 1924 and 1935 we can, for example, observe that the relative cost of office salaries was 4%, 2% and 8%. Whereas, the relative costs of stamps and telegraph was .5%, .2% and .3% while telephones were .3%, .2% and .5%. Travelling expenses on the other hand were .4%, .1% and .3%. We might conclude from this that, while there was an increased commitment to office salaries, over the period of fifteen years, relative cost efficiencies were kept tightly controlled. Furthermore, if we relate document types to relative costs, this shows that letters and cables, for example, were 61%, 60% and 64% for the years 1920, 1924 and 1935 against a relative cost of 12%, 5% and 6%. In other words, for an average infrastructure cost commitment of 8% on stamps, telegraph and stationary, the firm generated 62% of its communication interfaces in the form of letters and cables. We have argued above that letters were an effective source of information for the principals. By comparing this reliance on letters with the infrastructure costs behind the information flows, we may conclude that cost efficiencies were realised by tightly

controlling communication infrastructure costs, over the long term, within parameters that varied little. Considering the low relative costs, information flows were rich and effective.

Conclusion

One of the objectives in forming a joint venture between USSCo, Holyman's and Huddart Parker was USSCo.'s motivation to minimise costs associated with asymmetric information, arising from competition on the Tasmanian trade shipping routes up to 1904. Bounded rationality and opportunism played their part. For example, a lack of knowledge about local trade networks and Holyman's tacit knowledge from over twenty years trading in Tasmania posed obstacles to any idea USSCo. might have had of directly competing against Holyman, without incurring heavy costs.

By entering into a joint venture, an emphasis on fostering a high quality of information exchange was possible. The evidence from the archives shows that a high quality of information existed. Firstly, performance standards were specified at both the pre- and post-contract stages. In the pre-contract stage time and effort was directed toward minimising opportunism by putting in place explicit contracts borne out of a process focused on taking enough time as required to have as tight a set of specifications possible. At the post-contract stage bookkeeping standards were specified and applied throughout the entire joint venture. Secondly, a number of methods were used to monitor adherence to firm standards. These included regular visits, reviews and audits designed to provide feedback, and where appropriate, correction and improvement to existing standards. A regular flow of TPS- and MIS-type information also enabled effective monitoring of contractual obligations. Finally, control mechanisms were largely exercised through the empowerment of branch managers that allowed decisions to be as local as possible, encouraging a rich flow of information through the venture.

Underpinning the system of standards-monitoring-feedback-control was a firm culture founded on a high level of trust and co-operation. Examples of both cognitive and behavioural evidence are found embedded throughout the archives. These examples particularly pertain to the consistently high levels of trust, as well as a sustained commitment of financial resources by the joint venture partners, that spanned seventy years. Furthermore, there is evidence of sustained retention of financial resources in the joint venture, and on-going financial commitment to communications infrastructure. Finally, concern and support for human capital, at all levels of the venture, enhanced the high levels of trust and co-operation that underpinned the venture.

Notes: Chapter Five

[110] Union-Holyman Archives Box 299, 22^{26}, 15/5/39, Memo, For Mr Miller, p.1.

[111] Union-Holyman Archives Box 298, 22^{11}, 16/7/24, Letter, From General Manager to Jeffreys.

[112] Union-Holyman Archives Box 296, 22^{1}, 1/9/04, Report, From the Tasmanian Manager.

[113] Union-Holyman Archives Box 296, 15/6/04, 'Formation of Company and Working Agreement', p. 4.

[114] Union-Holyman Archives Box 296, 22^{2}, 4/3/05, Letter, Managing Director to Johnson.

[115] Union-Holyman Archives Box 296, 22^{2}, 20/1/05, Letter, Johnson to Managing Director.

[116] Union-Holyman Archives Box 297, 22, 23/7/04, Letter, Mills to Aiken.

[117] Union-Holyman Archives Box 296, 22^{2}, 19/4/05, Letter, Holdsworth to Johnson.

[118] Union-Holyman Archives Box 299, 22^{3}, 20/11/12, Letter, Johnson to General Manager.

[119] ibid., p. 23.

[120] Senn, James A., (1989,1984), Analysis and Design of Information Systems, McGraw-Hill Publishing Co., p. 22.

[121] While the variations between years appear significant, these statistics need to be viewed in the context of what circumstances underpinned each year:
1904 was the ventures founding year. Much of the year (from March to December) was taken up with contract negotiations. One would expect little TPS activity as a result.
1919/20 were very much business as usual years with little evidence of any major initiatives or challenges. This explains the relatively high TPS to MIS ratio.
1924 was the year when the two companies were being consolidated into one company. As with 1904, contract negotiations dominate the archives. It also followed the sudden death of William Holyman in 1921, the effects of which were still being felt in 1924.
1935 was marked by the ventures involvement in the newly launched Holyman Airways. As the principals worked to come to grips with the risks involved (two significant crashes had sent early shocks through the venture) and the changing nature of the transportation industry one would expect a high flow of MIS information.

[122] Union-Holyman Archives Box 298, 22^{7}, 4/10/21, Financial Analysis, Johnson to Aiken.

[123] ibid.

[124] Union-Holyman Archives Box 299, 22^{6}, 19/5/20, Letter, Johnson to Aiken.

[125] Union-Holyman Archives Box 296, 22^{7}, 5/9/21, Letter, Johnson to Aiken.

[126] Union-Holyman Archives Box 299, 22^{22}, 29/11/35, Branch Manager to Matthewson

[127] Union-Holyman Archives Box 297, 118, 26/8/10, Letter, London office to Head Office.

[128] Financial Statements for the joint venture companies are filed in one box, Union-Holyman Archives Box 297, Financial Statements 1912 to 1975.

[129] Union-Holyman Archives Box 296, 22^{2}, 17/8/05, Letter, Johnson to Holdsworth.

[130] Union-Holyman Archives Box 297, 118, 10/7/08, Letter, W. Holyman & Sons to USSCo. Head Office.

[131] Union-Holyman Archives Box 298, 22^{8}, 7/8/22, Letter, Hughes to Aiken.

[132] Union-Holyman Archives Box 296, 22^{11}, 20/10/24, Letter, Hughes to Aiken

[133] Union-Holyman Archives Box 296, 22^{11}, 30/10/24, Letter, Aiken to Jeffreys

[134] These figures are extrapolated from the statistics gathered from the archives:

	1904	1919/20	1924	1935
Number of Documents	234	137	139	145
Words	67,700	16,443	32,641	33,452

[135] Union-Holyman Archives Box 296, 22^{11}, 20/10/24, Letter, Hughes to Aiken.

Chapter Six: Information Types

We have seen from our theoretical framework that certain types of information are a richer source of quality than other forms. In particular, we are interested in strategic and 'inside' forms of information. Boyce, Zuboff, Yates and Ville are all scholars whose empirical research found that strategic and 'inside' forms of information were often of high quality.

To explore this relationship it is necessary to establish ways of analysing the evidence. Firstly, we are interested in strategic information. We have seen from our theoretical framework that firm efficiency arises from a firm applying its internal capabilities to seizing environmental opportunities. Furthermore, strategic information is the information used for the decision making that enables the firm to seize opportunities. Finally, so that we can analyse the information in a reliable and consistent manner, we utilise the Content Analysis methodology explained in Chapter Three. This provides us with evidence of DSS-type information and ways of seeing how the venture was able to apply its internal capabilities to seizing opportunities.

We have also seen that 'inside' information operates in the same way as strategic information. 'Inside' information draws on preferential and reputational sources for strategic decision making. In a way similar to applying Content Analysis to find evidence of strategic information, we categorise evidence of 'inside' information as either 'high' or 'low' trust. If we accept the validity of DSS and 'high'/'low' trust as ways of finding evidence of strategic and 'inside' information, we can draw conclusions on how good in quality the information was that supported the venture's decision making processes.

Strategic Information

Our focus in this section is the degree to which quality information supported the venture's strategic decision making. The ability of the principals to organise the venture's internal capabilities, so that environmental opportunities could be seized, was dependent on how good the strategic information was. From research undertaken by other scholars we have already seen how important this is for firm success.

Zuboff, for example, found a new conception of managerial responsibility developed from the strategic information that underpinned Taylor's work and that of the scientific management movement. Boyce found that the British maritime industry between 1870-1919 utilised strategic information as a way to gain competitive advantage over rivals. Zuboff's research into the banking industry found that knowledge (processed strategic information), rather than money, was Global Banks most valuable commodity. Finally, Yates argues that for Du Ponts the importance of strategic information was to allow firm principals to control the business more effectively.

In the same way that the firms and industries cited above utilised strategic information to capitalise on opportunities, in our research case study we find that an emphasis on strategic information grew from USSCo.' realisation that there was more to be gained from co-operating with Holyman's than in 'fighting'. As we have seen, USSCo. developed a knowledge base regarding Holyman's capabilities in relation to USSCo. The principals gathered strategic information in the form of costs, values and personal information about Holyman so that decisions as regards co-operation or fighting could be based on the best information available. This emphasis on strategic information continued throughout the life of the joint venture and resulted in a rich flow of high quality information. Before we analyse how this occurred, we explain the notion of firm strategy to refine our definitions of strategic information and provide a framework for our analysis.

We have seen that firm strategy, based on Mintzberg's definition of strategy, is the result of a number of possible actions. It may be formalised in planning documentation or follow from a 'ploy', 'position', 'pattern', or 'perspective'. Refer to Chapter Two for definitions. Because managerial judgement plays a significant role in strategic decisions, much of the information to support strategic decision making is to be found in a firms decision support systems (DSS). If we accept these definitions, we can measure information flows by DSS, in contrast to TPS and MIS types, from which the ventures decision making was made.

Turning now to our analysis, Table Fourteen below demonstrates the high reliance on DSS-type information within the joint venture: On average, 78% of

Year	Total FileDocs	TPS	%	MIS	%	DSS	%	Total Docs.	Total %
1904	234	2	1%	41	13%	267	86%	310	100%
1919	40	11	26%	22	53%	9	21%	42	100%
1920	97	17	14%	14	12%	87	74%	118	100%
1924	139	9	4%	16	8%	175	88%	200	100%
1935	145	17	9%	42	22%	128	69%	187	100%
Total	655	56	7%	135	16%	666	77%	857	100%

TABLE FOURTEEN: TYPES OF INFORMATION BY DOCUMENT ANALYSED

the information flows between the joint venture partners, and within USSCo., were of an unstructured, strategic nature. These flows conform to our definition of DSS-type information. That is to say, it is information used for decision making for which there were no clear procedures to follow. Furthermore, not all relevant factors were known or readily identified in advance of the decision made.

At times, formal plans were developed from information exchanges. These plans were usually based on exchanges of information passed back to, and from Head Office and/or the Board of Directors. For example, when the USSCo. was considering options for their relationship with Holyman's after 1904, the

General Manager wrote to the Strahan Manager, 'I enclose extracts of reports I addressed to the Managing Director on my return from Tasmania, and when opportunity occurs we should like you to ascertain Holyman's views in connection with the suggestion.'[136] In the same communication, the General Manager explicitly used a 'ploy' technique to 'outwit his competitor (Holyman)'. He instructed the Strahan Manager to 'be guarded in this matter and not put forward any proposals in the meantime as coming from us, but feel your way with him.' As negotiations progressed, USSCo. continued to use the 'ploy' technique. The Devonport Manager, for example, suggested that in trying to get the best deal with Holyman: 'we could influence the proposals by dropping an occasional hint as to what was likely to be most acceptable.' They understood their man well – 'I quite recognise that he is very crafty, and that proposals should come from him.'[137] In addition to formal plans and ploys, the USSCo. recognised the importance of 'position' in any strategic decisions to be made.

In one example, the opportunity arose to buy into the King Island trade. The parties to the joint venture each contributed their view on the advisability of the purchase. On one side were Holyman and Ellerker [a Melbourne-based shipping agent], who argued that the King Island trade had increased. On the other, Johnson [USSCo.' Tasmanian Branch Manager] did not subscribe to this view. In the middle was the third venture partner, Appleton [MD of HP], who could see there was a profit to be made, but was not as convinced as Holyman and Ellerker, as to the value of the trade. Johnson argued that 'the trade would probably pay one steamer but there would not be sufficient for two'; While Appleton, 'declined to purchase the land, but thought the steamers worth considering, although the price unreasonably high.'[138] Following further discussions, the King Island trade was taken over as a separate going concern by the joint venture, and was liquidated in 1924 when all the interests of the joint venture were merged into one company. Positioning as strategy then, allowed the joint venture to find the most advantageous way for purchase of the King Island trade.

To the extent that strategy is an intended set of actions, the strategy as 'ploy' and strategy as 'position' can be seen as complementary to the definition of strategy as 'plan', rather than as alternative definitions. Both definitions imply an action or set of actions to achieve an objective, whether that objective is to outwit an opponent, or occupy a niche position. Thus, a strategy or plan may consist of ploys, or possibly an intention to attain a given position in the market. The definition of strategy as 'pattern', however, is more problematic.[139] It allows an external observer to label a consistent pattern of actions by a particular organisation as strategic irrespective of whether those in the organisation acknowledge the existence of an intended strategy or plan. There is a subtle distinction between hypothesising that a set of actions may have been the result of a deliberate strategy, and stating that any consistent set of actions forms a strategy. What is the key characteristic of a deliberate strategy is that it provides active guidance for an adaptive search process. That is to say, local managers following a strategic direction must be given the freedom to adapt their actions to the situation at hand. We have already argued that the density of information flows to and from branch managers illustrate an empowered middle management,[140] thus demonstrating that USSCo's. managers often followed a course of 'pattern' strategy. For example, in a cable from the Managing Director during the joint venture negotiation phase, the local manager is informed that 'you may carry negotiations a stage further without committing us. Am personally in favour but cannot formally approve your proposal until the Board meets.'[141] This spirit of branch management empowerment, and the contingent 'pattern' for making decisions of a strategic nature, is found in most dealings by the joint venture.

We have seen then that the joint venture utilised Mintzberg's 'plan', 'ploy', 'position', and 'pattern' strategies. Mintzberg's final definition of strategy as 'perspective' is not, however, widely accepted by all scholars. For example, the (unknown) authors of 'Review and Synthesis of the Theory of Strategy' argue that:

> 'in order for a strategy to be executed it must be disseminated in some fashion throughout the organisation in order for appropriate actions to be taken in implementing the strategy. The members of an organisation may share the same view or set of beliefs about a strategy but this is not the same as saying that the strategy is strictly equivalent to the shared perspective of the group. The perspective arises because of the strategy, the strategy does not arise from the perspective.'[142]

If we accept this view, the strategy of the joint venture partners was to take an intended and contingent set of actions with a particular goal or objective in mind. The objective of registering a limited liability company, for example, with three competitors as shareholders, was taken to address problems associated with competition and asymmetric information. It was not a firm perspective toward joint venture arrangements for their own sake.

In summary, we have a number of examples of how USSCo. matched environmental opportunities with internal capabilities, utilising a rich flow of information to bring this about. Firstly, the 1904 registration of two limited liability companies was recognition that USSCo. saw strategic benefits in co-operating with Holyman, rather than 'fighting' him. We have also seen that USSCo. had both the financial and technological capability to seize opportunities presented to the joint venture. In a further example, the venture brought into the King Island trade based on the opportunity the principals saw to add to their existing trade routes, for a modest and affordable outlay. A further example of how the principals used strategic information to match environmental opportunity with internal capabilities was their investment in Holyman's Air Service.

Captain James Holyman had seen the strategic opportunities afforded by such a venture ahead of his venture partners as early as September 1932. The Holyman family, in conjunction with an outside colleague, L. Johnson, brought a three passenger plus pilot Fox Moth plane to work between Launceston and Flinders Island and Launceston and King Island. Holyman registered his company as Tasmanian Aerial Services Pty Ltd. His venture partners in Holyman's

were not as keen as the Holyman family, as minutes from the Directors meeting of September 1932 show: 'After discussion it was decided that the proposal could not be entertained as, apart from the fact that the carrying on of an Air Service was outside the sphere of a Shipping Company's ordinary operations, it was considered the risk and responsibility of attempting to carry out a service with a small one engined plane would be too great.'[143] Two years later, by the end of 1934, the USSCo. had changed their minds and took up 11,250 shares (50%) in Holyman's Airways Pty Ltd.

Their change of heart was based on the success of the service. As early as September 1933 the Melbourne Branch Manager [Souter] reported to Head Office that 'the *Narrabeen* also is not showing out very well, probably owing to the passengers in the Launceston-Flinders Island run being affected by the Air Service traffic.'[144] Holyman continued to press USSCo. to invest in the Aerial Service business. In January 1934 Souter again reported to Head Office. This time to say:

> 'When I was in Launceston Mr Ivan Holyman again brought up the matter of the Aerial Services to Tasmania and the question of our being willing to join in with them in regard to the tenders they are putting in at the end of February. Mr Ivan Holyman stated that since seeing me in Melbourne they had had communications from England by which they would be able to obtain planes carrying 16 passengers, practically with the same type of engine as they employ in the machine they are running at present. I told him that at present at any rate there was no prospect of either ourselves or Mr Webb [MD of HP] entertaining the idea of joining with them when tendering for the Air Services to Tasmania and he pointed out that if we maintained this view and their tenders for a daily service were successful it would probably be necessary for them to get outside capital into the venture but they would have no trouble in doing so.'[145]

Competition, however, continued to adversely affect the shipping trades on which Holyman offered an Air Service alternative. Souter reported in March that 'the *Narrabeen* does not seem to be making very much profit. No doubt this

is largley on account of the loss of passengers in this service owing to the competition of the Flying Service.'[146] Again a month later: 'The *Narrabeen* is rather a disappointment so far as earnings are concerned owing to the fact that the Flying Service between Launceston and Flinders Island means that comparatively few passengers travel by the *Narrabeen*.'[147] With money to invest, and Holyman's successful record in offering an air service to the slower shipping alternative, the venture principals applied their internal capabilities to seize the environmental opportunity offered by the strategically important air service.

In summary, we can see how USSCo. and the venture principals utilised strategic information to match environmental opportunities with internal capabilities. They placed more emphasis on information of a strategic nature (78%) than other forms of information. Furthermore, the joint venture engaged a variety of strategic methods to achieve favourable outcomes. The consistent success achieved by the venture, over a seventy year period, was based, in part, on the value placed on strategic information by the principals, which provided them with a rich source of high quality information.

'Inside' Information

The other form of information where we find indicators of quality, is 'inside' information. We have seen that 'inside' information is information not available in the market. Secondly, its value is based on the quasi-rent generated. Thirdly, because it is information that is appropriable, it is valuable information. Finally, it may or may not be information of high quality. It is for this reason that we make a distinction between 'high' and 'low' trust 'inside' information. Where this measurement indicates a predominance of 'high' trust information, we can judge the information as good quality.

Our theoretical framework also established that we are interested in two forms of 'inside' information, reputational and preferential. Furthermore, we argued that these forms of information are typically found within network struc-

A third indicator that the joint venture operated as a network form lay in the methods of conflict resolution. The norm, argues Powell, is reciprocity where reputational concerns are considered ahead of resorting to courts for enforcement (market-based solution) or by administrative fiat (hierarchical-based solution). Within the joint venture this approach operated at both the contractual and human capital level. For example, where breaches of contract occurred a procedure was in place to document and 'match' such breaches.[152] There was never a question of resolution by enforcement or administrative fiat, but a commitment to be transparent in the joint ventures dealings with one another.

In one example, Holyman had incurred advertising expenses without consulting USSCo. When asked by Souter [Melbourne Branch Manager] 'what it cost him, he stated they were constrained to put the matter in as previously Stephens Express Service had been advertised in the "Courier" and it seems the advertisement, together with a small pamphlet containing the same matter which he is sending out to shippers, cost £ 50.'[153] Souter explained to Holyman that the directors should firstly approve all advertising expenses. However, no further action was taken by the directors or venture principals, the preference being for resolution by discussion and mutual agreement. Furthermore, we have already seen that the principals agreed on the need to maintain a veneer of competition. To seek resolution in any other way would have jeopardised this agreement.

At the human capital level, opinions were given and expressed but never legally or administratively enforced, in the face of a difference. For example, when there was a disagreement over the appointment of one of the younger Holyman family members to the position of Master, the USSCo. General Manager expressed the view that 'I will be interested to know the result of your interview with Captain Holyman with reference to the appointment of a Master. My own opinion is that young Holyman has not sufficient ballast or experience and while I would not raise any objections to him retaining command of the *Toroa* I think *Warrantina* would be more suitable for him.'[154] There was, however,

no suggestion that the issue would be forced, but rather that Captain Holyman in making a final decision, should know the opinions of the USSCo. In another example, the relationship between Holyman's and USSCo. was the key to absorbing the shock of Capt. William Holyman's sudden death in September 1921. At the time the Tasmanian Branch Manager commented 'when in Launceston I had several interviews with Captain James Holyman and I think from his conversations he would like for some time, to take his brother's place, but will lean heavily on me for guidance as to what should be done.'[155] The significance of Johnson's remarks is that upon Holyman's death, the USSCo. retained a legal right to appoint a new director in Holyman's place. Furthermore, the shock to the Holyman family was such that the USSCo. could have sought to impose their will on a vulnerable partner. That they chose rather to be available to assist the family and provide advice, indicates a network response to possible conflict.

A fourth indicator that the joint venture conformed to a network structure is the tone, or climate, of the relationship. Powell argues that the climate of a network structure is one of 'open ended mutual benefits' as opposed to suspicion (market form) or formal and bureaucratic (hierarchical form). Throughout the life of the joint venture the tone of the relationship is reflected directly by the players. For example, in one transaction Johnson comments; 'In view of the harmonious relations which have always existed between us, Captain Holyman asks if we will accept the vessel as an unit of Wm. Holyman & Sons Ltd., which of course means having a half interest in her.'[156] In another example, Holyman's, in trying to secure the agency business on behalf of P & O in Tasmania, outlines the strength of the network structure in place between USSCo. and Holyman's; 'With our thorough knowledge of shipping business in general, and the most economical ways of working it should all be to the advantage of the P & O and the Associated Companies. We, as ship-owners, are constantly in touch with all the shipping people of Tasmania. We think we are justified in claiming that there is nobody in Tasmania who could give them better representation.'[157] By focusing on

the successful network that already existed between Holyman-USSCo. and USSCo.-P & O, Holyman hoped to extend the mutual benefits to a closer Holyman-P & O relationship. The climate surrounding the joint venture conforms closely to Powell's 'open-ended mutual benefits' than suspicion (market form) or bureaucratic (hierarchical).

We can see, then, that the joint venture operated as a predominantly networked structure. Our Content Analysis methodology has allowed a measurement of the information inside this structure. This was achieved by classifying information exchanges between the parties as either 'high' or 'low' trust. Where evidence of 'high' trust information was found we have made a value judgement that the information was of good quality. These classifications of 'high' and 'low' trust information interfaces over the five years analysed has provided the results

High Trust Interfaces	1904	1919/20	1924	1935	Ave.
USSCo. to USSCo.	88%	85%	88%	72%	83%
USSCo. to Holyman's	82%	100%	9%	84%	69%
USSCo. to HP.	92%	75%	85%	88%	85%
USSCo. to External parties.	77%	100%	100%	33%	78%

TABLE SIXTEEN: INFORMATION INTERFACES % OF HIGH TRUST EXCHANGES

in Table Sixteen above. On average, of all the information exchanges that USSCo. were involved with, both as transmitters or transmittees, 79% of these were of a high trust nature. From Table Seventeen below, where a measure has been taken of all key words, similar results are to be found. Every key word from the five years under study were analysed for high or low trust meaning. Of these 63% of all keywords are of a high trust nature. From this we can conclude that information flows supporting the joint venture network structure were flows of a rich and high quality nature.

High Trust Keywords	1904	1919/20	1924	1935	Ave.
USSCo. to USSCo.	59%	62%	61%	50%	58%
USSCo. to Holyman's	61%	58%	64%	62%	61%
USSCo. to HP.	69%	55%	65%	76%	66%
USSCo. to External parties.	68%		100%	33%	67%

TABLE SEVENTEEN: INFORMATION INTERFACES % OF HIGH TRUST KEYWORDS

We have already seen examples of how good quality this information was. When considering the possibility of the joint venture with Holyman in 1904, the views of Ellerker were viewed as a useful source of inside information. Ellerker acted as a shipping agent for both USSCo. and Holyman. The USSCo. General Manager wrote to the Strahn Branch Manager that 'as you aware, Holyman and Ellerker confer pretty freely. It is probably also that Ellerker would disclose negotiations to Appleton [MD of HP].'[158] In another example, USSCo. worked deep within Holyman's own network to gain valuable inside information. During negotiations Aiken [USSCo. General Manager] had written to Mills [USSCo. MD] that 'our Banker advised us confidentially that Holyman's firm was worth £ 20/25,000 in addition to which the individual members were possessed of house properties and are practically working without an overdraft. As this has all been made out of the N.W. trade, it may be looked on as a reassuring fact in view of our present investment.'[159]

In summary, the information that flowed between the principals and agents was found to be information of a high quality; 79% of all exchanges were high trust; 63% of all keywords and phrases were also high trust. Furthermore, we have argued that, based on Powell's forms of economic organisation, the ventures principals and agents operated within a predominantly network structure. The resulting 'inside' information was information of a high quality and was a key to sustaining effective working relationships between the venture principals.

Conclusion

Our starting point for any discussion regards strategic and 'inside' information is the empirical research already undertaken by Boyce, Zuboff, Yates and Ville. Where evidence of strategic and 'inside' information, underpinned by a high level of trust, was found, rich sources of quality information were often found. The analysis from this case study has found similar evidence. 78% of all information flows were of a strategic nature with concrete indicators of a consistent emphasis on successfully matching environmental opportunities. Furthermore, the analysis of information interfaces within the joint venture network indicates a high level of trust between the players; 79% of all exchanges were 'high' trust and 63% of all keywords and phrases used were also 'high' trust.

Notes: Chapter Six

[136] Union-Holyman Archives Box 297, 22, 25/3/04, Letter, General Manager to Strahan Manager.

[137] ibid., 21/4/04, Letter, Devonport Manager to General Manager.

[138] Union-Holyman Archives Box 296, 22^{2}, 21/7/11, Letter, General Manager to Johnson.

[139] A detailed argument of the different views of what makes up strategy is given in a paper taken from the internet on 18/3/99 with no authors cited, www address; http://www.aom.pace.edu/bps/Papers/Thesis/2/2.html.

[140] Refer to Chapter Five for an analysis of information flows.

[141] Union-Holyman Archives Box 297, 22, 11/3/04, Letter, Managing Director to Johnson.

[142] http://www.aom.pace.edu/bps/Papers/Thesis/2/2.html, op. cit., p. 2.

[143] Union-Holyman Archives Box 299, 22^{19}, 19/9/32, Directors Meeting Minutes.

[144] Union-Holyman Archives Box 299, 22^{19}, 12/9/33, Letter, Souter to Aiken.

[145] Union-Holyman Archives Box 299, 22^{19}, 31/1/34, Letter, Souter to Wheeler.

[146] Union-Holyman Archives Box 299, 22^{19}, 12/3/34, Letter, Souter to General Manager, Wellington.

[147] Union-Holyman Archives Box 299, 22^{19}, 9/4/34, Letter, Souter to General Manager, Wellington.

[148] Union-Holyman Archives Box 297, Letter, Holdsworth to Mills, 8/3/04, Holdsworth emphasises that Holyman's ability to run efficient services would be very difficult to compete against. McLean, Gavin. (1990), The Southern Octopuss: the rise of a shipping empire, New Zealand Ship & Marine Society, argues that the formation of the joint venture in 1904 coincided with a time when USSCo. had accumulated healthy reserves and were looking for investment outlets.

[149] Union-Holyman Archives Box 297, 22, 8/3/04, Letter, Holdsworth to Mills.

[150] Union-Holyman Archives Box 296, Unnumbered Files, 6/10/76, Letter, Cole to Smythe.

[151] Union-Holyman Archives Box 296, 22^{7}, 4/10/21, Letter, Sydney Branch Manager to Head Office.

[152] Union-Holyman Archives Box 296, 22^{1}, 1/9/04, Report, From the Tasmanian Manager.

[153] Union-Holyman Archives Box 299, 22^{19}, 20/10/32, Letter, Souter to Aiken.

[154] Union-Holyman Archives Box 296, 22^{2}, 6/10/1910, Letter, Head Office to Hughes.

[155] Union-Holyman Archives Box 296, 22^{7}, 3/10/21, Letter, Johnson to Aiken.

[156] Union-Holyman Archives Box 299, 22^{6}, 23/8/20, Letter, Johnson to Aiken.

[157] Union-Holyman Archives Box 296, 22^{19}, 18/8/33, Memo, Holyman Head Office to Melbourne Branch Manager.

[158] Union-Holyman Archives Box 297, 22, 25/3/04, Letter, General Manager to Strahan Manager.

[159] Union-Holyman Archives Box 296, 22^{1}, 10/8/04, Letter, Aiken to Mills.

Chapter Seven: Measuring Information Quality

As we have seen, performance standards for the joint venture were well specified, regularly monitored, tightly controlled, and feedback was effectively used to improve existing standards. Furthermore, a culture of high trust and co-operation underpinned the joint venture's ability to sustain standards of performance at levels specified. The question begs, however, to what degree can we explain the success of sustaining performance standards? In addition, how much did the quality of information contribute to this success? To answer these questions requires some form of measurement of information. In this chapter, three means of measurement will be used to reach a conclusion with respect to the degree to which quality information contributed to the success of the joint venture.

Our argument that quality information makes an important contribution rests on the assumption of accepting that where qualitative attributes exist - as measured by our Content Analysis method - appropriate conclusions can be drawn. Firstly, we measure standards of accuracy and timeliness. Where high standards of accuracy and timeliness existed we are likely to find a high quality of information as a result of compliance to standards. Secondly, where there is evidence of information and knowledge being effectively diffused throughout the firm, quality information is likely to be the outcome.

Accurate and Timely Information

In the same way that strategic and 'inside' information of a high quality went to the heart of the venture's success, we find that accurate and timely information is just as important. However, as a prerequisite for understanding how this occurred we need to establish a point of reference, against which accurate and timely information was important. Furthermore, we find that to enable the principals of the venture to address problems associated with asymmetric information, accurate and timely information was imperative.

This imperative was understood by the principals of the early trading companies, such as Hudson's Bay Company who recognised the problems caused by information asymmetries. They recognised the underlying cause as opportunistic behaviour on the part of agents. In the same way as these early companies, firms such as USSCo. recognised the necessity of monitoring compliance of contracts by insisting on keeping written records and submitting regular written reports back to the principals of the joint venture. We have also seen the importance of the feedback these written records provided for the maintenance and improvement of performance standards. Within this framework, accuracy of information was continually monitored which was considered important to the principals.

There were a number of reasons for the importance they placed on accurate information. Firstly, the principals recognised that inaccurate information would impede operations. In one example, the company accountant highlighted a number of discrepancies in the report submitted by the Melbourne Branch Manager [Hughes]. Hughes mistakenly believed that call account monies were available, when in fact all capital had been fully paid up. Since Hughes had reported an incorrect profit figure, an incorrect balance had been given of one of the joint venture companies, and he had mistakenly allowed insufficient monies for forthcoming State and Federal taxes.[160] Each of these if left unattended could have affected the business. Insufficient monies to cover forthcoming taxes would have had both cash flow and taxation penalty implications.

A second reason why the principals were concerned with accuracy was an awareness that opportunistic behaviour needed to be monitored and controlled. In an example of the principals' attention to accuracy, Hughes had reported on the focus on monitoring and controlling opportunism. 'We have had some trouble in connexion with (the wreck of) the *Waichope's* volunteer crew, a number of them claimed £ 8 to £ 10 each, for loss of effects, though it is very doubtful if they lost anything at all. Seeing, however, that this could not be proved, and the fact

that they were loyalists, the Interstate Central Committee authorised the payments up to £ 5 each, and the claims were settled on this basis. I notice, by the way, that in writing to you on the 5th inst., I mention that the vessel was insured for £ 10,000., - this was a clerical error, and should read £ 6,000.'[161] By highlighting this instance of opportunism, the principals would have been aware of a possible repeat in the case of similar claims. As it happened, in the same correspondence a clerical error had been noted. This highlights a third reason for attention to accuracy, namely the importance of maintaining accurate records.

The latter was achieved by both regular reporting and analysis of results submitted to Head Office. From 1904 to 1911, submissions of financial results were limited to annual financial results with accompanying comment. However, from January 1911, and every month thereafter, a monthly cost accounting report was submitted to USSCo. detailing all itemised revenue and expenditure for each vessel owned by the joint venture companies. Refer to Appendix Five. The joint venture monitoring of contracts and results was not restricted to the holding of records only. Results were subject to detailed and often rigorous analysis. In one instance;

> 'Captain Holyman states that this embraces everything and if so the result is fairly satisfactory for the three months. The expenditure which he states also includes initial charges which will not be necessary later amounted to only £ 400 per month. Compared with our estimated expenditure the difference is very marked. It would be made up in less wages, about half the cost for coals, victualling present cost about £ 60 per month as against £ 110, insurance is not included, labor at present only amounts to about £ 40 per month, transshipments of course would not be included and general charges, managing and advertising while included in the expenditure would only be a very small sum compared with what *Waeatea* has been charged in our returns.'[162]

In another example, USSCo's accountant identified nine instances where 'at first sight copies of the accounts received are somewhat confusing.'[163] Having clarified what is behind the figures there follows a detailed analysis of the results

(twenty three in all) which allows the conclusion to be made that 'the business shows a decided improvement over the previous year or a corresponding period of 1909.' In an itemised analysis of victualling expenses, the observation is made that 'these figures are so far below the Company's experience that they suggest not only that the bulk of the passage money is earned on trips where little or if any victualling is required, but that the scale adopted for the victualling of the crew is a very economical one.' This attention to accurate analysis of operations contributed to a process of adding to existing firm knowledge and shift the principal's focus to ways of being more efficient.

The regular reporting and analysis of results emanating from the joint venture was grounded in the development of processes and procedures designed to operate as efficiently as possible. An application of Cowen and Forey's model (See Figure Two, Chapter Two) to the processes and procedures of the joint venture helps us to measure the process of codification that underpinned the joint venture. For example, in an exchange of views between the Melbourne office and Head Office, pre-existing knowledge regards chartering the vessel *Laranah* gave rise to the message 'My reason suggest cancellation *Laranah* charter was to obtain separate agencies for each steamer as otherwise afraid cannot to same extent control cargo.'[164] The creation of the message was based on Johnson's tacit knowledge of the vessel *Laranah*, the charter business existing in Tasmania and the state of the cargo movements. Having created a model from his knowledge, Johnson used specific language to relay his message. This is in the form of, firstly, knowledge of the shipping business (terms such as vessel, charter and cargo were unique to the industry) and, secondly, the adoption of codified language used in cables of this nature.[165] Codified language of the kind used by shipping principals and agents confirms Cowen and Foray's argument that 'knowledge is easier to codify and codified knowledge is easier to diffuse within a community made up of agents who can read the codes.'

Coupled with the necessity for accurate information in the codification process is the need for information to be timely. For example, the Tasmania Branch Manager in reviewing the accounts reported that 'the system that [Holyman] had originally adopted was somewhat cumbersome, and the agents balances coming in fairly late made it difficult to get a grasp of what was being done. He has now advised all agents that their accounts must be forwarded during the first week of the month, and under the new system one will be able to keep in close touch with everything that has been done.'[166] Not only were the process (new system) and codification process (the system for keeping accounts), but the timing was crucial to ensuring the information was accurate.

The most important means of ensuring timeliness was by a continual exchange of letters. Table Thirteen (above) highlights the different means of communication utilised. On average, a letter once a week would be used to convey information dealing with joint venture affairs.[167] Underlying any of these exchanges was a concern with timely responses to a variety of issues. One letter dated 1/6/05 demonstrates this:

> 'I always took an opportunity of looking through the accounts, but the system he had originally adopted was somewhat cumbersome, and the agents balances coming in fairly late made it difficult to get a grasp of what was being done. He has now advised all agents that their accounts must be forwarded during the first week of the month, and under the new system one will be able to keep in close touch with everything that has been done.'[168]

In another example, Johnson expressed the view that 'I think a better system of sending accounts to Head Office in Launceston could be adopted, by which we could at an earlier date receive an approximate idea of what the vessels were doing.'[169] More significantly, cables represent the degree to which timeliness was important in addressing issues. Cables were used every three weeks during the five years researched. Cables always represented the requirement that timely responses were required. For example, in one exchange 'Harrison just advises ar-

rangements so far advanced that Palmer must enter Port Fairy trade next week. He recommends should replace Palmer promptly as otherwise Patrick S.S. Co. and Arthur H. Haull will secure connection. Have telegraphed Holyman asking when he is coming across.'[170] While letters and cables were important means of ensuring timely information was available, the joint venture recognised the relatively greater value in its investment in human capital. For the three year's figures analysed, the commitment to branch salaries easily exceeded all other communication infrastructure costs. We can see from Table Thirteen in Chapter Five, in 1920 salaries accounted for 53% of all expenditure on communication infrastructure; in 1924 it was 41%; and 1935, 75%.[171] This assumes that branches were maintained for the purpose of supporting the firm's communication infrastructure. If we accept this assumption, the commitment to expenditure on human capital exceeded all other forms of communication infrastructure expense. This ensured the ventures attention to timely dissemination of information.

The attention placed on the importance of accurate and timely information supports the view that continual attention to accurate and timely information was crucial to the ventures success. Furthermore, by placing accuracy and timeliness within the context of the shipping industry at the turn of the twentieth century and up to 1935. The 'tyranny of distance'[172] facing the industry necessitated an emphasis on accurate and timely information, if principals were to continue to be in business. Without accurate and timely information, principals would be faced with making decisions out of touch with what had already taken place in another location. Equally problematic would be making wrong decisions, because the information on which the decision was based might be out of date or based on information that could not be checked personally. Accurate and timely information was important for its own sake. However, with respect to the industry it served, in the period 1904 to 1935, accuracy and timeliness shaped informational outcomes as either good or bad.

In summary, the principal's attention to accurate and timely information was important for the industry it served. That they placed significant emphasis on accuracy and timeliness is evidenced by the continual monitoring and feed-back of standards that underpinned the standards-monitoring-control-feedback mechanism. Furthermore, a high relative cost commitment to the human capital component of the communication infrastructure highlights the commitment to maintaining a high quality of information.

Information Diffusion

We have seen from Cowen and Foray's arguments that codified knowledge is easier to diffuse through a community than uncodified information. The extent and ease with which knowledge or information was diffused through the joint venture provides a further measure for the quality of information feeding the diffusion process. In Boyce's firm-specific study of the USSCo.'s adoption of oil propulsion, he found that 'there was nothing inherently defective with the (USSCo.) group structure: indeed in this instance it exhibited considerable flexibility and sensitivity to external stimuli.'[173] The diffusion of information in this instance was effective, because it was 'based on such good information which it analysed with such effectiveness that its decision-makers could very accurately assess the degree of prevailing risk.' While Boyce found evidence of high quality information within USSCo., the venture partners benefited from USSCo's effective diffusion of information in other ways.

This commitment included an institutional motivation toward 'learning by using.' The founding of Holyman's Airways in 1932 was a further example of how the USSCo. were far-sighted, as was the joint venture network in applying their knowledge and experience to ventures they judged strategically advantageous. In one example 'Capt. Holyman stated that Mr Dare Holyman, who is a brother of the late Capt. Victor Holyman, had gone across to Launceston with a view to ascertaining if he could get a proper grip of the air business and would

be suitable for superintending the ground work so far as the service was concerned. This Mr Dare Holyman has been an engineer on a number of Holyman's steamers and evidently Mr Ivan Holyman thought it was only just to him, in view of the interest he had in the concern, to be tried out as indicated.'[174] The venture principals wanted to learn and apply all they could to the development of what they believed to be strategically important business opportunities. Learning-by-doing was one way that they achieved this.

Learning from experience was a principle fundamental to the joint venture principals. For example, commenting on an initiative to inaugurate a new air service from Sydney to Melbourne and Hobart, the General Manager of USSCo., Matthewson, advised that:

> 'we think this calls for most careful consideration. We appreciate there is some value in becoming established early, in view of other prospective operators, but we do not look upon this as of fundamental importance. We consider it more important that Holyman's first make a success of their present daily service between Hobart, Launceston and Melbourne. If Holyman's can gain the full confidence of the public by providing in this service safety, comfort, promptitude and general excellence of service, there should be little difficulty in their establishing themselves in an extension to Sydney and in due course in opposition to any service that may be established in the meantime. Our proposal would allow time for full investigation of all factors and for the thorough organisation which is essential. We would like to see a careful examination of earnings and expenditure prepared and submitted to the partners in Holyman's Airways.'[175]

Again, we find evidence of adherence to and monitoring of performance standards with the added requirement to learn from current experience before embarking into new or untried ventures.

In summary, effective diffusion of information through a firm indicates information flows of high quality. Evidence from our research case study builds on previous research undertaken by Boyce into the operations of USSCo. which shows an organisation committed to the benefits to be gained from effective in-

formation diffusion. Such practices ranged from encouraging learning-by-doing through to applying the knowledge inherent in tacit information.

Conclusion

We have argued in our theoretical framework that where evidence can be found of accurate, timely, and well diffused information flows within a firm, these flows may be indicators of high quality information. By applying these measures to the archives, we established that the information the principals relied on and utilised was of high quality.

The first measurement employed was to examine the degree to which accuracy and timeliness was important to the venture. Against the background of the shipping industry of the late-1800s to early-1900s, accuracy and timeliness of information was imperative, given the distances over which the venture principals had to communicate. We found through an examination of the standards-monitoring-feedback-control processes that the venture had systems in place in which accuracy and timeliness were taken very seriously. Such was the importance placed on accuracy and timeliness that we find a rich flow of information sustaining the high quality of information. The second measure, of how well information was diffused through the venture, we have found a strong commitment by the principals to encourage a number of forms of diffusion, such as learning-by-doing and utilising tacit knowledge available to it.

Notes: Chapter Seven

[160] Union-Holyman Archives Box 298, 22^5, 7/6/18, Memo, Accountant to General Manager.

[161] Union-Holyman Archives Box 299, 22^6, 13/8/19, Letter, Hughes to Aiken.

[162] Union-Holyman Archives Box 299, 22^2, 20/1/05, Letter, Johnson to Managing Director.

[163] Union-Holyman Archives Box 299, 22^2, 28/6/10, Memo, Accountant to General Manager.

[164] Union-Holyman Archives Box 296, 22^7, 22/8/21, Cable, Johnson to Aiken.

[165] The message had been sent as 'OSHIPUBBDA BOGZEYAHIB CAFIFWIZY MUYKTRALKO AHBIHGIFOB EUKHASCOWER APUFKNONJA AGWEJBOKCA IMPETPUJOH FUIPRDODAL.' Code books were developed with each firm so that cables could only be interpreted by the person or firm the cable was intended for.

[166] Union-Holyman Archives Box 299, 22^2, 1/6/05, Letter, Tasmanian Manager to Head Office.

[167] In the five years under study there are 655 documents in the USSCo. Head Office archives. Fifty three percent of these documents are letters meaning that on average a letter a week either went from Head Office or came into Head Office. If similar records for Holyman's and Huddart Parker in addition to Branch Office records for each company still existed it would no doubt be the case that documents of the nature in the USSCo. Head Office archives would demonstrate a more regular average exchange took place within the joint venture.

[168] Union-Holyman Archives Box 299, 22^2, 1/6/05, Letter, Tasmanian Manager to Head Office.

[169] Union-Holyman Archives Box 297, 22, 28/9/04, Letter, Johnson to Head Office.

[170] Union-Holyman Archives Box 296, 22^7, 23/8/21, Cable, Johnson to Aiken.

[171] Figures are available from the financial statements of the joint venture, unfiled in Box 297, Various 1904 to 1974.

[172] Refer to: Blainey, Geoffry, (1966), The Tyranny of Distance, Sun Books, Melbourne.

[173] Boyce, Gordon,, "Union Steamship Co. of New Zealand and the Adoption of Oil Propulsion: Learning by Using Effects:, Unpublished Paper, p. 33.

[174] Union-Holyman Archives Box 299, 22^{21}, 6/12/34, Letter, Souter to Falla.

[175] Union-Holyman Archives Box 299, 22^{21}, 6/9/35, Letter, Matthewson to Souter.

Chapter Eight: Conclusion

This research case study supports the thesis that quality information underpins firm efficiencies in a significant way. Furthermore, the contribution of this study to the theory of the firm is the extension to Casson's diagrammatic representation of inter-firm communication flows, by measuring the density and quality of information flows between the principals and agents that made up the Holyman-USSCo.-HP joint venture. The venture existed for seventy years, from 1904 to 1975. This study has focused on the archives that have survived from USSCo. Head Office records from the period 1904 to 1935.

To ensure creditable, acceptable and verifiable outcomes, the established methodology of Content Analysis has been utilised. To meet the requirements of Content Analysis all data scrutinised was entered into a pre-determined spreadsheet. This included recording how many words there were in each document studied. Secondly, the source and recipient of each exchange was recorded. Thirdly, based on the documents content, a subjective judgement was made as to whether or not an exchange was conducted in an environment of 'high' or 'low' trust. The same judgement was made for all keywords and phrases in each document. Finally, the nature of each information exchange was recorded as TPS, MIS, or DSS. The end result of this recording process has allowed an analysis to be made of a number of aspects regards the venture's information flows. By utilising Casson's diagrammatical methodology the measurement of the empirical data, in a number of different ways, has led to the conclusion that quality information underpinned firm efficiencies in a significant way. This conclusion is supported as follows.

Firstly, it has been demonstrated that the distances associated with the shipping industry gave rise to some unique problems of asymmetric information for the venture. In particular, problems of bounded rationality were addressed directly by USSCo. by entering into a limited liability company partnership with

Holyman and HP. Holyman's personal network within the Tasmanian trading routes, in addition to his superior knowledge of running an efficient coastal service, would have been costly to compete against. By forming an alliance, rather than competing directly with Holyman, allowed USSCo. to utilise this high quality information.

In addition to the problems of bounded rationality, USSCo. had to deal with the problems of opportunism, which are a feature of asymmetric information. They addressed this at both the pre- and post-contractual phases of the joint venture relationship. At the pre-contract phase, tightly negotiated specifications were the focus of detailed and time consuming contract negotiations. In the post-contract phase, performance standards were laid out in the contractual specifications and established for all areas of the business.

These standards included how financial book-keeping was to be undertaken. There were also standards for the structuring of the company which included legal mechanisms for handling contract breaches. Organisational standards were specified, as well as remuneration levels for positions within the firm. Furthermore, operational standards made clear the shipping routes that were to be worked, and how rates were to be fixed. On their own, however, standards would have been meaningless. Adequate monitoring and feedback systems were put in place to ensure the principals could control the venture.

Standards were regularly and thoroughly monitored, employing a variety of techniques. These included, firstly, regular audits of financial records. Secondly, regular branch visits by other venture managers, with clearly understood objectives, were undertaken. Compliance to standards was reviewed and, where appropriate, improvements made. Thirdly, routine reporting underpinned a rich flow of information throughout the venture. Finally, the successful delegation of corporate decision making to branch managers enabled an empowered branch structure to monitor corporate standards, in a way that effectively addressed information problems associated with distance.

On its own, however, an effective standards-monitoring-feedback-control mechanism cannot function without a supporting culture of trust and co-operation. In the case of the USSCo.-Holyman-HP venture, the culture was one of high trust, allowing a rich flow of high quality information to support the success of the venture. To demonstrate that this was the case some specific measures were used. Firstly, the venture promoted a high degree of accuracy in the gathering, processing and transmitting of information. This emphasis on accuracy was supported by timely transmission processes, specifically focused on the unique problems of transmitting timely information over vast distances. Secondly, the information was effectively diffused in a way that ensured the best use was made of the firms stock of knowledge.

It has been demonstrated, then, that a high quality of information nurtured, sustained and underpinned the joint venture. How can this be related to achieving firm efficiencies? Without comparative case study research any conclusions must be cautiously made. However, by specifically measuring the investment in communication infrastructure, it has been demonstrated that costs, relative to all expenses, were exceedingly low. For the three years examined, over a fifteen-year period, this cost never rose above 10% of total expenditure. Furthermore, relativities were tightly contained. Based on the evidence of rich information flows, a high trust culture of co-operation and low communication infrastructure costs, it is the conclusion of this research case study that the high quality of information which flowed through the joint venture underpinned the achievement of firm efficiencies in a significant way.

APPENDICES

Appendix One: Letter Appleton to Mills, dated 6th July 1904

COPY.

HUDDART, PARKER & CO. PROPRIETARY LTD,

525-527 Collins Street,

Melbourne, 6th July, 1904.

James Mills, Esq.,

Managing Director,
Union Steamship Co. Ltd,
DUNEDIN.

Dear Mills,

I am dictating at home and unfortunately have not got your communications before me, except your cable of Friday informing me that Mr Aiken was arriving from Tasmania and that you would be glad if I would discuss matters with him.

I saw him on Friday evening, but was much disappointed with the interview, inasmuch as I gathered little or nothing from him, except what you had told me, but possibly this was because Mr Henderson was with him. Still, he was very reticent on the Saturday morning, when I promised that I would consult with our Chairman and see him again on the Monday. On the Monday I am glad to say that he gave me full information as to the result of the negotiations on the other side, and I was able to place these before Mr Traill, who had been unable up to that time, although we talked the matter over on Sunday, to give me the advice which I was asking of him.

The position, so far as your invitation to take a third of the

interest in the Launceston boat, is that we are willing to do so, but consider the price for the "Wareatea", £6500, rather high, but, as Holyman has accepted this, we do not feel inclined to cavil, but have proposed to Mr Aiken that the £500 paid to Holyman, practically for good-will, should be met by you.

I cannot say that I was very pleased to have the proposal sprung upon me so suddenly, especially when it left me such short notice to consider the question of joint ownership with yourselves, which might naturally become a position of much delicacy, although of so small a character, were we to fail in a mutual understanding in connection with arrangements for trades of much more consequence. In commenting upon this phase of the question to Mr Aiken, he led me to understand that the negotiations were the outcome of the possible clashing of interests in connection with the larger portion of Holyman's business, and that probably this may have been the reason that we were not consulted at the earlier stages, as he did not consider we were interested. I pointed out to him that we were much interested, and that the restrictions imposed upon us by our agreement with your Company had resulted to our great disadvantage, inasmuch as in a trade where we had been largely concerned in the past your rights had been conserved only to be attacked by others, to wit, Paterson and the Melbourne Steamship Co., who had been able to make agreements with you, so securing, to our loss, what we

certainly were more entitled to than they.

Again, we are interested inasmuch as the Melbourne Steamship Co., under their present arrangements, are catering strongly for the West Australian traffic, and this may lead to retaliation by one of the other companies, whereas if anybody should undertake the work it is our right and privilege.

Then again, under the altered conditions of the Melbourne-Launceston trade, together with the competition just referred to by the Melbourne Steamship Co., it is questionable whether your Company and mine should not come to a larger understanding, embracing Burnie and Devonport at least. I can quite understand your difficulties, inasmuch as you have time and again made arrangements and submitted to some loss in order to retain this trade, but you must recognise that our hands cannot be tied too tightly, or otherwise sooner or later we shall be compelled, willingly or unwillingly, to burst the bands.

Further, there is another important feature, which is that the boats to be displaced must find occupation. The "Anglian", of course, we shall be able to bring back into the home trade failing any other suitable service, but the "Coogee" is hardly likely to find employment on the coast, nor the N.Z. boats when replaced by larger and faster steamers; hence, there must be an opening for them.

It seemed to the Chairman and myself that your negotiations

with Holyman, resulting so favourably in the present Agreement, provided values are fairly reliable, were the outcome of good sound policy, and this being the case we have felt bound to join with you, trusting to the future to bring about a maintenance of the amicable relations which have now existed for a considerable period.

The advent of the "Loongana" will necessitate consideration as to the best method of carrying on the Launceston service. Personally, if the boat is capable of running every day I think she will meet the demands of the public for accommodation, and that in that case the "Coogee", more or less expensive little ship as she is, will not be required, although further provision than the "Wareatea" would have to be made for the cargo. In this case we would have to enter into the question of a charter rate to cover depreciation, interest and insurance , and run the boats jointly, alternating the passenger boat at any rate between your agency and ours. We have had all these points before us in previous communications, and I think they will have to wait a while longer.

Yours W. Holyman & Sons

Appendix Two: Letter Johnson to Head Office, dated 19th May 1904

19th May, 1904.

HOLYMAN'S. I had an interview with Captain W. Holyman Jr last evening

but his values are somewhat in excess of what I anticipate. This is chiefly brought about by him considering he should receive something in the shape of goodwill for his trades, because in addition to going out of one half of what he states is a profitable undertaking he is left with the "Australian", while on the other hand we get rid of "Wareatea". At first he wanted to include £5,000 for goodwill, but this, I told him, was absurd, and I wanted to strike it out, but he has asked me to submit the following proposals to you, which he is prepared to fix up at any reasonable time, but I might mention at first he said to let it run out until the end of present agreement with our Company, but the "Orion" I know is making a lot of money on the Coast just now, while the "Australian" under the conditions in which she is running is somewhat of a loss to us, which would be avoided under new conditions.-

A new Company to be formed, known as "Holyman's Limited" - Holyman and Union Co. would each retain half interest in the Trades between Launceston and N.W.Coast and N.W.Coast-Melbourne.

Launceston-Melbourne. This service will also belong to the new Company, "Wareatea" or similar boat to be acquired by them, of which Holyman would retain one third, Union Co. one third, and Huddart Parker & Co. one third. The management to be under the control of Holyman's Limited. Expenses in connection with management could be borne "pro rata", or on an agency as may be arranged.

Melbourne agent. Kilgker to act as agent at Melbourne and Wm

Holyman & Son to have option of allowing Ellerker to acquire £1000 interest in new Company, but if this is not acquired, any interest they may have to dispose of must first be offered to Union Co. at reasonable market rates (They would agree to clause not to sell for number years).

Other Agencies. These to be retained as at present unless otherwise arranged. Launceston management to be under control of Capt. Wm Holyman Jr at salary of £300 per annum. Present Holyman Company to be bound not to directly, or indirectly, enter or interfere in any of the above mentioned trades. On the other hand Union Co. to guarantee not to interfere with trade between East Coast Ports to or from Hobart and Launceston.

Straits Islands. This trade may, or may not be taken over. If "Amy" is required by new Company trade to the Straits Islands situated to the N.E. of Tasmania would be taken over with her, otherwise that would remain with present Holyman Co.

Lighters. Union Co. to have sole right to lighter all cargo from out ports for transhipment either to Melbourne or Sydney. Towage to be done by Holyman's Limited at sums to be hereafter arranged.

The Fleet will comprise,-

"Orion"	£7,000
"Warrentinna"	£5,000
"Dorset"	£2,000
"Amy"	£1,500

L'ton-N.W.C. & N.W.C-Melb. Trades	£2,400
Launceston-Melbourne	600

This concludes the proposals which he asked me to submit for your consideration.

As regards the "Amy" you can either include or exclude her. At present she is just about paying her way running down to Straits Islands, but is useful as a spare boat in relieving any of the others during overhaul If we exclude her we could, no doubt, arrange to charter her should she be occasionally required.

"Orion". You will notice her price has been increased from £6500 to £7000, Holyman's contention being that he was offered £6500 for her a little while ago, and that if we reduced the goodwill of the trades, of which he has to pay half, he thinks "Orion" should at present remain in his proposal at £7000. On this value I think we should put in "Wareatea" at £7000, although I did not mention any price to him last night, stating that the value of her was a matter that would have to be fixed by Head Office. If, as Mr Holdsworth stated, "Wareatea" is valued at about £5500 an increased value on her would compensate, to some extent, for what he is asking for the trades, although I think these can be reduced, provided other matters are agreed to.

Under the figures above stated our half of his Fleet would amount to £8950, one third of goodwill for Launceston £200, equal £9150, less two thirds of value of "Wareatea" at £7000 - £4666, which would leave us to make a payment of £4,484, for which we would than have a half interest in "Orion" "Warrentinna" "Dorset" "Amy" and one third in "Wareatea". Under what I consider would be the most favourable conditions, viz., Holyman's

fleet valued at £15,000, and "Wareatea" at £6000, without any goodwill, we would have to pay Holyman £7500 for half interest, receiving £4000 for two thirds of "Wareatea", leaving a payment of £3500, so that even with his £3000 for goodwill, and £500 additional value of "Orion", there is actually only £1000 difference, as regards cash payment to be made, and I am certain that his present proposals can be reduced. All spare plant, of course, would go with purchase, including what offices and places he has along the Coast, which are certainly not of any great value.

If the Directors were in favour of the proposals, I think it is certainly to our advantage to adopt same as early as possible, for the reason that Launceston trade as at present being run necessitates cash payments to balance things, and on the other hand "Orion" and other trades are paying remarkably well. I do not think there is the slightest doubt but what 10% would be paid on the total invested, besides putting something to reserve. But, even if this was lower there would be a considerable gain to us in a certainty of the rates not being cut and hacked about as in the past. This year we cannot well avoid the payment of 5% to shippers to Melbourne, tho' I think it could possibly be avoided next year, which would be considerable gain to us. Also, a bonus on inward shipments could then be fixed up on a proper basis, payments being made after 12 months for loyal support.

ELLERKER. His agency would, I think, be necessary over at Melbourne, and Holyman suggests him being allowed to sell, say, £1000 of his interest to Ellerker, so as to give latter an interest in trade. I do not

know how you will view this. It may have a beneficial effect, or it may give Ellerker an insight into the trade that he would be better without, although, under any circumstances, he would have a fair idea of what was being done. Besides, Ellerker is at present in partners with Appleton, presumably representing H.P. & Co. in the Coastal trade to Apollo Bay and Westernport, also in steamers trading to Lakes, consequently Holyman thinks H.P. & CO. would, no doubt, like an interest in the other trades besides Launceston-Melbourne, but I think, if possible, it would be better to retain those trades to ourselves.

I think there would need to be clause in agreement that Holyman was to retain management for a number of years, although I think there would be no question about this, as his salary would be an inducement for him to retain it. I do not know whether you will approve of amount of salary mentioned, £300, but I do not think he would agree to less, and if he conducts the business as energetically as in the past, which would be necessary to give it a semblance of opposition, I think his salary would be well earned.

In connection with N.W.C-Melbourne trade, Holyman mentioned that he was just about completing contract for carriage of from 20,000 to 30,000 feet timber from Duck River to Melbourne each week, and that he looked forward to a considerable amount of trade from that place to Melbourne. Next week he will take out 1200 casks potatoes from there, and generally he thinks the outports will shortly be nearly sufficient to keep him fully

occupied. As giving one instance which cropped up yesterday, of the advantage which Holyman has over us in the N.W.C. trade, I might mention that the Don. Co. state for past 12 months we have carried sugar for them amounting to 500 to 600 tons, under arrangement with shippers (China Sugar Co.) but that this year they are going to arrange their own freight, and they could hold out no possible hope to us of securing it, as Holyman's services to outports gave him a considerable advantage over us, and they could not see their way clear to divide the shipments. I think this was merely a bait thrown out to try and get us to make a cut for business, which, of course, would be immediately given to Holyman with the object of forcing rates down. This appears to have been done so often in the past that, indirectly, the advantages of combination as suggested would be greatly to advantage of both Companies trading here.

.....

I should have mentioned that Holyman appears to be fairly keen to come to terms, and there should be no great difficulty in bringing his price down. He thinks proposal to-day is the first intimation you have had, except, of course, discussion with the Hon. George McLean, hence I think his anxiety to ask large price at first. Launceston trade under existing conditions hardly carries a good-will, except the fact of leaving "Australian" on his hands. He seems confident coal trade to Melbourne will continue, and says if running with no restrictions she would pay much better than at present doing.

Appendix Three: Extract from Spreadsheet Methodology

												Trust		Key Words		Storage/Retrieval Types		
				Huddart Parker		Solicitors	Salisbury Foundry	Woods Shipbuilders	Comm. Bank of Tas. Laun.	Ellerker		Low	High	Low Trust	High Trust	TPS	MIS	DSS
HO		s.s.	Holdsworth	Traill	Appleton	Melleson,	Campbell	Woods	Baird	Ellerker								
Secretary	Capt.	Monowhai				England,	(Manager)											
(Whitsor	Stacey	Gibb				Stewart												
													1	9	11			1
													1	13	21			1
													1		2			1
												1		6	10			1
											1							
													1		2			1
				1														

INFORMATION FLOW ANALYSIS: HOLYMAN-USSCo.-HP JOINT VENTURE
24th July to 31st December 1904 File 22 (1)

	No. Docs.	Ave. No. Words per doc.	Letters	Meetings	Cables	Agreements & Contracts	Newspaper Articles	Financial Memos	Financial Data	Company Minutes	Talks	Wm. Holyman & Sons HO	William Holyman Jnr.	James Holyman	Snr. Partner
297,22 (1) ,27/7/04	1	487													
Letter															
Transmitter															
Transmittee															
297,22 (1),27/7/04	1	706													
Letter															
Transmitter															
Transmittee															
Meeting	1														
Transmitter															
Transmittee															
Meeting	1														
Transmitter															
Transmittee															
Meeting	1														
Transmitter															
Transmittee															

Company Structure

Holyman Bros.	William Holyman & Sons	Holymans Limited	Holymans Solicitors	USSCo.														
	William Snr,		Law, West	HO	Strahan	Launceston		Hobart (Tasmanian)			David Mills	Tasmanian	Devonport	James Mills	USSCo.	NZ	London	London
	William Jnr,		& Archer		Mgr.	Branch		Mgr.			Melb. Mgr.	Mgr.	Mgr.		Director	Board	Board	Office
	James						Aiken	(Davies)	Branch (Jo'on Act)	(Henderson)			(Johnson)		McLean			
							1								1			
							1								1			
							1								1			
							1								1			
							1								1			

Appendix Four: Draft Contract Number One Company 1904

690

U. S. S. C.

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Holyman & Son

Interim Agreement

15th June 1914

made this day of

and four BETWEEN the UNION STEAM

NEW ZEALAND LIMITED (hereinafter called

part and WILLIAM HOLYMAN WILLIAM

and JAMES HOLYMAN trading as WILLIAM HOLYMAN

called "The Firm") of the other part

INTERIM AGREEMENT

WHEREBY IT IS AGREED AS FOLLOWS:

In consideration of the payment of the sum of

hundred and fifty pounds(£7,750) "The

BETWEEN

sell and "The Company" agrees to buy one

in the steamers "ORION" "WARRENTINNA" "DORSET"

THE UNION STEAM SHIP COMPANY OF NEW ZEALAND LIMITED and

Launceston and North West Coast Ports of Tasmania

and

Coast Ports of Tasmania and Melbourne and

West Coast Ports to Islands situated in

WILLIAM HOLYMAN AND SONS

Company under the title of WILLIAM HOLYMAN

hereinafter called the "First Company") in

acquire the whole of the above interest in

and "The Firm" should hold equal interest

mutually arranged.

Original

Directors each shall be appointed by "The

Firm" whose remuneration shall be nil

William Holyman Junior is to be the

Company" at a salary of

it being understood that this does

"The Firm's" representative on the

Firm" individually and collectively shall

into competition with the "First Company

in any way becoming interested or

any firm or person which may have for

in any of the above mentioned Trades

years from date hereof.

First Company" will enter into an agreement

AN INTERIM AGREEMENT made this Fifteenth day of June One thousand nine hundred and four BETWEEN the UNION STEAM SHIP COMPANY OF NEW ZEALAND LIMITED (hereinafter called "The Company") of the one part and WILLIAM HOLYMAN WILLIAM HOLYMAN JUNIOR and JAMES HOLYMAN trading as WILLIAM HOLYMAN AND SONS (hereinafter called "The Firm") of the other part WHEREBY IT IS AGREED AS FOLLOWS:-

(1) That in consideration of the payment of the sum of Seven thousand seven hundred and fifty pounds(£7,750) "The Firm" agrees to sell and "The Company" agrees to buy one half interest in the steamers "ORION" "WARRENTINNA" "DORSET" and "AMY" and the Trades they are respectively engaged in and to include Launceston and North West Coast Ports of Tasmania and North West Coast Ports of Tasmania and Melbourne and Launceston and North West Coast Ports to Islands situated in Bass' Straits

(2) That a Company under the title of WILLIAM HOLYMAN AND SONS LIMITED (hereinafter called the "First Company") is to be formed to acquire the whole of the above interest in which "The Company" and "The Firm" should hold equal interest or share as may be mutually arranged.

(3) That one Director each shall be appointed by "The Company" and "The Firm" whose remmeration shall be nil

(4) That Captain William Holyman Junior is to be the Manager of the "First Company" at a salary of Two hundred pounds (£200) per annumn it being understood that this does not debar him from being "The Firm's" representative on the Directorate.

(5) That "The Firm" individually and collectively shall abstain from entering into competition with the "First Company or becoming agents or in any way becoming interested or employed by any company firm or person which may have for its object competition in any of the above mentioned Trades for a period of fifteen years from date hereof.

(6) That the "First Company" will enter into an agreement

with"the Company" to run in the Melbourne North West Coast Trade on similar lines to that now existing between "The Firm" and "The Company" subject to such alterations in schedules or rates of freight passage money and bonuses as may be mutually agreed upon

(7) That in consideration of the sum of Five hundred -:) pounds(£500) to be paid by "The Company" "The Firm" agrees to withdraw from the Launceston Melbourne Trade on or before the thirty first day of December One thousand nine hundred and four or sooner should the steamer Australian be sold.-

(8) A new company (hereinafter called the "Second Company" will be formed to take over the above mentioned Launceston -:- Melbourne Trade as at present conducted by the steamer -:-:-:- Australian in which "The Firm" will hold one third interest and "The Company" two thirds or of agreeable to the latter -:- Huddart Parker and Company may become holders of one third -:- interest and "The Firm" Huddart Parker and Company and "The -:- "Company" will each hold one third interest in the Company to be formed.-

(9) That the steamer Wareatea be purchased from"the Company" by the "Second Company" at a cost of Six thousand -:- five hundred pounds(£6500) "The Firm" to pay "The Company" Two thousand one hundred and sixty six pounds thirteen shillings and fourpence (£2166/13/4) for their interest in steamer Wareatea on or before date arranged for the withdrawal of -;- steamer Australian.-

(10) That "The Firm" shall individually and collectively abstain from entering into competition with the "Second Company or in becoming agents or in any way being interested or employed by any company or firm which may have for its object -;-:- competition in the above mentioned Trades.-

(11) "The Company" agrees not to place any cargo steamer or steamers other than those already employed or intended to be employed or vessel of similar description in the Launceston Melbourne Trade without the consent of the "Second Company"

(12) The "Second Company" to have three Directors "The Firm"

to appoint one "The Company" two or if Huddart Parker and Com-
pany acquire equal interest one Director to be appointed by
each and the remuneration shall be nil.-

(13) That Captain William Holyman Junior will be the Manager of
the "Second Company" at a salary of One hundred pounds (£100)
per annum for at least five years but this will not prevent him from being the Firm's
representative on the Directorate.-

(14) That the "First Company" will act as agents for the
"Second Company" and latter will pay the ordinary rate of
commission as charged elsewhere for similar services rendered
or as may be arranged.-

(15) That the "Second Company" will sign an agreement with
either or both "The Company" and Huddart Parker and Company to
run on schedule rates of freight and passage money with or
without bonuses and no concession or alteration either in
freights or passage money to be made unless mutually agreed
upon.-

(16) That "The Firm" shall transfer to the "First Company"
all right title and interest in the ownership or leasehold of
any stores sheds or offices situated either at Launceston or
North West Coast Ports of Tasmania the "Second Company" to
contribute one half the cost of hire of the Launceston Marine
Board shed.-

(17) The "First Company" will act as agents for "The Firm's"
shipping interests and the remuneration will be for the steamer
Koonakarra "Kelvinhaven" ten pounds (£10) per month or commission not exceed-
ing that paid elsewhere for similar services.-

(18) That "The Company" have the right of lighting cargo
for transhipment to or from any port on the North West Coast
of Tasmania the towing of lighters to be done by the "First
Company" and the rate of towing to be agreed upon.-

(19) That all vessels belonging to either the "First
Company" and/or the "Second Company" to be kept insured for
amounts to be agreed upon each and all taking a proportionate
risk to the interest held.-

(20) That all monies collected are to be paid to the credit of the "First Company" bank account and alldisbursements other than petty cash xx to be paid by cheque Monies to the credit of "The Firm" to be paid monthly and that belonging to the "First Company" and "Second Company" at such times and in such amounts as may be agreed upon provided that except for actual disbrusements all monies to the credit or as much thereof as is considered advisable must be paid to all shareholders at the same time in proportion to the interest or shares held.-

(21) That no interest or share in either the "First Company or "Second Company" are to be sold for a period of five years and then only by Firm offering to the Company or Company offering to Firm at a marketable -:- value that can be obtained elsewhere.-

(22) That a proper system of book keeping will be adopted and statements of steamers' earnings and disbrusements be handed to "The Firm" and "The Company" at the end of each month, and a balance sheet at the end of every half year.-

(23) That a half yearly audit by a competent person shall be made of the "First Company's" books and accounts.-

(24) The "First Company" to take over the business from "The Firm" on or about the month of July One thousand nine -:- hundred and four or as soon thereafter as possible and the commission to be paid by "The Firm" on account of the steamer Australian will be similar to that paid by the "Second Company" when the steamer Australian is withdrawn.

(25) That "The Company" will not directly or indirectly interfere with "The Firm's" Trades to the North East or East Coasts of Tasmania from either Hobart or Launceston but on the other hand will assist "the Firm" where possible "The Firm to have the right of tendering for and calling at all lighthous -es with stores irrespective of whether such lighthouses may be situated in Bass' Straits or on North West Coast of Tasmania. Also to have the right of calling at Islands on the North-East Coast of Tasmania providing the "First Company's" steamers are not trading there

-:-:-:-:-:-:-:-:-:-:-:-:-:-:-:-:-:-:-:-

(26) That "The Firm" individually and collectively agree not to interfere directly or indirectly or to be associated with or enter into employment as agentsor otherwise of any firm company or person who may have for its object competition in any of "The Company's" trades to or from Tasmania or to or from West Coast of Tasmania and North West Coast Ports Launceston and Hobart inclusive excepting as already provided for in -:- running the "First Company" and the "Second Company".

(27) In the event of any unforeseen expenditure and it being foundnecessary each and all agree to become liable for and to pay same in proportion to the interests held.

(28) That this INTERIM AGREEMENT or any portion thereof is subject to the approval or otherwise of the Directors of the UNION STEAM SHIP COMPANY OF NEW ZEALAND LIMITED and in the event of their approval "The Firm" agrees when called upon to sign one or more agreements embodying the bfore mentioned -:- conditions with either or both the "First Company" and "Second Company" mentioned.-

(29) ALWAYS PROVIDED it is understood that the vessels herein before mentioned are in good order and are subject to inspection. Any objection to be made before the "First -:-:- Company" is formed.-

As the steamer Wareatea may not be finally acquired till the thirty first day of December One thousand nine hundred and four she is to be accepted or otherwise in present condition and subject to fair wear and tear to be taken over by the "Second Company". In the event of anything unforeseen happening to prevent the steamer Wareatea being handed over "The Company" are to have the option of replacing her by a similar suitable steamer at a price to be agreed upon.-

(30) INTERPRETATIONS.-

North West Coast Trade shall mean trade to any port or place between Launceston and Pieman River inclusive ~~and include~~ -:- ~~trade on River Tamar should it be decided at any time to enter~~

-:-

Melbourne- North West Coast Trade shall mean North West Coast ports and places as between Duck River and Port Sorell and Melbourne all inclusive.-

(7)

On behalf of the UNION STEAM SHIP COMPANY OF NEW ZEALAND LTD.-

West Coast Trade shall mean Launceston and Hobart either direct or via all ports to Strahan or vice versa all inclusive.-

East Coast Trade shall mean all ports and places situated on the Coast of Tasmania east of Low Head extending round to Hobart and including Launceston and Hobart.-

On behalf of WILLIAM HOLYMAN AND SONS

Company's Trades shall mean Launceston-Melbourne, North West Coast - Melbourne, North West Coast-Sydney, Launceston-Sydney, Hobart-Melbourne, Hobart-Sydney, Strahan-Melbourne, Strahan -:- to Sydney Newcastle or Port Kembla, all inclusive.-

Launceston shall mean all places inside Low Head including Beauty Point Gerogetown Rosevears et cetera.-

Melbourneshall mean everything inside Hobson's Bay including Geelong Queenscliff Williamstown Port Melbourne et cetera.-

Lightering shall mean the use by "The Company" of lighters neither propelled by sail or machinery carrying transhipment cargo to or from any places outside Tasmania provided they are not interfering with the "First Company's" Melbourne-North West Coast Trade.-

31.- THAT PROVIDED the "First Company" decline at any time to purchase or work King Island Trade from Launceston and or North West Coast "The Firm" to have the option of doing same.

32.- THAT cargo for out ports carried by Company's steamers to be forwarded by "First Company's" Coastal steamers.

33.- THATXXXXXXXX provision be made in the Agreement between "The Firm" and the "Second Company" that in event of vessel being laid up reasonable compensation is to be paid to "The Firm".-

34.- THAT agreement now existing between GUNN & STEPHENSON owners of steamer Yambacoona and "The Firm" providing that neither interfere with others trade be taken over.

S I G N E D at DEVONPORT in the State of TASMANIA this Fifteenth day of JUNE One thousand nine hundred andfour

On behalf of the UNION STEAM SHIP COMPANY OF NEW ZEALAND LTD.-

Witness Frank A. Kemp

Val. Johnson

On behalf of WILLIAM HOLYMAN AND SONS

Witness Frank A. Kemp

W. Holyman Jun

Appendix Five: Cost Accounting Results

Profit and Loss Summary

	Amy	Aristides	Awaroa	Colliboi	Dorset	Erskine	Hall	Caine	Kittawa Charter	Loomeela Charter	Kooringa	Kowhai Charter	Lanena	Laranah	Lutana	Marrawah	Tarrabeen	Ngatoro Charter	Orion	Prosperpine Charter	Tambar	Toroa	Wareatea	Warrentinna	Wauchope	Woniora	Yambacoona	Yimbacoona Charter	Monthly Totals	ANNUAL TOTALS	Accumultaed Profits
Dec. 1904	£50	£0	£0	£0	£170	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£415	£0	£0	£0	£0	£600	£0	£0	£0	£0	£1,235		
Jan. 1905	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Feb. 1905	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Mar. 1905	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Apr. 1905	£0	£0	£0	£0	£66	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£264	£0	£0	£0	£122	£147	£0	£0	£0	£0	£599		
May. 1905	£0	£0	£0	£0	£96	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£170	£0	£0	£0	-£175	£371	£0	£0	£0	£0	£462		
Jun. 1905	£0	£0	£0	£0	-£37	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£188	£0	£0	£0	-£63	£75	£0	£0	£0	£0	£163		
Jul. 1905	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Aug. 1905	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Sep. 1905	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Oct. 1905	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Nov. 1905	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Dec. 1905	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£2,459	
Jan. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Feb. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Mar. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Apr. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
May. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Jun. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Jul. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Aug. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Sep. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Oct. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Nov. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Dec. 1906	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	
Jan. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Feb. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Mar. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Apr. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
May. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Jun. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Jul. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Aug. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Sep. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Oct. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Nov. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Dec. 1907	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	
Jan. 1908	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Feb. 1908	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Mar. 1908	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Apr. 1908	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
May. 1908	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Jun. 1908	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Jul. 1908	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Aug. 1908	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Sep. 1908	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Oct. 1908	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
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Jan. 1916	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	
Feb. 1916	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	
Mar. 1916	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	
Apr. 1916	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£906	£0	£912	£0	£0	£0	£0	£0	£82	£373	£0	£227	£0	£0	£0	£2,500	
May. 1916	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£841	£0	£662	£0	£0	£0	£0	£0	-£68	-£87	£0	£372	£0	£0	£0	£1,720	
Jun. 1916	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£614	£0	£1,574	£0	£0	£0	£0	£0	£0	£305	£0	£166	£0	£0	£0	£2,659	
Jul. 1916	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£769	£0	£169	£0	£0	£0	£0	£0	£0	£520	£0	£226	£0	£0	£0	£1,684	
Aug. 1916	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£708	£0	£688	£0	£0	£0	£0	£0	£0	£0	£0	£375	£0	£0	£0	£1,771	
Sep. 1916	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£501	£0	£857	£0	£0	£0	£0	£0	£0	-£663	£0	£467	£0	£0	£0	£1,162	
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Nov. 1916	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£130	£0	£343	£0	£0	£0	£0	£0	£0	-£97	£0	£378	£0	£0	£0	£494	
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Jan. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£700	£0	£338	£0	£0	£0	£0	£0	£0	-£40	£0	£419	£0	£0	£0	£1,417	
Feb. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£782	£0	£330	£0	£0	£0	£0	£0	£0	-£504	£0	£570	£0	£0	£0	£1,178	
Mar. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£384	£0	£668	£0	£0	£0	£0	£0	£0	-£376	£0	£475	£0	£0	£0	£201	
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May. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£1,093	£0	£235	£0	£0	£0	£0	£0	£0	-£420	£0	£40	£0	£0	£0	£948	
Jun. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£721	£0	£608	£0	£0	£0	£0	£0	£0	£361	£0	£137	£0	£0	£0	£1,827	
Jul. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£802	£0	£277	£0	£0	£0	£0	£0	£0	£43	£0	£265	£0	£0	£0	£1,387	
Aug. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£416	£0	£382	£0	£0	£0	£0	£0	£0	£715	£0	£451	£0	£0	£0	£1,964	

Sep. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	
Oct. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£802	£0	£365	£0	£0	£0	£0	£0	£0	£414	£0	£407	£0	£0	£0	£1,988		
Nov. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£1,040	£0	£516	£0	£0	£0	£0	£0	£0	-£209	£0	£884	£0	£0	£0	£2,231		
Dec. 1917	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£729	£0	£881	£0	£0	£0	£0	£0	£0	-£256	£0	£525	£0	£0	£0	£1,879	£17,040	
Jan. 1918	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£633	£0	£789	£0	£0	£0	£0	£0	£0	£194	£0	£218	£0	£0	£0	£1,834		
Feb. 1918	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£625	£0	£793	£0	£0	£0	£0	£0	£0	£129	£0	£221	£0	£0	£0	£1,768		
Mar. 1918	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£722	£0	£1,582	£0	£0	£0	£0	£0	£0	£593	£0	£376	£0	£0	£0	£3,273		
Apr. 1918	£0	£0	-£18	£0	£0	£0	£0	£0	£0	£0	£0	£0	£736	£0	£854	£0	£0	£0	£0	£0	£0	£865	£0	£488	£0	£0	£0	£2,925		
May. 1918	£0	£0	£733	£0	£0	£0	£0	£0	£0	£0	£0	£0	£705	£0	£1,088	£0	£0	£0	£0	£0	£0	£374	£0	£128	£0	£0	£0	£2,772		
Jun. 1918	£0	£0	£11	£0	£0	£0	£0	£0	£0	£0	£0	£0	£703	£0	£1,942	£0	£0	£0	£0	£0	£0	-£354	£0	£49	£0	£0	£0	£2,351		
Jul. 1918	£0	£0	£195	£0	£0	£0	£0	£0	£0	£0	£0	£0	£541	£0	£478	£0	£0	£0	£0	£0	£0	£658	£0	£203	£0	£0	£0	£2,075		
Aug. 1918	£0	£0	£384	£0	£0	£0	£0	£0	£0	£0	£0	£0	£687	£0	£1,103	£0	£0	£0	£0	£0	£0	£122	£0	£345	£0	£0	£0	£2,641		
Sep. 1918	£0	£0	-£382	£0	£0	£0	£0	£0	£0	£0	£0	£0	£339	£0	£1,581	£0	£0	£0	£0	£0	£0	£206	£0	£301	£0	£0	£0	£2,045		
Oct. 1918	£0	£0	£447	£0	£0	£0	£0	£0	£0	£0	£0	£0	£181	£0	£954	£0	£0	£0	£0	£0	£0	-£319	£0	£403	£0	£0	£0	£1,666		
Nov. 1918	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Dec. 1918	£0	£0	£185	£0	£0	£0	£0	£0	£0	£0	£0	£0	£740	£0	£453	£0	£0	£0	£0	£0	£0	-£67	£0	£293	£0	£0	£0	£1,604	£24,954	
Jan. 1919	£0	£0	£684	£0	£0	£0	£0	£0	£0	£0	£0	£0	£808	£0	£1,346	£0	£0	£0	£0	£0	£0	£801	£0	£104	£0	£0	£0	£3,535		
Feb. 1919	£0	£0	-£562	£0	£0	£0	£0	£0	£0	£0	£0	£0	£833	£0	£1,799	£0	£0	£0	£0	£0	£0	-£136	£0	£406	£0	£0	£0	£1,528		
Mar. 1919	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Apr. 1919	£0	£0	-£223	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£94	£0	-£668	£0	£0	£0	£0	£0	£0	£60	£0	£218	£0	£0	£0	-£707		
May. 1919	£0	£0	£717	£0	£0	£0	£0	£0	£0	£0	£0	£0	£991	£0	£1,179	£0	£0	£0	£0	£0	£0	£313	£0	£525	£0	£0	£0	£3,725		
Jun. 1919	£0	£0	£186	£0	£0	£0	£0	£0	£0	£0	£0	£0	£504	£0	£511	£0	£0	£0	£0	£0	£0	£271	£0	£279	£0	£0	£0	£1,751		
Jul. 1919	£0	£0	£371	£0	£0	£0	£0	£0	£0	£0	£0	£0	£296	£0	£468	£0	£0	£0	£0	£0	£0	£293	£0	£117	£0	£0	£0	£1,545		
Aug. 1919	£0	£0	-£411	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£278	£0	-£255	£0	£0	£0	£0	£0	£0	£131	£0	-£472	£0	£0	£0	-£1,285		
Sep. 1919	£0	£0	£87	£0	£0	£0	£0	£0	£0	£0	£0	£0	£330	£0	£213	£0	£0	£0	£0	£0	£0	£121	£0	-£131	£0	£0	£0	£620		
Oct. 1919	£0	£0	£186	£0	£0	£0	£0	£0	£0	£0	£0	£0	£246	£0	£268	£0	£0	£0	£0	£0	£0	£246	£0	-£11	£0	£0	£0	£935		
Nov. 1919	£0	£0	£140	£0	£0	£0	£0	£0	£0	£0	£0	£0	£94	£0	-£81	£0	£0	£0	£0	£0	£0	-£185	£0	£0	£0	£0	£0	-£32		
Dec. 1919	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£11,615	
Jan. 1920	£0	£0	-£68	£0	£0	£0	£0	£0	£0	£0	£0	£0	£320	£0	£340	£0	£0	£0	£0	£0	£0	£284	£0	£0	£0	£0	£0	£876		
Feb. 1920	£0	£0	£296	£0	£0	£0	£0	£0	£0	£0	£0	£0	£491	£0	£19	£0	£0	£0	£0	£0	£0	£317	£0	£0	£0	£0	£0	£1,123		
Mar. 1920	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Apr. 1920	£0	£0	£547	£0	£0	£0	£0	£0	£0	£0	£0	£0	£150	£0	£730	£0	£0	£0	£0	£0	£0	£518	£0	£0	£0	£0	£0	£1,945		
May. 1920	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Jun. 1920	£0	£0	£469	£0	£0	£0	£0	£0	£0	£0	£0	£0	£594	£0	£1,174	£0	£0	£0	£0	£0	£0	-£76	£0	£0	£0	£0	£0	£2,161		
Jul. 1920	£0	£0	£865	£0	£0	£0	£0	£0	£0	£0	£0	£0	£695	£0	£1,621	£0	£0	£0	£0	£0	£0	£598	£0	£0	£0	£0	£0	£3,779		
Aug. 1920	£0	£0	£754	£0	£0	£0	£0	£0	£0	£0	£0	£0	£836	£0	£2,795	£0	£0	£0	£0	£0	£0	£1,101	£0	£0	£0	£0	£0	£5,486		
Sep. 1920	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Oct. 1920	£0	£0	£828	£0	£0	£0	£0	£0	£0	£0	£0	£0	£437	£0	-£168	£0	£0	£0	£0	£0	£0	£637	£0	£0	£0	£0	£0	£1,734		
Nov. 1920	£0	£0	£484	£0	£0	£0	£0	£0	£0	-£149	£0	£0	£1,072	£0	£1,072	£0	£0	£0	£0	£0	£0	£689	£0	£0	£0	£0	£0	£3,168		
Dec. 1920	£0	£0	£710	£0	£0	£0	£0	£0	£0	£1,455	£0	£0	£1,008	£0	£904	£0	£0	£0	£0	£0	£0	£122	£0	£0	£0	£0	£0	£4,199	£24,471	
Jan. 1921	£0	£0	£1,292	£0	£0	£0	£0	£0	£0	£1,066	£0	£0	£1,056	£0	£1,836	£0	£0	£0	£0	£0	£0	-£21	£0	£0	£0	£0	£0	£5,229		
Feb. 1921	£0	£0	£1,188	£0	£0	£0	£0	£0	£0	£1,331	£0	£0	£1,100	£0	£2,118	£0	£0	£0	£0	£0	£0	-£1,722	£0	£0	£0	£0	£0	£4,015		
Mar. 1921	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Apr. 1921	£0	£0	£196	£0	£0	£0	£0	£0	£0	-£1,782	£0	£0	£1,020	£0	£1,107	£0	£0	£0	£0	£0	£0	£223	£0	£0	£0	£0	£0	£764		
May. 1921	£0	£0	-£1,897	£0	£0	£0	£0	£0	£0	-£242	£0	£0	£969	£0	£694	£0	£0	£0	£0	£0	£0	-£3,043	£0	£0	£0	£0	£0	-£3,519		
Jun. 1921	£0	£0	-£57	£0	£0	£0	£0	£0	£0	-£3,488	£0	£0	£822	£0	£1,801	£0	£0	£0	£0	£0	£0	£196	£0	£0	£0	£0	£0	-£726		
Jul. 1921	£0	£0	-£289	£0	£0	£0	£0	£0	£0	-£411	£0	£0	£836	£0	£483	£0	£0	£0	£0	£0	£0	£22	£0	£0	£0	£0	£0	£641		
Aug. 1921	£0	£0	-£401	£0	£0	£0	£0	£0	£0	£504	£0	£0	£735	£0	£604	£0	£0	£0	£0	£0	£0	£359	£0	£0	£0	£0	£0	£1,801		
Sep. 1921	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Oct. 1921	£0	£0	£662	£0	£0	£0	£0	£0	£0	£469	£0	£0	£210	£0	-£61	£0	£0	£0	£0	£0	£0	£498	£0	£0	£0	£0	£0	£1,778		
Nov. 1921	£0	£0	£282	£0	£0	£0	£0	£0	£0	-£61	£0	£0	£408	£0	£135	£0	£0	£0	£0	£0	£0	-£814	£0	£0	£0	£0	£0	-£50		
Dec. 1921	£0	£0	-£139	£0	£0	£0	£0	£0	£0	£59	£0	£0	£769	£0	£74	£0	£0	£0	£0	£0	£0	£22	£0	£0	£0	£0	£0	£785	£10,718	
Jan. 1922	£0	£0	£61	£0	£0	£0	£0	£0	£0	-£234	£0	£0	£557	£0	£944	£0	£0	£0	£0	£0	£0	-£289	£0	£0	£0	£0	£0	£1,039		
Feb. 1922	£0	£0	£342	£0	£0	£0	£0	£0	£0	£776	£0	£0	£852	£0	£835	£0	£0	£0	£0	£0	£0	-£161	£0	£0	£0	£0	£0	£2,644		
Mar. 1922	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
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May. 1922	£0	£0	£380	£0	£0	£0	£0	£0	£0	£145	£0	£0	£779	£0	£1,037	£0	£0	£0	£0	£0	£0	£516	£0	£0	£0	£0	£0	£2,857		
Jun. 1922	£0	£0	-£863	£0	£0	£0	£0	£0	£0	-£406	£0	£0	£670	£0	£1,645	£0	£0	£0	£0	£0	£0	£382	£0	£0	£0	£0	£0	£1,428		
Jul. 1922	£0	£0	£265	£0	£0	£0	£0	£0	£0	-£153	£0	£0	£776	£0	£397	£0	£0	£0	£0	£0	£0	£456	£0	£0	£0	£0	£0	£1,741		
Aug. 1922	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		
Sep. 1922	£0	£0	£6	£0	£0	£0	£0	£0	£0	£55	£0	£0	£675	£0	-£376	£0	£0	£0	£0	£0	£0	£83	£0	£0	£0	£0	£0	£443		
Oct. 1922	£0	£0	£576	£0	£0	£0	£0	£0	£0	£324	£0	£0	£196	£0	-£40	£0	£0	£0	£0	£0	£0	£182	£0	£0	£0	£0	£0	£1,238		
Nov. 1922	£0	£0	£439	£0	£0	£0	£0	£0	£0	£639	£0	£0	£208	£0	-£416	£0	£0	£0	£0	£0	£0	-£213	£0	£0	£0	£0	£0	£657		
Dec. 1922	£0	£0	-£133	£0	£0	£0	£0	£0	£0	£259	£0	£0	£777	£0	-£1,545	£0	£0	£0	£0	£0	£0	£51	£0	£0	£0	£0	£0	-£591	£12,021	
Jan. 1923	£0	£0	£271	£0	£0	£0	£0	£0	£0	£442	£0	£0	£683	£0	£610	£0	£0	£0	£0	£0	£0	-£43	£0	£0	£0	£0	£0	£1,963		
Feb. 1923	£0	£0	£123	£0	£0	£0	£0	£0	£0	£625	£0	£0	£778	£0	-£935	£0	£0	£0	£0	£0	£0	-£656	£0	£0	£0	£0	£0	-£65		
Mar. 1923	£0	£0	£2	£0	£0	£0	£0	£0	£0	£260	£0	£0	£579	£0	£604	£0	£0	£0	£0	£0	£0	-£114	£0	£0	£0	£0	£0	£1,331		
Apr. 1923	£0	£0	£144	£0	£0	£0	£0	£0	£0	-£381	£0	£0	£719	£0	£759	£0	£0	£0	£0	£0	£0	-£202	£0	£0	£0	£0	£0	£1,039		
May. 1923	£0	£0	-£221	£0	£0	£0	£0	£0	£0	£476	£0	£0	£839	£0	£1,363	£0	£0	£0	£0	£0	£0	-£238	£0	£0	£0	£0	£0	£2,219		
Jun. 1923	£0	£0	-£1,632	£0	£0	£0	£0	£0	£0	-£612	£0	£0	£771	£0	£772	£0	£0	£0	£0	£0	£0	£287	£0	£0	£0	£0	£0	-£414		
Jul. 1923	£0	£0	£312	£0	£0	£0	£0	£0	£0	£23	£0	£0	£715	£0	£754	£0	£0	£0	£0	£0	£0	-£456	£0	£0	£0	£0	£0	£1,348		
Aug. 1923	£0	£0	£135	£0	£0	£0	£0	£0	£0	£558	£0	£0	£712	£0	£1,526	£0	£0	£0	£0	£0	£0	-£123	£0	£0	£0	£0	£0	£2,808		
Sep. 1923	£0	£0	-£108	£0	£0	£0	£0	£0	£0	-£105	£0	£0	£523	£0	-£291	£0	£0	£0	£0	£0	£0	£412	£0	£0	£0	£0	£0	£431		
Oct. 1923	£0	£0	£429	£0	£0	£0	£0	£0	£0	£322	£0	£0	£4	£0	£817	£0	£0	£0	£0	£0	£0	£46	£0	£0	£0	£0	£0	£1,618		
Nov. 1923	£0	£0	£218	£0	£0	£0	£0	£0	£0	£216	£0	£0	-£113	£0	£526	£0	£0	£0	£0	£0	£0	£343	£0	£0	£0	£0	£0	£1,190		
Dec. 1923	£0	£0	£13	£0	£0	£0	£0	£0	£0	£196	£0	£0	£729	£0	-£418	£0	£0	£0	£0	£0	£0	£195	£0	£0	£0	£0	£0	£715	£14,183	
Jan. 1924	£0	£0	£123	£0	£0	£0	£0	£0	£0	£270	£0	£0	£707	£0	£1,195	£0	£0	£0	£0	£0	£0	-£200	£0	£0	£0	£0	£0	£2,095		
Feb. 1924	£0	£0	£633	£0	£0	£0	£0	£0	£0	£857	£0	£0	£568	£0	£777	£0	£0	£0	£0	£0	£0	-£1,043	£0	£0	£0	£0	£0	£1,792		
Mar. 1924	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0		

Apr. 1924	£0	£0	-£84	£0	£0	£0	-£70	£0	£0	£120	£0	£0	£746	£0	£443	£0	£0	£0	£0	£0	£0	£905	£0	£0	£0	£0	£0	£2,060			
May. 1924	£0	£0	-£1,645	£0	£0	£0	£392	£0	£0	-£475	£0	£0	£698	£0	£676	£0	£0	£0	£0	£0	£0	£236	£0	£0	£0	£0	£0	-£118			
Jun. 1924	£0	£0	£65	£0	£0	£0	£176	£0	£0	£499	£0	£0	£699	£0	£1,119	£0	£0	£0	£0	£0	£0	£356	£0	£0	£0	£0	£0	£2,914			
Jul. 1924	£0	£0	£256	£0	£0	£0	-£94	£0	£0	£550	£0	£0	£625	£0	£741	£0	£0	£0	£0	£0	£0	£560	£0	£0	£0	£0	£0	£2,638			
Aug. 1924	£0	£0	£243	£0	£0	£0	£9	£0	£0	£143	£0	£0	£766	£0	£272	£0	£0	£0	£0	£0	£0	£8	£0	£0	£0	£0	£0	£1,441			
Sep. 1924	£0	£0	-£135	£0	£0	£0	-£74	£0	£0	£230	£0	£0	£590	-£500	£46	£0	£0	£0	£0	£0	£0	-£91	£0	£0	£0	£0	£0	£66			
Oct. 1924	£0	£0	£241	£0	£0	£0	£55	£0	£0	£500	£0	£0	£685	£322	£493	£0	£0	£0	£0	£0	£0	£571	£0	£0	£0	£0	£0	£2,867			
Nov. 1924	£0	£0	£409	£0	£0	£0	-£11	£0	£0	£124	£0	£0	£641	-£1,869	£0	£0	£0	£0	£0	£0	£0	-£17	£0	£0	£0	£0	£0	-£723			
Dec. 1924	£0	£0	£216	£0	£0	£0	-£26	£0	£0	£850	£0	£0	£144	£1,060	-£1,082	£0	£0	£0	£0	£0	£0	-£118	£0	£0	£0	£0	£0	£1,044	£16,076	£16,076	
Jan. 1925	£0	£0	£456	£0	£0	£0	-£1,049	£0	£0	£1,007	£0	£0	£379	£611	£3,398	£0	£0	£0	£0	£0	£0	£260	£0	£0	£0	£0	£0	£5,062			
Feb. 1925	£0	£0	£80	£0	£0	£0	£182	£0	£0	£143	£0	£0	£782	£850	£282	£0	£0	£0	£0	£0	£0	-£443	£0	£0	£0	£0	£0	£1,876			
Mar. 1925	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0			
Apr. 1925	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0			
May. 1925	£0	£0	-£670	£0	£0	£0	£158	£0	£0	-£970	£0	£0	£985	£848	£502	£0	£0	£0	£0	£0	£0	£519	£0	£0	£0	£0	£0	£1,372			
Jun. 1925	£0	£0	-£160	£0	£0	£0	£21	£0	£0	-£527	£0	£0	£263	£695	£918	£0	£0	£0	£0	£0	£0	£470	£0	£0	£0	£0	£0	£1,680			
Jul. 1925	£0	£0	-£141	£0	£0	£0	-£348	£0	£0	£92	£0	£0	£88	£918	-£148	£0	£0	£0	£0	£0	£0	£206	£0	£0	£0	£0	£0	£667			
Aug. 1925	£0	£0	-£472	£0	£0	£0	£274	£0	£0	£338	£0	£0	£1,054	£673	£495	£0	£0	£0	£0	£0	£0	£990	£0	£0	£0	£0	£0	£3,352			
Sep. 1925	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0			
Oct. 1925	£0	£0	£0	£0	£0	£0	£502	£0	£0	£868	£0	£0	-£1,232	£534	£801	£0	-£270	£0	£0	£0	£0	£834	£0	£0	£0	£0	£0	£2,037			
Nov. 1925	£0	£0	£0	£0	£0	£0	£128	£0	£0	£164	£0	£0	£1,090	£171	-£680	£0	-£196	£0	£0	£0	£0	£399	£0	£0	£0	£0	£0	£1,076			
Dec. 1925	£0	£0	£0	£0	£0	£0	-£61	£0	£0	£587	£0	£0	£477	£496	-£257	£0	£613	£0	£0	£0	£0	-£561	£0	£0	£0	£0	£0	£1,294	£18,416	£34,492	46.61%
Jan. 1926	£0	£0	£0	£0	£0	£0	-£634	£0	£0	£178	£0	£0	£662	£777	£323	£0	£0	£0	£0	£0	£0	£97	£0	£0	£0	£0	£0	£1,403			
Feb. 1926	£0	£0	£0	£0	£0	£0	-£97	£0	£0	£198	£260	£0	£1,119	£674	£473	£0	-£446	£0	£0	£0	£0	£510	£0	£0	£0	£0	£0	£2,691			
Mar. 1926	£0	£0	£0	£0	£0	£0	-£217	£0	£0	-£102	£0	£0	£920	£741	£713	£0	£1,030	£0	£0	£0	£0	£571	£0	£0	£0	£0	£0	£3,656			
Apr. 1926	£0	£0	£0	£0	£0	£0	£173	-£247	£0	£411	£0	£0	£299	£798	£503	£0	£0	£0	£0	£0	£0	£756	£0	£0	£0	£0	£0	£2,693			
May. 1926	£0	£0	£0	£0	£0	£0	-£19	-£286	£0	-£131	£0	£0	£1,248	£770	£877	£0	£0	£0	£0	£0	£0	£485	£0	£0	£0	£0	£0	£2,944			
Jun. 1926	£0	£0	£0	£0	£0	£0	£17	£23	£0	-£437	£0	£0	£711	£514	£444	£0	£0	£0	£0	£0	£0	£6	£0	£0	£0	£0	£0	£1,278			
Jul. 1926	£0	£0	£0	£0	£0	£0	£146	-£170	£0	£3	£0	£0	£1,154	£728	£293	£0	£0	£0	£0	£0	£0	£605	£0	£0	£0	£0	£0	£2,759			
Aug. 1926	£0	£0	£0	£0	£0	£0	-£405	£0	£0	-£141	£0	£1,481	£77	£848	£353	£0	£0	£0	£0	£0	£0	£602	£0	£0	£0	£0	£0	£2,815			
Sep. 1926	£0	£0	£0	£0	£0	£0	-£141	£0	£0	£0	£0	£82	£736	£693	£305	£0	£0	£0	£0	£0	£0	£700	£0	£0	£0	£0	£0	£2,375			
Oct. 1926	£0	£0	£0	£0	£0	£0	£385	£0	£0	£0	£0	£489	-£1,388	£617	£415	£0	£0	£0	£0	£0	£0	£584	£0	£0	£0	£0	£0	-£132			
Nov. 1926	£0	£0	£0	£0	£0	£0	£298	£0	£0	£0	£0	£2,214	£251	£153	-£2,717	£0	£0	£0	£0	£0	£0	£201	£0	£0	£0	£0	£0	£400			
Dec. 1926	£0	£0	£0	£0	£0	£0	£419	£0	£0	£0	£0	-£93	£1,127	£798	£39	£0	£0	£0	£0	£0	£0	£248	£0	£0	£0	£0	£0	£2,538	£25,420	£59,912	57.57%
Jan. 1927	£0	£0	£0	£0	£0	£0	-£663	£0	£0	£0	£0	£901	£777	£848	£885	£0	£0	£0	£0	£0	£0	-£770	£0	£0	£0	£0	£0	£1,978			
Feb. 1927	£0	£0	£0	£0	£0	£0	-£458	£0	£0	£0	£0	£132	£1,570	£848	£1,010	£0	£0	£0	£0	£0	£0	£395	£0	£0	£0	£0	£0	£3,497			
Mar. 1927	£0	£0	£0	£0	£0	£0	£328	£0	£0	£0	£0	£1,913	-£540	-£298	-£2,803	£0	£0	£0	£0	£0	£0	£514	£0	£145	£0	£0	£0	-£741			
Apr. 1927	£0	£0	£0	£0	£0	£0	-£49	£0	£0	£0	£0	£515	£936	£739	£126	£0	£0	£0	£0	£0	£0	£1,248	£0	£0	£38	£0	£0	£3,553			
May. 1927	£0	£0	£0	£0	£0	£0	£11	£0	£0	£0	£0	£843	£1,231	£803	£763	£0	£0	£0	£0	£0	£0	£1,527	£0	£0	£100	£0	£0	£5,078			
Jun. 1927	£0	£0	£0	£0	£0	£0	-£72	£0	£0	£0	£0	£951	£812	£586	£630	£0	£0	£0	£0	£0	£0	£853	£0	£0	£121	£0	£0	£3,881			
Jul. 1927	£0	£0	£0	£0	£0	£0	-£68	£0	£0	£0	£0	£1,605	£965	£818	£2	£0	£0	£0	£0	£0	£0	£788	£0	£0	£340	£0	£0	£4,450			
Aug. 1927	£0	£0	£0	£0	£0	£0	£76	£0	£0	£0	£0	£370	£492	£805	£673	£0	£0	£0	£0	£0	£0	£733	£0	£0	£407	£0	£0	£3,556			
Sep. 1927	£0	£0	£0	£0	£0	£0	-£367	£0	£0	£0	£0	-£2,455	£669	£82	£358	£0	£0	£0	£0	£0	£0	£463	£0	£0	£527	£0	£0	-£723			
Oct. 1927	£0	£0	£0	£0	£0	£0	£203	£0	£0	£0	£0	£173	-£125	£852	£925	£0	£0	£0	£0	£0	£0	£1,102	£0	£0	£669	£0	£0	£3,799			
Nov. 1927	£0	£0	£0	£0	£0	£0	£603	£0	£0	£0	£0	£48	-£294	£849	-£1,493	£0	£0	£0	£0	£0	£0	-£418	£0	£0	£974	£0	£0	£269			
Dec. 1927	£0	£0	£0	£0	£0	£0	-£152	£0	£0	£0	£0	-£250	£300	£656	-£351	£0	£0	£0	£0	£0	£0	-£94	£0	£0	£714	£0	£0	-£605	£27,992	£87,904	68.16%
Jan. 1928	£0	£0	£0	£0	£0	£0	-£281	£0	£0	£0	£0	-£203	£531	-£805	£331	£0	£0	£0	£0	£0	£0	£1,130	£0	£0	£1,052	£0	£0	£1,755			
Feb. 1928	£0	£0	£0	£0	£0	£0	£79	£0	£0	£0	£0	-£165	£447	£806	£654	£0	£0	£0	£0	£0	£0	£1,246	£0	£0	£239	£0	£0	£3,306			
Mar. 1928	£0	£0	£0	£0	£0	£0	-£133	£0	£0	£0	£0	-£245	£993	£843	£847	£0	£0	£0	£0	£0	£0	£1,389	£0	£0	-£740	£0	£0	£2,954			
Apr. 1928	£0	£0	£0	£0	£0	£0	-£205	£0	£0	£0	£0	£3	£1,490	£857	£390	£0	£0	£0	£0	£0	£0	£1,211	£0	£0	£928	£0	£0	£4,674			
May. 1928	£0	£0	£0	£0	£0	£0	-£274	£0	£0	£0	£0	£930	£1,200	£721	£652	£0	£0	£0	£0	£0	£0	£1,278	£0	£0	£1,306	£0	£0	£5,813			
Jun. 1928	£0	£0	£0	£0	£0	£0	-£94	£0	£0	£0	£0	£821	£191	£809	-£95	£0	£0	£0	£0	£0	£0	£330	£0	£0	£488	£0	£0	£2,450			
Jul. 1928	£0	£0	£0	£0	£0	£0	-£363	£0	£0	£0	£0	-£720	£770	£812	£69	£0	£0	£0	£0	£0	£0	£182	£0	£0	£709	£0	£0	£1,459			
Aug. 1928	£0	£0	£0	£0	£0	£0	£102	£0	£0	£0	£0	-£365	£178	£882	£272	£0	£0	£0	£0	£0	£0	£688	£0	£0	£1,172	£0	£0	£2,929			
Sep. 1928	£0	£0	£0	£0	£0	£0	-£41	£0	£0	£0	£0	-£517	£483	£667	£11	£0	£0	£0	£0	£0	£0	-£663	£0	£0	£499	£0	£0	£439			
Oct. 1928	£0	£0	£0	£0	£0	£0	-£20	£0	£0	£0	£0	-£241	£759	£852	£252	£0	£0	£0	£0	£0	£0	£507	£0	£0	-£150	£0	£0	£1,959			
Nov. 1928	£0	£0	£0	£0	£0	£0	£280	£0	£0	£0	£0	£0	£167	£491	-£549	£0	£0	£0	£0	£0	£0	£667	£0	£0	£422	£0	£0	£1,478			
Dec. 1928	£0	£0	£0	£0	£0	£0	£166	£0	£0	£0	£0	£963	£433	£563	-£34	£0	£0	£0	£0	£0	£0	£1,354	£0	£0	£248	£0	£0	£3,197	£32,413	£120,317	73.06%
Jan. 1929	£0	£0	£0	£0	£0	£0	-£27	£0	£0	£0	£0	-£15	£996	£824	£942	£0	£0	£0	£0	£0	£0	£1,101	£0	£0	£207	£0	£0	£3,614			
Feb. 1929	£0	£0	£0	£0	£0	£0	-£857	£0	£0	£0	£0	-£136	£1,013	£894	£613	£0	£0	£0	£0	£0	£0	£742	£0	£0	£363	£0	£0	£2,632			
Mar. 1929	£0	£0	£0	£0	£0	£0	-£397	£0	£0	£0	£0	£380	£761	£873	£555	£0	£0	£0	£0	£0	£0	£1,380	£0	£0	£898	£0	£0	£2,654			
Apr. 1929	£0	£0	£0	£0	£0	£0	-£109	£0	£0	£0	£0	£1,640	£2,546	£856	£1,093	£0	£0	£0	£0	£0	£0	£1,296	£0	£0	£846	£0	£0	£8,168			
May. 1929	£0	£0	£0	£0	£0	£0	-£32	£0	£0	£0	£0	£1,364	£1,316	£886	£749	£0	£0	£0	£0	£0	£0	£1,048	£0	£0	£552	£0	£0	£5,883			
Jun. 1929	£0	£0	£0	£0	£0	£0	-£139	£0	£0	£0	£0	£1,498	£941	£821	£206	£0	£0	£0	£0	£0	£0	£867	£0	£0	-£305	£0	£0	£3,889			
Jul. 1929	£0	£0	£0	£0	£0	£0	£185	£0	£0	£0	£0	£1,740	£988	£839	£735	£0	£0	£0	£0	£0	£0	£763	£0	£0	£0	£0	£0	£5,250			
Aug. 1929	£0	£0	£0	-£62	£0	£0	-£188	£0	£0	£0	£0	£353	£721	£826	£592	£0	£0	£0	£0	£0	-£8	£0	£483	£0	£0	-£121	£0	£0	£2,596			
Sep. 1929	£0	£0	£0	-£811	£0	£0	-£235	£0	£0	£0	£0	£393	£909	-£2,021	£511	£0	£0	£0	£0	£70	£0	-£1,663	£0	£0	£672	£0	£0	-£2,175			
Oct. 1929	£0	£0	£0	£0	£0	£0	-£159	£0	£0	£0	£0	£839	-£1,008	£600	-£1,337	£0	£0	£0	£0	£1,008	£0	£545	£0	£0	£697	£0	£0	£1,185			
Nov. 1929	£0	£0	£0	-£16	£0	£0	-£104	£0	£0	£0	£0	£411	£92	£771	£458	£0	£0	£0	£0	£937	£0	£815	£0	£0	-£326	£0	£0	£3,038			
Dec. 1929	£0	£0	£0	£401	£0	£0	-£36	£0	£0	£0	£0	-£2,995	£1,672	£888	£328	£0	£0	£0	£0	£1,007	£0	£839	£0	£0	-£198	£0	£0	£1,906	£38,640	£158,957	75.69%
Jan. 1930	£0	£0	£0	-£192	£0	£0	£44	£0	£0	£0	£0	£249	£1,046	£846	£1,263	£0	£0	£0	£0	£596	£0	£1,426	£0	£0	£99	£0	£0	£5,377			
Feb. 1930	£0	£0	£0	-£238	£0	£0	-£30	£0	£0	£0	£0	£329	£1,050	£832	£950	£0	£0	£0	£0	£471	£0	£561	£0	£0	-£134	£0	£0	£3,791			
Mar. 1930	£0	£0	£0	-£148	£0	£0	£2	£0	£0	£0	£0	£485	£1,077	£781	£1,210	£0	£0	£0	£0	£112	£0	£1,163	£0	£0	-£140	£0	£0	£4,542			
Apr. 1930	£0	£0	£0	£406	£0	£0	£0	£0	£0	£0	£0	£593	£829	£924	£547	£0	£0	£0	£0	£460	£0	£354	£0	£0	-£329	£0	£0	£3,784			
May. 1930	£0	£0	£0	£93	£0	£0	-£795	£0	£0	£0	£0	£727	£307	£929	£1,068	£0	£0	£0	£0	£164	£0	£801	£0	£0	-£109	£0	£0	£3,185			
Jun. 1930	£0	£0	£0	-£232	£0	£0	-£39	£0	£0	£0	£0	-£332	£737	£768	£570	£0	£0	£0	£0	-£766	£0	-£40	£0	£0	-£182	£0	£0	£484			
Jul. 1930	£0	£0	£0	-£853	£0	£0	-£21	£0	£0	£0	£0	-£119	£1,268	£911	£682	£0	£0	£0	£0	-£312	£0	£61	£0	£0	£958	£0	£0	£2,575			
Aug. 1930	£0	£0	£0	-£178	£0	£0	-£15	£0	£0	£0	£0	£528	£54	£838	£264	£0	£0	£0	£0	-£918	£0	£164	£0	£0	£775	£0	£0	£1,512			
Sep. 1930	£0	£0	£0	£345	£0	£0	-£13	£0	£0	£0	£0	-£266	£459	-£1,255	£129	£0	£0	£0	£0	-£571	£0	-£1,816	£0	£0	£310	£0	£0	-£2,678			
Oct. 1930	£0	£0	£0	£544	£0	£0	£0	£0	£0	£0	£0	-£225	-£696	£748	-£2,231	£0	£0	£0	£0	£716	£0	£521	£0	£0	£135	£0	£0	-£488			

Nov. 1930	£0	£0	£0	£303	£0	£0	£0	£0	£0	£0	£0	-£294	-£58	£710	-£4,189	£0	£0	£0	£0	£671	£0	£124	£0	£0	-£161	£0	£0	-£2,894			
Dec. 1930	£0	£0	£0	£264	£0	£0	£0	£0	£0	£0	£0	-£178	£250	£233	-£32	£0	£0	£0	£0	£730	£0	-£200	£0	£0	-£165	£0	£0	£902	£20,092	£179,049	88.78%
Jan. 1931	£0	£0	£0	£184	£0	£0	£0	£0	£0	£0	£0	£78	£458	£706	£193	£0	£0	£0	£0	£241	£0	£327	£0	£0	£183	£0	£0	£2,370			
Feb. 1931	£0	£0	£0	-£124	£0	£0	£0	£0	£0	£0	£0	-£1,439	£736	£735	£429	£0	£0	£0	£0	£615	£0	£405	£0	£0	£582	£0	£0	£1,939			
Mar. 1931	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0			
Apr. 1931	£0	£0	£0	£108	£0	£0	£0	£0	£0	£0	£0	£885	£949	£718	£895	£0	£0	£0	£0	£163	£0	£465	£0	£0	-£207	£0	£0	£3,976			
May. 1931	£0	£0	£0	-£627	£0	£0	£0	£0	£0	£0	£0	£546	£684	£315	£125	£0	£0	£0	£0	£233	£0	£333	£0	£0	£0	£0	£0	£1,609			
Jun. 1931	£0	£0	£0	£38	£0	£0	£0	£0	£0	£0	£0	£729	£927	£494	£199	£0	£0	£0	£0	-£11	£0	£792	£0	£0	£0	£0	£0	£3,168			
Jul. 1931	£0	£0	£0	-£194	£0	£0	£0	£0	£0	£0	£0	-£239	£666	£183	£309	£0	£0	£0	£0	-£292	£0	£62	£0	£0	-£240	£0	£0	£255			
Aug. 1931	£0	£0	£0	£173	£0	£0	£0	£0	£0	£0	£0	£427	£357	-£201	£416	£0	£0	£0	£0	£148	£0	-£85	£0	£0	£140	£0	£0	£1,375			
Sep. 1931	£0	£0	£0	£23	£0	£0	£0	£0	£0	£0	£0	-£235	£367	£1,149	£34	£0	£0	£0	£0	-£345	£0	-£1,262	£0	£0	£289	£0	£0	-£94			
Oct. 1931	£0	£0	£0	£167	£0	£0	£0	£0	£0	£0	£0	£0	£478	£521	£591	£0	£0	£0	£0	£662	£0	£413	£0	£0	£564	£0	£0	£3,396			
Nov. 1931	£0	£0	£0	£378	£0	£0	£0	£0	£0	£0	£0	£0	£989	£764	-£890	£0	£0	£0	£0	£1,066	£0	£276	£0	£0	£597	£0	£0	£3,180			
Dec. 1931	£0	£0	£0	£223	£0	£0	£0	£0	£0	£0	£0	£0	£496	£411	£50	£0	£0	£0	£0	£812	£0	£547	£0	£0	£454	£0	£0	£2,993	£24,167	£203,216	88.11%
Jan. 1932	£0	£0	£0	-£41	£0	£0	£0	£0	£0	£0	£0	£0	£1,325	£167	£248	£0	£0	£0	£0	£581	£0	£612	£0	£0	£596	£0	£0	£3,488			
Feb. 1932	£0	£0	£0	£71	£0	£0	£0	£0	£0	£0	£0	£0	£1,603	£756	£452	£0	£0	£0	£0	£305	£0	£394	£0	£0	£477	£0	£0	£4,058			
Mar. 1932	£0	£0	£0	£77	£0	£0	£0	£0	£0	£0	£0	£0	£1,805	£318	£607	£0	£0	£0	£0	£366	£0	£761	£0	£0	£397	£0	£0	£4,331			
Apr. 1932	£0	£0	£0	£171	£0	£0	£0	£0	£0	£0	£0	£285	£1,440	£760	£744	£0	£0	£0	£0	£388	£0	£1,289	£0	£0	£588	£0	£0	£5,665			
May. 1932	£0	£0	£0	-£1,278	£0	£0	£0	£0	£0	£0	£0	-£329	£1,077	£704	£582	£0	£0	£0	£0	£146	£0	£1,144	£0	£0	£435	£0	£0	£2,481			
Jun. 1932	£0	£0	£0	-£104	£0	£0	£0	£0	£0	£0	£0	-£109	£278	£1,220	£380	£0	£0	£0	£0	£31	£0	£47	£0	£0	£559	£0	£0	£2,302			
Jul. 1932	£0	£0	£0	£6	£0	£0	£0	£0	£0	£0	£0	£114	£240	£183	£219	£0	£0	£0	£0	-£528	£0	£223	£0	£0	£452	£0	£0	£909			
Aug. 1932	£0	£0	£0	£96	£0	£0	£0	£0	£0	£0	£0	£276	£830	-£231	£754	£0	£0	£0	£0	-£98	£0	£608	£0	£0	£372	£0	£0	£2,607			
Sep. 1932	£0	£0	£0	-£201	£0	£0	£0	£0	£0	£0	£0	£779	£524	-£1,225	£239	£0	£0	£0	£0	-£43	£0	-£1,350	£0	£0	£291	£0	£0	-£986			
Oct. 1932	£0	£0	£0	£0	£0	£0	£0	£0	£292	£0	£0	-£170	£880	£509	£750	£0	£0	£0	£0	£414	£0	£686	£0	£0	£669	£0	£0	£4,030			
Nov. 1932	£0	£0	£0	£0	£0	£0	£0	£0	£268	£0	£0	-£142	£1,133	£694	-£258	£0	£0	£0	£0	£543	£0	£377	£0	£0	£584	£0	£0	£3,199			
Dec. 1932	£0	£0	£0	£0	£0	£0	£0	£0	£275	£0	£0	£455	£967	£550	-£278	£0	£0	£0	£0	£842	£0	£562	£0	£0	£531	£0	£0	£3,904	£35,988	£239,204	84.96%
Jan. 1933	£0	£0	£0	£0	£0	-£42	£0	£0	£27	£0	£0	£0	£1,668	£689	£715	£0	£0	£0	£0	£227	£0	£947	£0	£0	£490	£0	£0	£4,721			
Feb. 1933	£0	£0	£0	£0	£0	£106	£0	£0	-£63	£0	£0	£0	£1,435	£1,072	£844	-£220	£0	£0	£0	£308	£0	£990	£0	£0	£574	£0	£0	£5,046			
Mar. 1933	£0	£0	£0	£0	£0	£84	£0	£0	£0	£0	£0	£0	£853	£54	£665	-£46	£0	£0	£0	£203	£0	£150	£0	£0	£447	£0	£0	£2,410			
Apr. 1933	£0	£0	£0	£0	£0	£61	£0	£0	£0	£0	£0	£0	£965	£190	£965	£69	£0	£0	£0	£262	£0	£587	£0	£0	£607	£0	£0	£3,706			
May. 1933	£0	£0	£0	£0	£0	-£168	£0	£0	£0	£0	£0	£0	£978	£565	£885	£67	£0	£0	£0	£60	£0	£765	£0	£0	£544	£0	£0	£3,696			
Jun. 1933	£0	£0	£0	£0	£0	£37	£0	£0	£0	£0	£0	£0	£490	£333	£255	-£43	£0	£0	£0	£11	£0	£278	£0	£0	£506	£0	£0	£1,867			
Jul. 1933	£0	£0	£0	£0	£0	£96	£0	£0	£0	£0	£0	£0	£564	£1,053	£456	£18	£0	£0	£0	-£461	£0	£296	£0	£0	£420	£0	£0	£2,442			
Aug. 1933	£0	£0	£0	£0	£0	£205	£0	£0	£0	£0	£0	£0	£0	£805	£581	£52	£0	£0	£0	£474	£0	£66	£0	£0	£155	£0	£0	£2,338			
Sep. 1933	£0	£0	£0	£0	£0	-£77	£0	£0	£0	£0	£0	£0	£304	£594	£50	£241	£0	£0	£0	-£322	£0	-£500	£0	£0	-£836	£0	£0	-£546			
Oct. 1933	£0	£0	£0	£0	£0	£169	£0	£0	£0	£0	£0	£0	£977	-£882	£801	£408	£0	£0	£0	£660	£0	-£460	£0	£0	-£135	£0	£0	£1,538			
Nov. 1933	£0	£0	£0	£0	£0	£208	£0	£0	£0	£0	£0	£473	£1,068	£540	-£863	£280	£0	£0	£0	£635	£0	£362	£0	£0	£0	£0	£0	£2,703			
Dec. 1933	£0	£0	£0	£0	£0	£53	£0	£0	£0	£0	£0	£524	£1,198	£819	£530	£339	£0	£0	£0	£575	£0	£648	£0	£0	£0	£0	£0	£4,686	£34,607	£273,811	87.36%
Jan. 1934	£0	£0	£0	£0	£0	£143	£0	£0	£0	£0	£0	£528	£795	£780	£554	£24	£0	£0	£0	£468	£0	£579	£0	£0	£0	£0	£0	£3,871			
Feb. 1934	£0	£0	£0	£0	£0	£188	£0	£0	£0	£0	£0	£843	£1,585	£784	£612	-£198	£0	£0	£0	£379	£0	£610	£0	£0	£0	£0	£0	£4,803			
Mar. 1934	£0	£0	£0	£0	£0	£67	£0	£0	£0	£0	£0	£485	£1,446	£784	£845	£224	£0	£0	£0	£509	£0	£506	£0	£0	-£442	£0	£0	£4,424			
Apr. 1934	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0			
May. 1934	£0	£0	£0	£0	£0	-£306	£0	£0	£0	£0	£0	£586	£1,117	£1,648	£967	£210	£0	£0	£0	£101	£0	£116	£0	£0	£0	£0	£0	£4,439			
Jun. 1934	£0	£0	£0	£0	£0	£17	£0	£0	£0	£0	£0	£586	£842	£1,447	£581	£114	£0	£0	£0	£122	£0	£560	£0	£0	£0	£0	£0	£4,269			
Jul. 1934	£0	£0	£0	£0	£0	£247	£0	£0	£0	£0	£0	£503	£781	£2,426	£661	£131	£0	£0	£0	-£147	£0	£249	£0	£0	£0	£0	£0	£4,851			
Aug. 1934	£0	£0	£0	£0	£0	£27	£0	£0	£0	£0	£0	£480	£917	£1,432	£716	£329	£0	£0	£0	-£1,135	£0	£202	£0	£0	£0	£0	£0	£2,968			
Sep. 1934	£0	£0	£0	£0	£0	-£105	£0	£0	£0	£0	£0	£386	£1,132	£1,322	£648	£336	£0	£0	£0	£150	£0	-£816	£0	£0	£0	£0	£0	£3,053			
Oct. 1934	£0	£0	£0	£0	£0	£173	£0	£0	£0	£0	£0	£398	-£395	£1,159	£1,044	£344	£0	£0	£0	£539	£0	£15	£0	£0	£1,398	£0	£0	£4,675			
Nov. 1934	£0	£0	£0	£0	£0	£83	£0	£0	£0	£0	£0	£225	£924	-£4,514	-£1,506	£489	£0	£0	£0	£807	£0	£317	£0	£0	£274	£0	£0	-£2,901			
Dec. 1934	£0	£0	£0	£0	£0	£132	£0	£0	£0	£0	£0	£523	£1,588	£1,132	£637	£554	£0	£0	£0	£739	£0	£534	£0	£0	£0	£0	£0	£5,839	£40,291	£314,102	87.17%
Jan. 1935	£0	£0	£0	£0	£0	£99	£0	£0	£0	£0	£0	£474	£1,297	£830	£1,225	£248	£0	£0	£0	£345	£0	£947	£0	£0	£0	£0	£0	£5,465			
Feb. 1935	£0	£0	£0	£0	£0	-£90	£0	£0	£0	£0	£0	£485	£2,001	£1,473	£932	-£290	£0	£0	£0	£615	£0	£1,010	£0	£0	-£648	£0	£0	£5,488			
Mar. 1935	£0	£0	£0	£0	£0	-£19	£0	£0	£0	£0	£0	£149	£847	£968	-£458	£46	£0	£0	£0	£435	£0	£1,013	£0	£0	£1,284	£0	£0	£4,265			
Apr. 1935	£0	£0	£0	£0	£0	£225	£0	£0	£0	£0	£0	£643	£1,137	£1,981	£399	£168	£0	£0	£0	£183	£0	£566	£0	£0	£618	£0	£0	£5,920			
May. 1935	£0	£0	£0	£0	£0	£131	£0	£0	£0	£0	£0	£532	£861	£207	£597	£86	£0	£0	£0	£323	£0	£670	£0	£0	£580	£0	£0	£3,987			
Jun. 1935	£0	£0	£0	£0	£0	-£130	£0	£0	£0	£0	£0	£466	£223	£950	-£333	-£30	£0	£0	£0	-£414	£0	£348	£0	£0	£943	£0	£0	£2,023			
Jul. 1935	£0	£0	£0	£0	£0	£9	£0	£0	£0	£0	£0	£498	£627	-£902	£181	£63	£0	£0	£0	-£484	£0	£301	£0	£0	£885	£0	£0	£1,178			
Aug. 1935	£0	£0	£0	£0	£0	£117	£0	£0	£0	£0	£0	£421	£787	£463	£79	£123	£0	£0	£0	£231	£0	£774	£0	£0	£1,258	£0	£0	£4,253			
Sep. 1935	£0	£0	£0	£0	£0	-£7	£0	£0	£0	£0	£0	£153	£916	£1,016	£625	£176	£0	£0	£0	£385	£0	£1,007	£0	£0	£601	£0	£0	£4,872			
Oct. 1935	£0	£0	£0	£0	£0	£143	£0	£0	£0	£0	£0	£366	£722	£1,226	£137	£357	£0	£0	£0	£790	£0	£1,001	£0	£0	£1,349	£0	£0	£6,091			
Nov. 1935	£0	£0	£0	£0	£0	£84	£0	£0	£0	£0	£0	£437	£646	£1,430	£141	£453	£0	£0	£0	£965	£0	£218	£0	£0	£1,073	£0	£0	£5,447			
Dec. 1935	£0	£0	£0	£0	£0	-£16	£0	£0	£0	£0	£0	£295	£1,275	£413	£223	£325	£0	£0	£0	£803	£0	£742	£0	£0	£1,907	£0	£0	£5,967	£54,956	£369,058	85.11%

Appendix Six: Comparative Balance Sheets

W. HOLYMAN & SONS LTD

Balance Sheet

TO		
CAPITAL	£16000. 0. 0	
HOLYMANS LIMITED	644. 2. 2	
KING ISLAND STEAMERS LIMITED	1618. 4. 5	
BRANCHES & AGENCIES	8235. 7.11	
SUNDRY CREDITORS	6338.11. 8	
PROFIT & LOSS ACCOUNT	5410. 0. 9	
BY		
SHIPS PROPERTY		£16231. 0. 0
STANLEY PROPERTY		350. 0. 0
LAUNCESTON "		1612.17. 0
WHARF PLANT		23. 0. 0
OFFICE FURNITURE		95. 8. 6
INVESTMENTS		
Shipping & Trading Agcy 300		
Interstate S.S.O.Insce 30		330. 0. 0
STOCK, STATIONERY		8. 1. 2
UNION BANK OF AUSTRALIA		3871.16. 0
INSURANCE (Unexpired Prems)		1686. 3. 9
CASH ON HAND		905. 7. 6
BRANCHES & AGENCIES		11371.15. 3
SUNDRY DEBTORS		1760.17. 9
	£38246. 6.11	£38246. 6.11

LAUNCESTON,

MARCH.31st.1920.

HOLYMANS' LIMITED

Balance Sheet

TO

Oct.1st. CAPITAL	£6504. 0. 0	
PROFIT & LOSS ACCOUNT	8015. 2. 2	
BY		
PROPERTY		
Ships	12772	
King Island Freehold	163	£12935. 0. 0
INVESTMENTS		
Interstate S.S.O Assn		40. 0. 0
Shipping & Trading Agency		900. 0. 0
W.HOLYMAN & SONS LTD		644. 2. 2
	£14,519.2.2	£14,519. 2. 2

LAUNCESTON,

MARCH.31st.1920

W. H. HOLYMAN & SONS PROPRIETARY LTD.,

BALANCE SHEET

LIABILITIES							
	CAPITAL				£16000	0	0
	PROFIT & LOSS APPROPRIATION				29133	4	10
	HOLYMANS PTY. LTD.,				~~4290~~	0	11
	SUNDRY CREDITORS				594	18	0
	BRANCHES & AGENCIES				227	13	9
ASSETS	PROPERTY						
	Ship	£25398	0	0			
	Launceston	1232	0	0			
	Devonport	1291	0	0			
	Stanley	251	0	0			
	Ulverstone	172	0	0			
	Frazer River	36	0	0			
					£28380	0	0
	INVESTMENTS						
	Amalgamated Wire-£ less	500	0	0			
	Shipping & Trading Agency	300	0	0			
	Interstate S.S. Owners Insce. Co	30	0	0			
	Tamar Stevedoring Co. Pty. Ltd.	25	0	0			
					855	0	0
	WHARF PLANT				245	12	8
	OFFICE FURNITURE				116	0	0
	CASH				368	6	6
	UNEXPIRED INSURANCE				2179	16	11
	STATIONERY				255	4	2
	SHIPS STORES				99	0	9
	UNION BANK OF AUSTRALIA LTD.,				5513 ~~9803~~	10	9
	SUNDRY DEBTORS				3063	5	2
	BRANCHES & AGENCIES				4880	0	7
					£50245	17	6

LAUNCESTON,

FOR HALF YEAR ENDING,

31st MARCH, 1924.

I have examined the accounts of the Company and I certify that the above Balance Sheet sets out the true position of the Company, as at 31st March, 1924, as per the books and vouchers submitted to me.

Henry A Dearman

.....AUDITOR

Licensed under the Co's Act (Tas.) 1920

LYMANS PROPRIETARY LIMITED

BALANCE SHEET

LIABILITIES						
CAPITAL	£ 6504	0	0			
PROFIT & LOSS APPROPRIATION	11310	0	11			
ASSETS						
SHIP PROPERTY				£12464	0	0
KING ISLAND PROPERTY				120	0	0
W. HOLYMAN & SONS PTY. LTD.,				4290	0	11
INVESTMENTS						
Interstate S.S. Owners Insce. Co.	£ 40	0	0			
Shipping & Trading Agency Co. Pty. Ltd	900	0	0	940	0	0
	£17814	0	11	£17814	0	11

LAUNCESTON,

FOR HALF YEAR ENDING,

31st MARCH, 1924.

I have examined the accounts of the Comapny and I certify that the above Balance Sheet sets out the true position of the Company, as at 31st March, 1924, as per the books and vouchers submitted to me.

.....AUDITOR
Licensed under the Co's Act (Tas.) 1920.

WM. HOLYMAN & SONS PTY. LTD.

Balance Sheet.

LIABILITIES:-						
CAPITAL.	150000	0	0			
Less Unissued.	25710	0	0			
				124290	0	0
PROFIT AND LOSS.				44729	9	8
SUNDRY CREDITORS.				1244	5	0
BRANCHES & AGENCIES.				541	13	4
ASSETS:-						
PROPERTY:-						
Ships.	72741	0	0			
Less depn.	2182	0	0			
				70559	0	0
Plant.	2083	6	7			
Plus	610	11	8			
	2693	18	3			
Less depn.	247	18	3			
				2446	0	0
Land & Buildings	8114	17	6			
Plus	10427	11	7			
	18542	9	1			
Less depn.	122	14	11			
				18419	14	2
						91424 14 2
INVESTMENTS.						46146 16 3
CURRENT ACCOUNT UNION BANK & CASH.						11811 3 4
BRANCHES AND AGENCIES.						7543 17 9
SUNDRY DEBTORS.						5220 13 8
LOANS.						5000 0 0
UNEXPIRED INSURANCE.						2304 11 9
STORES & STATIONERY.						1353 11 1
				£170805	8	0 £170805 8 0

In accordance with Section 122 of "The Companies Act 1920". I certify that all my requirements as Auditor have been complied with. In my opinion the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Company's affairs at the 31st MARCH 1935, according to the best of my information and the explanations given to me and as shown by the books of the Company.

LAUNCESTON.
FOR HALF YEAR ENDED
31st MARCH 1935.

.....
Chartered Accountant (Aus) AUL

Appendix Seven: Communication Infrastructure Costs

1920	Salaries	Rent	Office Depr.	Advertising	Stamps & Telegraph	Stationary	Telephone	Travelling Expenses	Wireless	TOTAL
Vessels										
Wareatea					0.0009%			0.0026%		0.0035%
Marrawah					0.0002%			0.0028%		0.0030%
Wauchope				0.3067%	0.0460%			0.0245%		0.0736%
Laranah						0.0009%		0.0041%		0.0050%
Awaroa					0.0002%	0.0002%		0.0013%		0.0018%
Total Vessels				0.0031%	0.0016%	0.0005%		0.0031%		0.0046%
Working Account										
Holyman's					0.0118%			0.0032%		0.0083%
Devonport	0.8159%	0.0669%			0.0209%	0.0293%	0.0377%	0.0042%		0.9749%
Burnie	0.9078%				0.0168%	0.0028%	0.0587%			0.9860%
Stanley	0.8235%	0.0045%			0.0362%	0.0136%	0.0633%	0.0181%		0.9593%
Melbourne					0.2628%	0.4818%	0.0949%			0.8394%
King Is.	0.6439%	0.0227%			0.0152%	0.0341%	0.0152%	0.0720%		0.8030%
Total Working	0.1263%	0.0033%			0.0127%	0.0125%	0.0088%	0.0061%		0.1698%
TOTAL	0.0380%	0.0010%		0.0000%	0.0047%	0.0039%	0.0027%	0.0040%		0.0560%

1924	Salaries	Rent	Office Depr.	Advertising	Stamps & Telegraph	Stationary	Telephone	Travelling Expenses	Wireless	TOTAL
Vessels										
Wareatea				0.0004%	0.0013%	0.0001%		0.0028%		0.0040%
Marrawah				0.0045%	0.0018%	0.0001%			0.0102%	0.0165%
Kooringa				0.0035%	0.0012%	0.0001%		0.0002%		0.0048%
Laranah					0.0002%	0.0002%				0.0004%
Awaroa				0.0033%	0.0013%	0.0001%		0.0002%		0.0049%
Total Vessels				0.0027%	0.0013%	0.0001%		0.0007%	0.0328%	0.0080%
Working Account										
Holyman's	0.5034%	0.0116%	0.0403%	0.0348%	0.0159%			0.0843%		0.5823%
Devonport	0.8395%	0.0132%			0.0158%	0.0079%	0.0579%	0.0158%		0.9500%
Burnie	0.9088%	0.0147%			0.0118%	0.0147%	0.0324%			0.9824%
Stanley	0.8608%	0.0032%			0.0095%	0.0222%	0.0538%			0.9272%
Melbourne					0.3364%	0.1495%	0.2991%			0.7944%
King Is.	0.8317%	0.0198%			0.0495%	0.0594%	0.0099%			0.9703%
Ulverstone	0.7264%	0.0048%			0.0121%	0.0242%	0.0291%			0.7966%
Total Working	0.3624%	0.0102%	0.0533%	0.0348%	0.0313%	0.0170%	0.0332%	0.0125%		0.7298%
TOTAL	0.0198%	0.0006%	0.0029%	0.0036%	0.0017%	0.0009%	0.0018%	0.0007%	0.0031%	0.0475%

1935	Salaries	Rent	Office Depr.	Advertising	Stamps & Telegraph	Stationary	Telephone	Travelling Expenses	Wireless	TOTAL
Vessels										
Wareatea				0.0050%	0.0009%	0.0001%		0.0001%		0.0060%
Marrawah				0.0047%	0.0014%	0.0001%			0.0174%	0.0236%
Tambar				0.0093%	0.0022%	0.0001%		0.0002%		0.0116%
Laranah				0.0039%	0.0004%	0.0001%		0.0001%		0.0050%
Woniora				0.0014%	0.0008%	0.0001%		0.0055%		0.0079%
Lanena					0.0004%	0.0002%				0.0006%
Narrabeen				0.0043%	0.0020%	0.0002%				0.0065%
Lutena				0.0014%	0.0006%			0.0001%		0.0022%
Erskine				0.0059%	0.0034%	0.0005%				0.0098%
Total Vessels				0.0034%	0.0011%	0.0001%		0.0005%	0.0027%	0.0081%
Management Account	0.7873%	0.0427%	0.0138%	0.0051%	0.0178%	0.0312%	0.0452%	0.0252%		0.9724%
TOTAL	0.0786%	0.0043%	0.0014%	0.0038%	0.0028%	0.0032%	0.0045%	0.0030%	0.0024%	0.1044%

Appendix Eight: Examples of Casson's diagrammatic representation of information flows

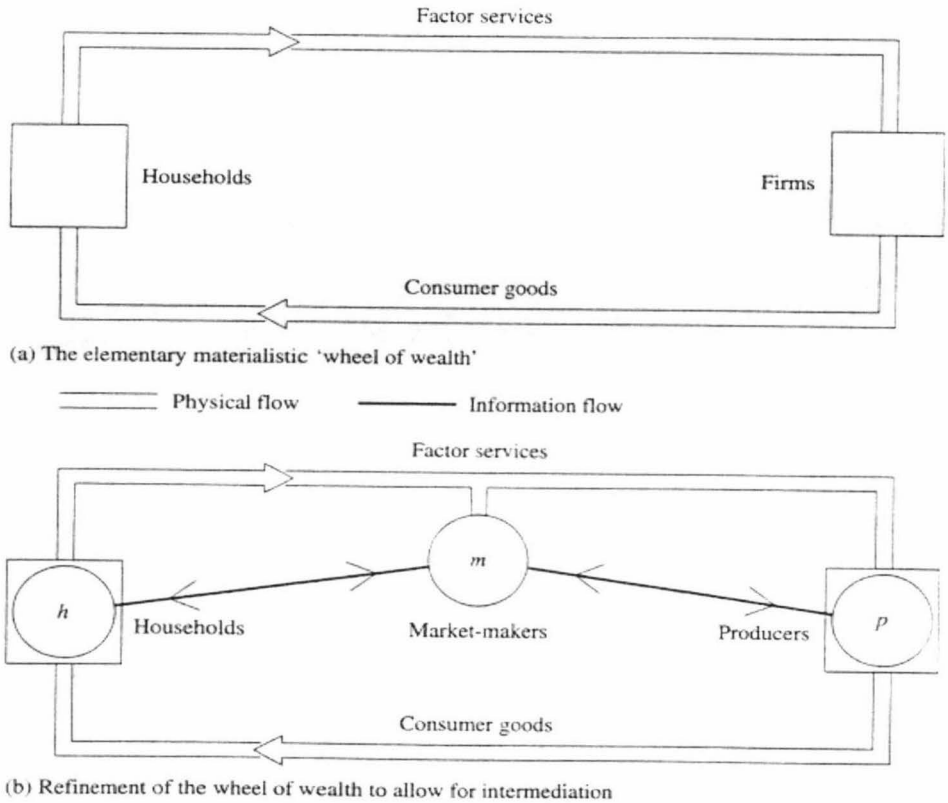

FIG. 1.1. *Re-drawing the wheel of wealth*

'A simple example of market-making is illustrated in Fig. 1.1. Part (a) illustrates the traditional 'wheel of wealth', while part (b) introduces intermediation in the product market. Material flows are identified by a double line. Units which generate or transform material flows are indicated by boxes. The purely materialistic picture of the economy at the top of the figure represents firms exclusively as transformers of physical factor inputs into physical consumer goods. Households use up these goods in consumption to generate energy for labour, or they abstain from consumption and recycle the goods in the form of capital.

The second part of the Fig. 1.1. introduces information flows. Information flows are indicated by a single line. It is these information flows which coordinate the flow of consumer products: they ensure that the mix of products generated corresponds to household preferences. Information flows take place between individual minds, and to highlight this fact individual minds are illustrated by circles, to distinguish them from the squares which represent the units that handle physical flows. Where an individual acts as both a physical consumer and as a decision-maker, or as both a manual worker and a decision-maker, they are represented as a circle inside a square.

Information flows, as shown in Fig. 1.1. are intermediated by the market-maker. The individual market-maker is indicated by *m*, to distinguish him from the individual householder, indicated by *h*, and the individual producer, indicated by *p*. It is through intermediation that the market-maker *m* coordinates decisions made by *h* and *p*. The coordination involves two-way flows of information, as indicated by the double arrows in the figure. Thus while material flows usually go in one direction only, information flow is a two-way affair.'

Casson, Mark, (1997), Information and Organization, *A New Perspective on the Theory of the Firm*, Clarendon Press, Oxford, p. 6.

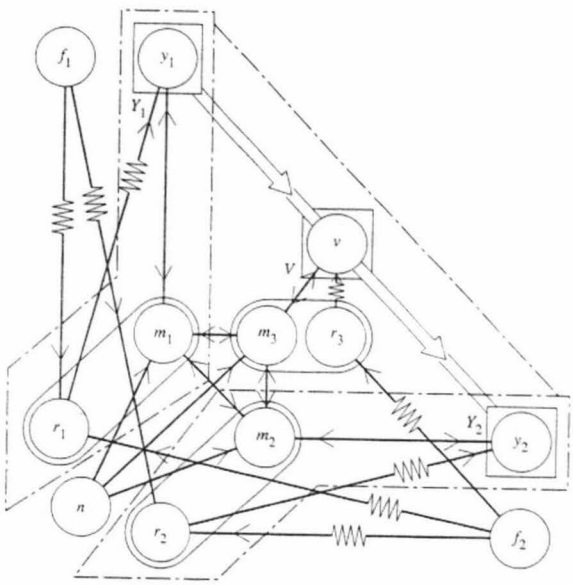

FIG. 8.3. *Role of shipping firms*

'Of particular relevance to the free-standing company is the way that the joint stock principle of finance developed in the maritime sector, both in the ownership of ships and in the financing of voyages. For example, one-sixty-fourth shares in ships were widely traded by the sixteenth century (Scott,1912). One way in which a shipping company can be factored in to the imperial system is shown in Fig. 8.3. The vessel V is controlled by the master, or captain, v, who coordinates the arrangements for the voyage with the manager of the shipping company m_3. The manager is appointed by the director of the company r_3 who controls the equity funds subscribed by the shareholders f_2. As shown, only domestic shareholders own the shipping company, although there is no reason in principle why colonial investors could not be involved as well.

The shipping company r_3 occupies a line of intermediate position on the spectrum between the free-standing direct investor r_1 and the domestic company r_2, but its asset base is not confined to domestic territories in the sense that the ship it owns can sail to foreign ports. In so far as the ship is domestically registered, however, the company technically remains a local investor like r_2. If, however, the ship were foreign-registered, in order to use cheaper labour, for example, then the company would technically become a free-standing direct investor like r_1.

Casson, Mark, (1997), Information and Organization, *A New Perspective on the Theory of the Firm*, Clarendon Press, Oxford, p. 234-235.

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Notes

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Union-Holyman Archives Box 296, 22^{2}, 1/1/05 to 31/10/12.

Union-Holyman Archives Box 299, 22^{3}, 1/11/12 to 31/12/14.

Union-Holyman Archives Box 298, 22^{5}, 1/6/16 to 31/12/18.

Union-Holyman Archives Box 299, 22^{6}, 1/1/19 to 31/12/20.

Union-Holyman Archives Box 296, 22^{7}, 1/1/21 to 31/10/21.

Union-Holyman Archives Box 298, 22^{8}, 1/11/21 to 31/12/22.

Union-Holyman Archives Box 298, 22^{11}, 1/7/24 to 31/12/24.

Union-Holyman Archives Box 296, 22^{18}, 1/8/32 to 31/7/33.

Union-Holyman Archives Box 296, 22^{19}, 1/8/33 to 31/12/34.

Union-Holyman Archives Box 299, 22^{21}, 1/12/34 to 31/10/35.

Union-Holyman Archives Box 299, 22^{22}, 1/1/35 to 30/11/35.

Union-Holyman Archives Box 299, 22^{26}, 1/3/38 to 31/5/39.

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Union-Holyman Archives Box 297, 118, 15/1/04 to 13/8/10.

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