A comparative analysis of agency approaches in two countries

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Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

Marco De Sisto

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Knowledge is like vegemite: the less you got it, the more you spread it (Unknown).

The most important aspect that I have learnt writing this thesis is the value of the network. In the last five years I have realized that a PhD (and more generally any research project) cannot be completed without the support and the encouragement of other people. In my case, these people are supervisors, friends, family members and all the interviewees that participated in my project.

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List of Acronyms

AAR: After-Action-Reviews
AFAC: Australasian Fire and Emergency Service Authorities Council
AIC: Australian Institute of Criminology
AIPC: Italian Association of Psychology and Criminology
CRC: Cooperative Research Centre
CEO: Chief Executive Officer
CFA: Country Fire Authority
CFS: Italian Forest Corp
CFVA: Forestry and Environmental Surveillance (Sardinian Forest Corp)
CIU: Criminal Investigation Unit
CCO: Communication Constitutes Organisation
CSOW: Centre for Sustainable Organisations and Work
CTIF: Centre of Fire Statistics
DNA: Deoxyribonucleic Acid
DSE: Department of Sustainability and Environment (now known as DELWP: Department of Environment, Land, Water and Planning)
EC: European Community
ECE: Economic Commission for Europe
EFFIS: European Forest Fire Information System
ESA: European Spatial Agency
EU: European Union
FAO: Food and Agriculture Organisation
FIMS: Fire Investigation Management System
FIRE 5: European Force for Rapid Intervention 5 (Force d’Intervention Rapide Europeenne 5)
IPA: International Police Association
ISO: International Organisation for Standardisation
JRC: Joint Research Centre
KM: Knowledge Management
MFB: Metropolitan Fire Brigade
NASA: National Aeronautics and Space Administration
NIA: Fire Investigative Unit (Italian Fire Brigade)
NIAB: Anti-Forest Fire Investigative Unit (Italian Forest Corp)
NIPAF: Investigative Units of Forestry and Environmental Surveillance
NSWRFS: New South Wales Rural Fire Service
OLM: Organisational Learning Mechanism
RDO: Regional Duty Officer
SFIC: State Fire Investigation Coordinator
SMEACS-Q: Situation Mission Execution Administration Command and Communications Safety Questions
SOP: Standard Operating Procedures
VAFI: Victorian Association of Fire Investigators
Vic. Pol.: Victoria Police
UN: United Nations
Abstract

It has been widely demonstrated that a strong relationship between police, fire and land management agencies can increase capacities for successful bushfire investigation. The central question therefore is how can co-operative arrangements be improved upon, given current investigation practices. The aim of this study is to identify strengths and weaknesses in knowledge sharing between bushfire investigative related agencies.

The research involves an international comparative analysis, via a case study design. Internal practices and procedures in undertaking bushfire investigation were examined in six investigative departments in Italy and Australia (Victoria). Using focus groups, face to face interviews and policy analysis, the intra and inter agency sharing knowledge was analysed. Such sharing is seen as the key factor of any organisational collaboration and indeed organisational effectiveness.

The ability of the investigators to “improvise”, based on their personal working experience, was found to be an integral, if not preferred, part of the investigator’s role. Tacit knowledge (personal initiative and creative input) is considered to be as important, if not more valuable, than explicit (formalized) knowledge (rules and protocols) by the majority of bushfire investigators. The main difference between the two countries is that in Australia, bushfire investigators are more focused towards technical and process orientated skills (knowledge and experience – analytical mind). Conversely, in Italy, bushfire investigators give equal importance to both technical and social skills (communication and social abilities). The outcomes reinforce the assumed advantages of an all agencies approach as long as knowledge and information sharing processes adequately support this development. This will result in more efficient and well-targeted bushfire prevention and suppression strategies, based on investigation.
CHAPTER 1
INTRODUCTION

1.1 Overview of the project

The incidence and impact of bushfires in Australia and globally has increased over the past several decades to the point that these blazes are impacting on approximately 350 million hectares of land a year (FAO 2010) with incalculable costs in terms of lives, nature and properties. Although some differences in terms of percentage exist between countries and states, what is startling is the knowledge that worldwide almost 90% of all bushfires can be attributed to humans, for actions that are either unintentional or malicious, while natural causes count for less than 4% (Bryant 2008; Weber 1999; Willis 2004). In this context, it is evident that all bushfires should be investigated and data collection should be consistent (Lewis 2010). Such awareness is seen as an unavoidable step not just for reconstructing the event of bushfire itself, but also for planning an appropriate bushfire protection strategy through a well-targeted policy and program development (Fritzon et al. 2014).

1.2 The Research

Fire suppression activities and plans are critical in the event of such a disaster. The core proposition of the research is that bushfire investigation is critical so that causes can be taken into account for suppression, mitigation and protection. Indeed, investigation allows causes to be addressed. Changing the focus from bushfire suppression activities to investigation (seen as one of the major prevention tool) could lead to fewer bushfire incidents and diminished impact on people and environment (De Sisto 2005).

The crucial point is that forty per cent of all bushfires attended across Australia do not have a cause assigned by the responding fire and police agencies (Bryant 2008). The situation is not so different all around the world (CTIF 2006). As stated by the Royal Commission after the
Black Saturday events of February 2009 (Victoria 2009), the extent and causes of this global dilemma are not well understood. The investigation of bushfire is a complex procedure. Any attempt to comprehend its entirety must encompass a number of sectors and disciplines, so as to comprehend the range of geographical, social, political, environmental and meteorological considerations (Webster 2008). One aspect in this process is to understand the practices and procedures involved in trying to determine why bushfires occur. These matters are dealt with through instruments of investigation and interventions against fires.

Investigation involves actions by fire officers, police officers, crime investigation personnel, forensic scientists and representatives from insurance and other emergency service organisations. Further, urban and regional planners seek to address issues of peri-urban growth and bushfire risk and emergency services examine effective response strategies and primary schools undertake fire-prevention education. The question is to what degree are these activities undertaken with mutual awareness. The degree to which this occurs can effectively prevent or undermine a comprehensive understanding of the phenomenon and the implementation of a coordinated approach to its prevention and associated responses (Dwyer & Esnouf 2008). However, despite being faced with the prospect of more frequent and increasingly destructive bushfires, no comprehensive, systemic and international examination of the investigation of the social causes of bushfires has yet been undertaken.

1.3 Research Proposition

The understanding and prediction of the complex interactions of fire management, as well as data collection and fire investigation knowledge, have been addressed by others researchers and practitioners. Nonetheless, my claim is that the investigation of bushfire causes should be developed further and, above all, that knowledge should be better shared across agencies and between states (Lewis 2010). As observed by Dwyer and Esnouf (2008), agencies cannot provide effective investigation activity in isolation, particularly in a complex system, such as a bushfire event (Northumberland Gov. 2009; Tomkins 2005). Despite this sentiment, national- and international-level collaboration-building efforts between and across sectors are limited
(Bharosa et al. 2010). There is no formal system based on a comprehensive sharing of knowledge. Furthermore, even in those cases where state-level collaboration is evident, at most, there appears to be an informal structure based on an exchanging of information and ideas, rather than a formal system constituted by knowledge exchange and sharing (Kapucu & Gorayev 2011). To be able to share knowledge, it is necessary to promote interpersonal engagement within a balanced set of institutional relations.

A further dimension in this process is co-operation and knowledge sharing. Such exchange can build strong ties among various governments and also helps to create, manage and transfer this knowledge, which is a vital component of economic and social advancement for any country (Catignani 2014). It is understandable that each area and each bushfire has its own unique story, cause and scope. Each area has its own specific problems and with arsonists who act with a scope that nowadays should be clear to the investigative organisations. However, the activity of investigation carried out by police and fire organisations is not proportional to the devastating gravity of this phenomenon, especially on an international scale.

In order to improve an integration and application of efficient forensic investigation activities by these agencies, it becomes necessary to identify and understand those connections and dynamics that occur at an inter-organisational level (Cairns et al. 2012). Particular attention should be placed on those impediments for the realization of a system based on the sharing of knowledge and information between the agencies involved in the field of bushfire investigation.

Following this, the significance of this project resides in the promotion of a shared social knowledge, which is understood to comprise knowledge of self, knowledge of others, knowledge of situations (Kunda 1999). The rationale is that, even though the investigation of the causes of bushfires is a shared responsibility in Australia between fire and police services (see chapter 4), these agencies do not always share a mutual and agreed approach.

A possible reason for these different paths and approaches may reside in the organisational vision, which in turn appears to strongly influence the level of commitment by agencies. The differing bushfire investigation cultures of fire and police agencies can be perceived either as
an inhibitor or as a strength for effective inter-organisational collaboration, with respect to thinking, approach, training and language (Mitchell 1999; Woods 2011).

To address these issues, this study adopts a symbolic-interpretative perspective within the broader framework of organisational theory. More specifically, six post bushfire investigation departments are examined: Victoria Police, Department of Sustainability and Environment (DSE)¹ and Country Fire Authority (CFA) in Australia (Victoria); Anti-Forest Fire Investigative Unit (Italian Forest Corp - NIAB), Fire Investigative Unit (Italian Fire Brigade - NIA) and Forestry and Environmental Surveillance (Sardinian Forest Corp – CFVA) in Italy. The outcome is a comparative analysis based on inter- and intra-country considerations.

The necessity to improve bushfire prevention measures seems now more urgent than ever. This awareness was largely driven by the need for agencies to foster collaboration during response to and recovery from extreme events and catastrophic disasters, such as the black Saturday bushfires (Turoff et al. 2008; Pipek et al. 2012). These measures and the consequent bushfire reduction strategy have to be based and rely on a right and efficacy of the investigation processes in relation to bushfires (Brennan 2010). The argument is that in order to achieve this goal an interagency collaboration is required. The overarching premise of the project is that by sharing best practice in bushfire prevention and investigation, both at national and international level, bushfire practitioners would be better equipped to prevent the impact of bushfires, investigate the origin and causes of such events as well as reduce fire crime within their communities, if the case.

1.4 Research Questions

Following these premises, the central questions of the present study are:

1. How do organisations deal with post-bushfire investigation?

¹ The agency is now known as Department of Environment, Land, Water and Planning (DELWP). Since at the time of data collection (2011-2012) it was known as DSE, this acronym was maintained in the thesis.
2. What are the conditions that enable or prevent effective collaboration in bushfire investigation?

3. How can organisations structure themselves to deal effectively with a post-bushfire investigation?

4. Should there be an international dimension to such investigation?

The answer to these research questions and, consequently, the aim of the project itself is to identify strengths and weaknesses of sharing of knowledge between these bushfire investigative agencies as well as to grasp their internal practices and procedures in undertaking bushfire investigation. The analysis is through the lens of the professional communication, seen as one of the most relevant facilitators of inter-organisational coordinated bushfire investigation activities (McPhee & Zaug 2009).

1.5 The Study

The focus of the study is on Australia and Italy. Australia, with its warm and dry climate, is undoubtedly one of the most fire-prone countries on Earth. Bushfires represent 48 per cent of the total Australian death and injury cost from natural hazards (AIC 2004). A worrying aspect is that the south of Australia is expected to become even hotter and drier in the coming decades (Christensen et al. 2007; Stocker et al. 2013). This could result in an increased number of bushfires. Several initiatives have been undertaken to combat the increases in bushfire. Fire service and land management agencies across Australia are now targeting localized actions to reduce bushfire impacts (Geoscience Australia 2007). Such actions include improvements in the acquisition of relevant and timely datasets; the development of research to increase the efficiency of bushfire risk analysis; and sensitizing the public to help the emergency agencies in reducing the bushfire hazards and to become bushfire safe communities (e.g. CRC Bushfire).

There are two major reasons to include a European country and particularly Italy in the study. Firstly, the most active institutions at an international level in the gathering of data on wildfires are the UN agencies (FAO globally and the UN/ECE for the European continent) and
the European Commission (for the 27 member countries), both based in Europe. The second reason relies on the fact that bushfire prevention and investigation is currently a major topic in Europe, to the point that recently several projects have been initiated (e.g. the European Exchange of Best Practice in Arson Prevention and Investigation project, in 2008) to develop Fire Investigation Training Modules capable of being delivered in all European countries through the sharing of activity reports as well as visits and exchanges between organisations. In this context, Italy is not just one of the most affected European countries in terms of hectares of land burnt every year (EFFIS, 2009), but it is also one of the main actors in terms of calling for international collaboration and co-operation (further details on the rationale behind the choice of Italy as a comparative country as well as the researcher expertise within the Italian context can be found in section 4.2.3).

While Victoria (Australia) and Italy may differ in many aspects regarding bushfire investigation strategy (i.e. policies, procedures and even the organisations involved), they also have common features. Indeed, both countries have to deal with the same devastating dilemma and with the same degree of alarm; have more than one organisation involved within the bushfire investigation network; and methodically recognise the need of an efficient form of professional communication (Rahim 2011; Carroll 2013). Finally, key agencies of Italy and Victoria, Australia, such as police, fire services and state emergency services, have a common organisational feature; they are *traditionally* organised emergency service bodies. As such, the main characteristic of these agencies is their military style structure, especially in terms of management and ranking (Lang 1965; Egnell *et al.* 2014; Soeter *et al.* 2010).

In working with a continuous improvisation and coping with a high degree of uncertainty the concepts of after-action-reviews, lessons-learned and knowledge management become essential for military and emergency organisational systems (Iandoli & Zollo 2008; Kahnemann *et al.* 1982). In this context, organisational learning plays an important role in the creation of a ‘culture of reliability’, which is essential in order to operate in a very dynamic and high-risk environment (Marais *et al.* 2004; Argyris & Schön 1978). All activities, such as expert meetings or management development programs, which lead to the creation, sharing and transfer of knowledge, are designated organisational learning mechanisms. These aspects are the focus of the study.
1.6 Outcomes – intra and inter-organisational sharing knowledge

The analysis opens up a set of propositions in relation to organisational theory in relation to disaster agencies. Organisational learning occurs within a frame of dialectical processes and exchange; organisations are necessarily involved in transactions with their internal and external environments, which are changing, both as a result of forces external to organisation and as a result of organisational responses to their situations (Beyerlein et al. 2004). The whole process of interaction, therefore, is strongly based on the concepts of interpersonal communication and information flow. According to Beyerlein and his colleagues:

“Researchers... have pointed out that collaboration and partnerships can be a vehicle for new organisational learning, helping firms to recognize dysfunctional routines and preventing strategic blind spots” (2004, p.49).

Yet, even if we deal with these communication obstacles through dialogue and enhanced understanding, there could still be misunderstandings and a lack of comprehensive knowledge exchange between bushfire stakeholders; the question is how agencies can work together in meaningful ways. Such learning requires common codes of communication and coordinated search procedures (Mankin & Cohen 2004), and in agreement with the Victorian Bushfires Royal Commission (Teague et al. 2010), it can be stated that there is still a strong case among all bushfire stakeholders for a common terminology, data collection and information-sharing process in order to assist the development of evidence-based prevention measures as well as to identify and share best-practice approaches.

The present investigation should be seen as a starting point in offering a better understanding and, possibly, in facilitating organisations in the process of sharing their knowledge, to become more empowered and better coordinated. From a holistic perspective, fire and police agencies can improve as follows: by studying their structural and operative barriers, in the awareness of what are the major weaknesses in their own bushfire investigation and, by maximizing communication and collaboration with other fire stakeholders and in relation to the quality of their interconnections as well as of their knowledge (De Sisto 2011). Always mindful that a key to reducing and preventing bushfire arson is through maximising co-operation and overcoming the barriers of interoperability between all fire stakeholders, the
outputs produced during this project will be made available to arson practitioners and investigators working across Australia and elsewhere.

1.7 Structure of the Thesis

The thesis comprises 10 chapters. They are as follows:

Chapter 2 gives an explanation of the incidence and impact of bushfires in Australia and globally, focusing on the extent of deliberate human involvement (approximately 90% of all causes of bushfires). This provides the rationale behind the statement that all bushfires should be investigated. Such awareness is an unavoidable step not just for reconstructing the event of bushfire itself, but also for planning an appropriate bushfire protection strategy through a well-targeted policy and program development.

Chapter 3 provides a contextualisation for the thesis. It reviews the literature on disaster emergency organisations in which the knowledge creation and organisational learning are seen as crucial concepts to organisational effectiveness. The chapter ends with the explication of the Four Flows model, developed by McPhee and Zaug (2000). This analytic framework has been employed in order to analyse the professional/formal communication dynamics within and between the main organisations involved in bushfire investigation activities.

Chapter 4 explains the research design adopted to effectively address the complex nature of organisational communication within and between fire investigative agencies. Each of the six investigative departments involved in the study is described and analysed through a symbolic-interpretive perspective within the broader framework of organisational theory. The chapter, then, provides details of the research population, the different methods adopted in gathering data along with the procedures utilized to interpret such data. Aspects related to ethical considerations are also discussed in the chapter.

Chapter 5 presents a comparative analysis of six investigative organisations across two countries – Australia (Victoria) and Italy – using documentary analysis to identify both their
similarities and differences. The analysis focuses on operational procedures and compliance requirements concerning bushfire investigation. Emphasis is placed upon those documents that set out organisational responsibilities, boundaries between organisations as well as how a ‘good’ investigation should be conducted. The significance of this first examination resides in the fact that it allows analytic questions to be generated and integrated into the analysis (Chapter 6, 7, 8, and 9). Themes generated during this first step of analysis were grouped, according to the four communication flows, and turned into interview questions of the most senior investigators, a focus group interview, and specific as well as detailed face to face interviews.

Chapter 6 focuses on the first out of the four communication flows, identified by McPhee and Zaug as ‘Membership Negotiation’ (2000). ‘Membership Negotiation’ indicates the relation between organisational members, in which the individual’s working identity is not only negotiated through their job performances, but also by being part of the organisation’s larger context (Myers 2011). Who is the bushfire investigator, what kind of skills s/he needs to own, how s/he utilizes his/her knowledge in practice and how s/he shares this knowledge with others are the questions for this stage of the analysis. Answers to these thematic questions are fundamental in order to be able to understand the general profile of what has been defined as the first type of audience of any organisation: its employees. In this context, organisational communication has a double role referring to the balance between the organisation’s expectations and constraints and the individual’s autonomy and creativity (Coupland et al. 1991). This is the reason why, in this chapter, the relationship between bushfire investigators and their organisations is analysed through the lens of a communication framework.

Chapter 7 analyses the second communication flow, ‘Organisational Self-structuring’ (McPhee & Zaug 2000). It is concerned with the way the organisation communicates to their members, but also how the organisation learns and improves in return. It is important to be aware of how manuals, internal policies, procedures and documents are communicated and divulged amongst wildfire investigators. However, it is also important to consider whether investigators’ reports and feedback are taken into account. Is this an effective process? Does a
similar chain of reports from the bottom to the top operate? Do the wildfire investigators receive feedback on their job and/or on the quality of their reports? These are the questions that this chapter attempts to answer.

Chapter 8 is the exploration of the third communication flow; ‘Activity Coordination’ (McPhee & Zaug 2000). It focuses on all those specific processes by which work activities are adjusted and work problems solved. This chapter highlights the level to which the organisation develops and encourages a knowledge-based environment and also whether such knowledge is communicated, shared and consequently used by the investigators. The chapter ends with the analysis of strengths and weaknesses of the six investigative departments involved in the study. This analysis draws attention to an organisation’s performance (Sirmon et al. 2010). The recognition of its own strengths and weaknesses, therefore, allows an organisation to build and follow strategic interventions, and ultimately to reach and implement an efficient ‘Activity Coordination’.

Chapter 9 refers to that kind of communication (the fourth flow) that establishes organisational identity and develops legitimacy (Carroll 2013). ‘Institutional Positioning’ (McPhee & Zaug 2000) considers an organisation as something that exists within a broader environment, a societal context with its own regulations. There are a number of external communication activities in which an organisation is constantly involved and that allow inter-agency co-operation. Inter-agency knowledge sharing, intra- and inter-professional updating meetings, national and international organisational relationships are aspects related to an organisation’s institutional positioning and, therefore, the core of the chapter.

Chapter 10 provides an assessment of the analysis. It draws out the understandings and implications of the study, with specific reference to the ‘four-flow communication’ model. While this model provides an effective way of addressing the core proposition, it also can be further developed and refined. A different way of focusing the model is suggested, with the investigators themselves, individually and as a social unit, at the core of analysis.
In chapter 11 the themes of the analysis are drawn together and the research questions are addressed. The chapter ends presenting the implications for future research and highlighting the potential contributions of the study both in practical and theoretical terms.
CHAPTER 2

BUSHFIRES: A GLOBAL DILEMMA IN 21ST CENTURY

2.1 About the literature review

This review reports on the body of literature specifically related to post-bushfire investigation within the context of para-military-type organisations. The review is organised into two chapters; the present chapter sets the scene for the current analysis, while Chapter 3 provides a contextualisation for the thesis.

2.1.1 Focus

The literature presented in this chapter presents the background of the entire thesis. It analyses the incidence and impact of bushfires in Australia and globally. The review specifically focuses on the extent of deliberate human involvement; which is a crucial aspect in order to prevent and reduce the number of bushfires. This analysis provides the rationale for a study of bushfire investigative departments. The review then discusses the major issues in the field of bushfire investigation with a focus on post-bushfire investigation activities. By summarizing and reporting such relevant literature, related gaps will be identified and specific research questions, that will guide the present thesis, developed. The discussion continues (in Chapter 3) on those organisations (i.e. military-type organisations) carrying out such activities and on the importance that some aspects such as knowledge creation and sharing take on emergency organisations. The review of the relevant literature ends with the explication of the analytic framework of the current study. The Four Flows Model (McPhee & Zaug 2000) is presented and compared with other relevant research in the field as well as previously adopted models.

2.1.2 Method

A review of the existing literature into post-bushfire investigation and related military-type organisations was thoroughly conducted. The search strategy aimed to find both published and unpublished studies in English and Italian language. Each search was conducted with no
date limit; as a result, searching was performed from the beginning date of each database until the present. The search strategy was conducted in the three steps described below.

1) An initial limited search was undertaken for the identification of relevant key words contained in the titles and abstracts. This first search was conducted in two databases: Web of Knowledge and EBSCO. Following the identification of keys words in titles and abstracts, an analysis of the index terms used to describe the articles was conducted.

2) A second step comprised a more extensive search across all included databases, using those keywords (terms and synonyms) identified in the first step. Some of the included databases were Business Source Complete (EBSCO), Emerald Insight (Emerald), MEDGE: Management and Environment Information (Informit), PsycINFO (ProQuest), ScienceDirect (Elsevier), and Wiley Online Library. The included databases were selected on the base of their relevance to the topic.

3) Finally, the researcher assessed the reference list of the retrieved reports and articles so to identify additional studies. References were assessed by their titles only.

2.2 Overview

Fire is a recurrent symbol in human history and has been often linked to religion, culture, art and social. The importance of fire as source of heat, light and life is evident in every historical epoch. There is no population that does not know and does not utilize fire, and that use continues to develop in proportion to the understanding of this element (Hough 1926). The history of fire seems, therefore, to accompany the existence of humanity. It is a phenomenon that contains two contradictory values: benefit and destruction. The benevolent fire, gentle and comforting on one side; destructive and punitive on the other. The problem of setting fires emerges when individuals transfer the destructive power of fire to their advantage, real or imaginary, against the interest of others (Canter 1990).

The term blaze is better understood as a destructive fire that has significant proportions and virulence that tends to spread and is not easy to extinguish (Webster 2008). This explains why blazes represent and have always represented a risk factor for human activities. Thus, through
time, methodologies have been created to prevent or control them as well as devices to combat them. With the increase of human concentration within urban areas and with the amplification of potentially dangerous activities, the risk of blazes has become a phenomenon of global interest.

Bushfire is the most common and at the same time the most devastating example of all the typologies of fire. It consists of a rapid process of decomposition, which takes place only in the presence of combustibles (that is vegetation), oxygen, and heat that determines the chain reaction of this same process. A bushfire has an initial cause, a primer, and a predisposing situation, the phenomenon, represented by aridity of the soil and by the water level within the vegetation. Furthermore, climate factors and the seasonal course of diverse parameters of meteorological nature have a strong influence in creating favourable conditions for the development and propagation of bush fires.

Whether known as bushfires, wildfires, brushfires, or forest fires, the incidence and impact of such blazes involving peri-urban communities in Australia and globally has increased over the past several decades. A number of factors, including peri-urban growth into bushland terrain and shifting global weather patterns, have exacerbated the number of bushfires and the destructive implications of these blazes (Calkin et al. 2014)

These kinds of fires have increased both in frequency and in intensity, in areas such as the Mediterranean, sub-Sahara Africa, the United States, Canada and Australia. The monitoring of bushfires is now seen as a crucial aspect of human wellbeing, of environmental protection and of the utilization of natural resources. The Food and Agriculture Organisation (FAO), working in partnership with the European Spatial Agency (ESA) and the National Aeronautics and Space Administration (NASA), uses satellites to monitor fires, creating a system of rapid alert, providing data on the location of bushfire and estimating the damage in terms of bio-mass and bio-diversity. Satellites offer better opportunities to monitor blazes, providing information in real time to the prescribed services for the management of fires.
The chapter aims to set the scene for the analysis presented. First, the incidence of bushfire worldwide will be outlined, with a consideration of consequences. Second, a review of the features to consider when examining bushfire is presented. This section is followed by a discussion of causes of bushfire, focusing on the extent of deliberate human involvement. Fourth, the place of bushfire investigation into causes is discussed. In the fifth section I identify the puzzle in securing effective investigation procedures, namely the sharing and implementation of knowledge about causes of fire. Finally, the summary lays out the focus of the study, highlighting the importance of having inter-agency collaboration so to have not just an accurate bushfire investigation, but also to contribute to an effective emergency management system.

2.3 Incidence and consequences of bushfires

The increasing incidence and destructive consequences of bushfires is not simply a matter of increased social awareness; it is rather a statistical trend, up to the point that these blazes are now affecting approximately 350 million hectares of land a year (FAO 2010).

The consequences of bushfires—both direct and indirect—range from the ecological to the economic. For example, the ecological consequences include the substantial degradation of the affected areas, including the reduction of the number of flora and fauna species, the prolonged absence of the protection of soil provided by vegetation and the reduction of soil fertility (Komarek 1974). From an economic perspective, bushfires affect the bush in every one of its multiple functions, damages that are both direct and indirect. Direct costs can be measured by the value of timber mass and so forth. The indirect costs, more difficult to estimate, are related to the so called “priceless” concepts, including hydrological defence, of environmental conservation, tourist attraction and the possibility of employment in a range of areas.

The direct and indirect costs of an extreme fire event can reach multi-billion dollar levels with impacts on the infrastructure of a community including damage and disruption of water supply, utilities and transportation systems. These fires threaten high-valued community
assets including recreational resources, cultural icons, endangered species, grazing crops, jobs, and community health and commerce, as well as lives.

Another consequence of bushfires is the completion of a feedback mechanism that exacerbates the conditions fostering bushfires. Bushfires, by their combustive nature, contribute to pollution, desertification and to the loss of bio-diversity. This combustion of living or deceased bio-mass represents on a global scale an incidence of particular importance in terms of CO₂, CO and N₂O production (Komarek 1974; Ke et al. 2012). The effects of bushfires complete a climate change feedback mechanism: the shorter and wetter winters, warmer drier summers or more large wildfires, will continue to result in greater probability of longer and bigger fire seasons. Cumulative drought effects will further stress fuel accumulation, making many areas especially vulnerable in terms of fire risk.

A range of geographical, social, political, environmental and meteorological considerations come into play when considering bushfires. Three features are presented.

1) Patterns and implications of human growth
The exponential growth of the human population, from approximately one billion in 1900 to almost seven billion today has led to major ecological changes and drastic wildlife habitat reduction (U.S. Census Bureau 2009). This unabated growth of the human population at the approximate rate of 93 million per year has caused a number of socio-economic and ecological problems in both the developed and developing nations of the world. As much a factor as population growth is the nature of the expansion of that growth into ‘wildland’ areas: the wildland/bush-urban (peri-urban) interface. It is at this interface that there has been the greatest increases in the numbers of bushfires can be found.

Of the three types of population expansion —urban, peri-urban and rural— peri-urban has become the prevailing trend in the majority of countries. However, environmental policies or interventions with a specific focus on the growing human population in the wildland/bush-urban interface are still rare. This neglect is partly because of the lack of institutions with a clear and specific remit in these areas. An example of this feature can be found in Victoria, Australia. One of the most hazardous areas in terms of both human and economic loss is
Melbourne’s urban-bush interface. These outer suburban areas can be densely populated, have high property values, and can be exposed to fires of extreme intensity burning through sizeable pockets of remnant eucalypt forest. In such locations even comparatively small fires can become disasters claiming lives and destroying homes (noted over a long time period, see Country Fire Authority 1983; Cheney 1976; Bond & Mercer 2014).

2) Psychological fascination and the human hand

If bushfires had been naturally occurring ‘accidental’ phenomenon, then appropriate response strategies might be more readily identified and agreed upon. But what is startling is the fact that nearly 90% of all bushfires can be attributed to the human hand, whether unintentional or malicious, while the numbers of those caused by natural events are relatively insignificant (Provincia di Genova 2003). Whether through the accidental actions of campers or vacationers, the economically-driven actions of farmers or timber/construction companies, or the psychologically-driven actions of pyromaniacs, the role and responsibility of the human hand is an important consideration in understanding the bushfire phenomenon. Closely associated with this is the presence and characteristics of relevant education programs, penal codes and enforcement policies (Clarke 1995).

3) Response and educational policies

With the increased incidence and awareness of bushfires, a number of policy and response initiatives have been undertaken. Perhaps the highest profile Australian one is the Victorian initiative to identify a multi-stage ‘stay-go’ model in response to the Black Saturday bushfires of 2009. Other examples of initiatives to combat the increases in bushfires can be found in various sectors: organisations such as Fire Brigades and insurance companies support coordinated education, prevention, response and legal penalty schemes. In February 2009, the Australian Workers’ Union, representing Victorian Government Forest Fire-fighters, called on the State Government to urgently improve fire prevention measures. The bushfires reduction strategy seeks to make inroads into levels of bushfire crime. To address this feature, Kolko and Kazdin (2001) argue for a social-learning model as a means of changing the social construction of bushfires.
Despite the prospect of more frequent, increasingly destructive bushfires, no comprehensive, systematic, international examination of the investigation bushfires risk has yet been undertaken. Urban and regional planners seek to address issues of peri-urban growth and bushfire risk. Emergency services examine effective response strategies and primary schools undertake fire-prevention education. Unfortunately, these are undertaken with only limited awareness of each other’s developments and assessments, a condition that can effectively prevent or undermine a comprehensive understanding of the phenomenon and the implementation of a coordinated approach to its prevention and responses.

2.4 Causes

The management of bushfires represents an extremely significant issue that has social, criminological and environmental consequences. Therefore, the need to recognise and to actively manage bushfires is an unavoidable step in planning an appropriate bushfire management strategy through policy and program development.

There has been much discussion on the causes that lead to fires, often with some degree of superficiality. For a long time this discussion has not gone beyond the attribution of fires to natural phenomena. In Australia, therefore, it was thought that lightning would be the main reason for most bushfires (Bond & Keeley 2005; Darwin 1859; Johnson et al. 1999; Bowman & Murphy 2011). In other countries, self-ignition was seen as the principal cause behind bushfires, even if it is a rather rare event (DeHaan 2002; Stauffer 2005).

The reality, however, is very different and complex and it certainly deserves further examination (Fritzon et al. 2014). It now is known that almost 90% of all bushfires as well as structural fire can be attributed to humans, for actions that are either unintentional or malicious, while natural causes have less relevance (Provincia di Genova 2003; Willis 2004; Kapardis 1983; Bryant 2008). For this reason, the data on these aspects are of priority to understand the context that has caused the illicit event, often involving psychological explanations.
Many psychologists, psychotherapists and psychiatrists have worked on these complex and varied behavioural typologies without, however, managing to reach a well-defined ‘fire setter’s syndrome’ (Canter & Almond 2007). The psychopathology of the fire setter is therefore presented in various aspects closely linked to theories and psychiatric understanding (Fritzon et al. 2014). And so from time to time we are presented with an adolescent suffering from a disorder in their emerging sexuality, a pervert assailed by primitive urges, someone seeking revenge for a wound that does not heal, or suffering from a mental illness within the realm of psychopathy (Rix 1994; Marsh 2000; Wood 2000).

In order to improve the understanding of the current incendiary behaviour, it is essential to be clear about the distinction between occasional fire and recurring fires; of which only the second is either of psychiatric or criminological interest (Canter & Almond 2007; Tyler & Gannon 2012). More narrowly, it is necessary to differentiate those fires linked to a mental instability, of interest in psychiatry, from the calculated and planned fires, of interest in criminology and jurisprudence.

Despite such a specific range of possible motivations that could lead a person to set a fire, it seems possible to group all causes of fire in two broad categories: (1) those independent from the human presence and activity; and (2) those that have to be considered dependent on the presence, the activity and, sometimes, the deliberate action of people.

2.4.1 Independent causes
Such fires can be natural, accidental or doubtful causes. Under this category, there can be included:

- Hurricanes and storms, during which might be the possibility of the fall of a lightning.
- Volcanic eruptions; when the lava comes into contact with the vegetation of the forest, it catches fire with a dramatic and devastating violence.
- Self-ignition, even if it is rather rare event. It is caused by crocks of glass that would work as a burning glass.
• Littering along the road scarps, the borders of the forest, in proximity of bridges and so on. Often these ‘dumps’ of refusals are plenty of exhausted cans of deodorants, hairspray, lacquers, or anything else that becomes a vehicular fuel gas with low ignition point. Under the hot summer sun, therefore, these containers overheat themselves to the point of causing small but significant explosions so to become dangerous hotbeds (Geoscience Australia 2012).

2.4.2 Dependent causes

Human action is undoubtedly responsible for the majority of the fires. Linked to such action, these fires can be distinguished as:

a) ‘Deliberate’, caused with the intention and the will of causing the catastrophic event.
b) ‘Unintentional’, caused either by carelessness or by the adoption of inadequate safety norms; for negligence or incompetence.

a) Deliberate: arson and voluntary causes.

Among the causes that belong to this category are:

• actions of pyromaniacs. (The pyromaniac is a person who sets objects on fire to discharge his inner anguish. Already in the 1899 Cesare Lombroso, a founder of criminology, was interested in this behaviour that today is classified in the Diagnostic and Statistical Manual of Mental Disorders as an impulse-control disorders) (American Psychiatric Association 2013; Grant & Kim 2007; Odlaug & Grant 2010);
• economic gain (such as receiving insurance) (Pillinger 2013);
• revenges and resentment against private or public administrations (as a political act) (AIC 2006);
• protest against protected areas, national parks, regional parks, reservations, etc. (Kidd 1996);
• to hide a different crime (White 1996; Wood 2000).

b) Negligent or accidental causes.
These may include:

- careless actions, such as matches or cigarette stubs thrown on the ground by vacationers or campers;
- fires lit by hunters;
- fires lit following inadequate cleaning up of the edges road and consequent damages to the vegetation along the roads;
- fires lit by farmers and people working the land (Victorian Department of Sustainability and Environment 2011).

Many of those people who cause fires do so for specific and well planned reasons; this is the case with arson, which represents nearly 60% of all causes for fires (Italian Fire Brigade 2007). Fires, then, can be set for economic gain, to hide a crime, for revenge, as a political act, or simply to attract attention (Doley 2003). It is precisely from this perspective that the Crime Classification Manual subdivides arson on the basis of the motivation for the act of crime (Douglas et al. 1997):

a) arson motivated by vandalism;
b) arson motivated by excitement;
c) arson motivated by revenge;
d) arson in order to cover up another crime;
e) arson motivated by profit;
f) serial arson.

Arson motivated by vandalism (a) tends to be perpetrated by youth often from a low socio-economic class (Vreeland & Waller 1978; Day 2001). These young people usually live with their parents within a mile of the crime scene. Drug and alcohol use is not generally associated with this type of behaviour. The targets of their crime include setting fire to residential areas, school structures and vegetation. In younger subjects this type of motivation could be seen as driven by curiosity or, in other circumstances, by anger (Grant 2008). In time, playing with fire
becomes a deliberate choice of using fire in an attempt to attract attention to personal needs that have been neglected, or not met, by negative and destructive family environments.

When arson is motivated by *excitement* (b) it is probably a young single unemployed man, or an adult male form a middle socio-economic class still living with his parents. It is someone who has already been in contact with the police. These people tend to reoffend and the older subjects probably use alcohol and/or drugs (Wood 1995; Williams 2002).

The fire setter who acts for *revenge* (c) probably knows the victim and could have had prior convictions for theft, robbery and vandalism. This person has no stable and lasting relationships, and often uses alcohol while setting the fire. Usually such perpetrators target something meaningful to the victim such as the victim’s car or their bed. If the act of revenge is aimed at society then a public building, like a library, could be the target (Rider et al. 1985; Day 2001; Fritzon 2001).

The profile of the fire setter is not so clear when the act is motivated by an attempt to *cover up another crime* (d). If the fire has been set in order to conceal evidence of homicide some considerations lead to assumptions that these fire setters are more likely to be young, live in the suburbs, have a criminal record, and have used alcohol and/or drugs (DeHaan 1991).

*Arsonists motivated by profit* (e) set fires in order to receive, for example, an insurance claim on property. Two subjects are involved in this type of crime: the business man whose property has been set on fire and the ‘delinquent’ who has been engaged to carry out the setting on fire. Of the two, however, only the first one has calculated and planned everything, like the real estate value which will have to be replaced, financial difficulties, or recent changes of insurance companies (Pillinger 2013).

The motivation of fire setters defined “*serial arsonists*” (f) are of particular notice. Indeed, their actions are afforded the same degree of criminological importance as serial killers (American Psychiatric Association 2013). The simple and spasmodic passion for fire is what characterizes the pyromaniac (and this is why these days they are such a rare reality). There is
no gain other than excitement of watching the show, and related consequences, of something that burns. Such pleasure is linked to a strong emotional discomfort with profound frustration and repressed aggression (American Psychiatric Association 2013). Pyromania is also almost invariably associated with serious sexual problems. The act of setting fires transfers to the external environment a psychological condition of strong passions lived internally (Nasello 2009).

Little attention has been paid to the motives of bushfire arsonists, especially in Australia where this phenomenon seems to be accruing every year. In particular, Willis (2004) has studied the incidence and motivations of deliberately lit bushfires in arson, identifying five major types with a range of sub-types.

1) Bushfires lit to create excitement or relieve boredom:
   - vandalism – by individuals or groups (Sakheim & Osborn 1994);
   - stimulation – the author is interested in doing something ‘really’ extraordinary and excitement, such as setting a fire (Nasello 2009);
   - activity – as the word itself suggests, it represents an attempt to generate activity and relieve the boredom (Porth 2000; MacKay et al. 2012).

2) Bushfires lit for recognition and attention:
   - heroism – through reporting the fire and helping the fire services during the suppressions activity, it is possible for the arsonist to become an ‘hero’ (Stambaugh & Styron 2003);
   - pleading – it is defined and thought of as a ‘cry for help’ (Fineman 1995; Koike & Kazdin 1991).

3) Bushfires lit for a specific purpose or gain:
   - anger – intended as a form of revenge or protest (Moore et al. 1996; Koike & Kazdin 1989a);
   - pragmatic – practical activity that may lead to an uncontrolled bushfire, such as land clearing;
   - material – seeking financial gain (Aldrich 2011);
• altruistic – the aim is to facilitate others. For instances, fires to gain funding for small rural fire services (Aldrich 2011).

4) Bushfires lit without motive:
• psychiatric – psychological or psychiatric impulses derived from mental disabilities (Rice & Harris 1991; Fineman 1995);
• children – simply driven by curiosity, as a private form of experimentation (Porth 2000; Kolko & Kazdin 1991; Vreeland&Waller1980).

5) Bushfires lit with mixed motives:
• multiple – different reasons at the same time (Laxenaire & kuntzburger 2001).

In conclusion, it can be said that fire-setting acts are very different in terms of function, modality and significance. What they have in common is the symbolism of fire (Laxenaire & kuntzburger 2001). In this light, the right collection and preservation of data is an essential step in order to prevent arson and to facilitate policy and program development. There is a lack of reliable data of the origin and cause of a fire (Drabsch 2003), an impediment to the fire investigation process.

2.5 Bushfire investigation

In modern urban society our fire regimes, demand that no one should cause fires, unless it is done for precautionary or ecological reasons, for example, the use of fire by Aboriginal peoples to shape the tropical landscapes or the practice of precautionary burning adopted by agencies (Whitehead et al. 2003). As our use of fire becomes more varied and widespread, so are the risks and hazards. The avoidance of uncontrolled fire, therefore, represents a milestone for all industrialized societies (Canter 1980). According to the International Organisation for Standardisation (2002), the term ‘risk’ indicates the combination of the probability of an event and its consequences (ISO 2002). The term hazard, instead, can be defined as an aspect of a situation, which may lead to an accident. Thus, the risk is the sum
and interconnection of a number of hazards that gives rise to a risk. It is clear, then, that being prepared in bushfire risk management means to comprehend all possible hazards, especially in bushfire prone areas. For this reason guidelines have been developed to assist the various fire agencies in investigating those situations of risk.

As a natural phenomenon bushfires are an inherent part of the environment. In this sense they are unlikely to be prevented along with other environmental hazards such as cyclones and earthquakes (Ellis et al. 2004). Nowadays, however, most bushfires are the direct result of human activity, intentionally or accidentally (Willis 2005; Doley 2009; Hollowood & Woods 2010). The presence of this human element, lacking in the other environmental hazards, creates the premises that we are able to reduce bushfire risks.

The forensic investigation of bushfire and, more broadly, of any type of fire is a particularly demanding area of expertise in which managing uncertainty is the key (Biedermann et al. 2004). The attribution of the causes of bushfire and, more specifically, the motivations of any individuals involved is a key factor. It is clear that well prepared individuals or organisations tend to create the conditions that make a malicious event appear unintentional or accidental. It is only with a methodical and lengthy investigation that also operates as an ‘autopsy’ of the territory is it possible to recognize the circumstances that caused the illicit event (Clarke 1995). It becomes evident that all bushfires should be investigated to some degree and data collection should be consistent (Lewis 2009). With these premises, the investigation of the origin and cause of a bushfire results a very demanding area of expertise where investigators need to work with incomplete evidence, in totally damaged and dangerous places (NFPA 921 2001) and facing a range of possible explanations (Kahnemann et al. 1982). Given this scenario, the bushfire investigator must conduct a precise and accurate investigation.

Once again, understanding the motives and the specific circumstances behind bushfires can be seen as the basis for an efficacy bushfire reduction strategy. Indeed, The strong evidence base along with the accurate collection of data would allow fire services, land managers, police services and correctional agencies to improve risk prevention, educational programs and the appropriate response to offenders who are caught (Doley 2009; Drabsch 2003; Fritzon et al. 2014).
2.6 Inter-Agency Collaboration

Bushfire is becoming a complex and a world-wide issue with significant environmental, economic and social impacts as a consequence, especially in the Australian context. To help deal with this growing problem, collaborative practices across different agencies (and sometimes different countries) need to be achieved if effective outcomes are going to occur in the area of bushfire services (Kamensky et al. 2004). Although a novelty for many leaders, managers, and decision-makers, the idea of interagency collaboration has been the natural result of several innovations and developments in spheres that have made this concept achievable (Kapucu & Garayev 2011).

Interestingly, in 2005, an advisory committee to the Dutch Ministry of Internal Affairs stated that enabled interagency collaboration between autonomous agencies is the key factor when it comes to disaster management response (Bharosa et al. 2010). This approach could be adapted in the Australian context, despite the dynamic and constantly changing nature of the environment.

Emergency management is a supportive process that requires the active and coordinated participation of different kinds of agents, including government agencies, communities, volunteers and residents (Berlin & Calstrom 2008; Carver & Turoff 2007; Waugh & Streib 2006). This activity can be analysed in the phases of preparedness, response, recovery and mitigation (Howes et al. 2012). Such agencies are intended to operate as peers and are organized to have similar functions and competencies. However, in many situations these peer agencies are not organised under any single oversight authority and they may have no hierarchical dependencies (Kapucu, 2006; Bharosa et al. 2010). Accordingly, each agency can decide whether and how to cooperate (Ley et al. 2012).

Different sectors and fields have already been exposed to this phenomenon and the importance of them collaborating (Hills 2004; Raiffa et al. 2002; Turoff et al. 2008). The rise of the frequency and scope of natural and human-made disasters during recent decades in Australia have made it abundantly clear that traditional emergency crisis and disaster management tools, especially in the areas of bushfires, have proved to be at best partially effective (McMaster & Baber 2012). This is why interagency collaboration has become an
inevitable and indispensable tool to deal with complex extreme events over recent years (Waugh & Streib 2006).

2.7 Terms and concepts

Terms such as coordination, collaboration or co-operation are often used interchangeably. However, these differ in practice. Such differences are also well explained in the literature (Linden 2003). There are different levels of joint action or strategies for working together (Himmelman 2002). Generally, these have been grouped as follow: (1) Networking-Interaction, that is the exchange of information; (2) Coordination, representing exchange of information and link existing activities for mutual benefit; (3) Co-operation, intended as the sharing of resources for mutual benefit and to create something new; and (4) Collaboration, that is working jointly to accomplish shared vision and mission, using joint resources.

A network is built on trust; networks are largely designated as inter-organisational collaborative relationships (partnerships) (Perri et al. 2007). In this sense, successful network cultures exist only when competitors are turned into collaborators (Wagner & Leydesdorff 2005). This is the reason why networks can only thrive when there is a clear recognition of complementarity and a willingness by all parties to take advantage of it (Holland 1995; Minai et al. 2010). Complementarity means “the degree to which collaboration features, including structures, systems, processes, and/or member characteristic, are thought to complement, match, or ‘fit’ one another, key external stakeholders, and environments” (Beyerlein et al. 2004, p.55). Thus, this is a critical concept for the analysis.

Nonetheless, a number of conceptual distinctions should be considered:

1) ‘Interaction’ is understood as an inherent aspect of a joint activity based on a social communication (Fiedler 2007). For this reason, it has been described as a sequence of exchange between two or more systems (Kahn et al. 2003). The exchange of information is then essential to obtain interactions. This concept refers to “the information held by the
source is encoded into a message, which is transmitted (transferred) to and decoded by the receiver so that the original information is recovered” (Fiedler 2007, p.28). Thus, the exchange of information refers to all those conversation in which “speakers will not say more than what it is necessary for the purpose of the exchange and will say all that is necessary to convey the information required. They generally expect that what their interlocutor says is relevant to the topic at hand” (Kramsch 1998, p.31).

2) ‘Coordination’ is a mechanism (or mechanisms) of identification of the responsibilities of the partnership, which is required to ensure that skills and resources are utilized appropriately. “We may label coordination based on pre-established schedules coordination by plan, and coordination that involves transmission of new information coordination by feedback. The more stable and predictable the situation, the greater the reliance on coordination plan; the more variable and unpredictable the situation, the greater the reliance on coordination by feedback” (March & Simon 1958, p.182).

3) ‘Inter-agency Co-operation’ “is a function of developing complementary goal structures and complementary role expectations among organisations. Comprehensive planning will require that agencies obtain clear understandings of their own goals and primary tasks and that these understandings be shared by the entire inter-organisational field” (Baker & O’Brien 1971, p.130).

4) “Collaboration” means that “all collaborations, complex or otherwise, have the same foundation: people, the relationships among them, and the interpersonal processes that enable the people to work together”. It is claimed that “a successful collaboration is when there is a situation that involves no barriers to overcome and where the collaborative process can flow unobstructed” (Mankin et al. 2004, p.3).

Collaboration is complex. “Collaboration involves inter-institutional work, which joins strengths not found in a single organisation, and international work with its border-crossing cultural complexity. These are some factors that stimulate interest in collaboration in contemporary society; they range from interpersonal to interdisciplinary to multidisciplinary to inter-institutional to international” (Poggenpohl & Sato 2009, p.23). Here, interdisciplinary “refers to
activities that fall between two disciplines” (Rogers 1994, p.404), whereas multidisciplinary “refers to the activities in which several disciplines share perspectives” (Rogers 1994, p.404). Under this view, collaboration is only a tool, and like any tool, it works well only when applied to an appropriate task (Linden 2002). Linden defines collaboration as a "process by which groups come together, establishing a formal commitment to work together to achieve common goals and objectives” (2002). In other words, collaboration is the result of a shared labour, a shared purpose or goal, and joint ownership of the work, risks, results, and rewards.

Moreover, complex collaboration refers to knowledge-intensive business processes that require highly interactive communication, coordination, negotiation, research and/or development (Mankin et al. 2004). In this context, a ‘Collaboration Entity’ (Fitzgerald 2004) can be defined as a social action system whose members “exchange information, alter their activities, share resources and enhance each other’s capacity for mutual benefit and a common purpose by sharing risks, responsibilities, and rewards” (Himmelman 1996, p.22).

The chart in Figure 2.1 provides a graphic representation of the process and the levels the agencies should go through in order to achieve complex collaborations and become Collaboration Entities.
As noted, there is another important concept that underpins and embraces deeper level of inter- and intra-agency collaboration. Knowledge sharing encourages trust and helps to build a shared team culture, to establish team rules and roles, and to accomplish goals. Indeed, to be able to share knowledge the indispensable condition is the creation of a deep interpersonal engagement.
2.8 Issues in bushfire investigation

There are three main issues to consider.

1) A clear typology of cause is not evident.

Conscious of the fact that bushfires can move across different landscapes at varying rates of spread under varying conditions, there are many factors to consider in quantifying its risks that, clearly, need to be analysed by different typologies of fire and police agencies and from different perspectives. Indeed, the challenge of greater fire, larger fires, and longer fire seasons occurring irregularly within and across regions – asymmetric fire – will surely demand greater flexibility and agile capabilities within fire management (Tremblay & Craig 1995).

2) Different agencies are involved in analysis of cause using different methodologies.

In order to improve efficacy and efficiency in understanding and predicting the complex interactions of fire behaviour, data collection should be shared across agencies and state boundaries. This approach constitutes the basis for an integrated investigative and strategic response program. The root of this assumption is the fact that agencies cannot provide effective investigation activity in isolation, as correctly affirmed also by Dwyer and Esnouf (2008), particularly in a complex system, such as bushfire. The best way to guarantee a safe and secure environment for all is represented by sharing knowledge and forming collaboration between all of stakeholders in this field, both national and international.

The same necessity also has been confirmed and underlined by several organisations and researchers both in Australia and globally. Just to offer some examples, in 2005, Tomkins clearly showed the desire for co-operation between different policing institutions (Tomkins 2005). Only one year later, an innovative project was delivered in the UK with the purpose of sharing “Best Practice in Arson Prevention and Investigation” by creating a European network and developing Fire Investigation Training Modules, which could be utilised by all European countries (www.northumberland.gov.uk).
3) Attempts of co-operation appear limited.

Unfortunately, it is still difficult to find evidence of national- and international-level collaboration-building efforts between and across sectors. The strong commitment of both Bushfire CRC and AFAC on adopting a holistic and multidisciplinary approach of bushfire management across Australia is well known. The CEO of Bushfire CRC himself, O’Loughlin, claimed that “the relationship is a core part of the Bushfire CRC research process” (O’Loughlin 2006, p.43). In this respect, the organisation has also been making international connections, especially with Europe and United States. Furthermore, even in those cases where state-level collaborations are evident, there is, at maximum, an informal structure based on an exchanging of information and ideas, rather than a formal system constituted by sharing knowledge.

The activity of investigation carried out by police and fire organisations is not yet proportional to the devastating gravity of this phenomenon, especially on an international scale. This is the fundamental reason why identifying and understanding inter-organisational connections and dynamics, also and above all in terms of obstacles, is an important step to improve the integration and application of efficient forensic investigation activities by fire agencies.

2.9 Puzzles and research questions

The literature selected and presented earlier in the chapter guided with the identification of gaps as well as the development of specific research questions. By reviewing the relevant literature, the themes of the analysis are drawn together and the research questions are identified. These represent the rationale behind the present research project. In research, a study starts with what Mason (2002, p.18) called “intellectual puzzles”. In order to solve and produce some kind of explanation of that puzzle or argument, the researcher actively endeavours to understand and explain a social phenomenon (Hinton et al. 2003). The present study is constructed around what Mason (2002, p.18) defines as a “comparative puzzle”. Comparative puzzles are about what we can learn from comparing x and y, and how we can explain differences and similarities between them. Comparing organisations internationally,
different cultural groups, or people with different sets of experiences are examples of comparative puzzles. For the present study, the aim is to understand the extent of the sharing of knowledge within and between the Italian and Victorian bushfire investigative agencies. The analysis sought to identify strengths and weaknesses of knowledge sharing, and compare each agency’s internal practices and procedures in undertaking bushfire investigation. To answer comparative puzzles, different methodological strategies may be involved (Mason 2002). This research utilised a case study approach.

Thinking about research in terms of puzzles and explanations helped with the formulation of a set of research questions, which in turn formed the backbone of the research design. The central questions of the present study are:

1. How do organisations deal with post bushfire investigation?
2. What are the conditions that enable or prevent effective collaboration in bushfire investigation?
3. How can they structure themselves to deal effectively with post bushfire investigation?
4. Should there be an international dimension to such investigative actions?

To address effectively the complex nature of organisational communication, which is at the core of this project, it utilized qualitative case study research that is international in its scope, cross-sector in its breadth, and multidisciplinary in its conceptualization.

2.10 Summary

Bushfire is a major and devastating phenomenon. The direct and indirect costs of a fire event can reach multi-billion dollar levels with impacts on the infrastructure and well-being of a community. Moreover, bushfires, by their combustive nature, contribute to pollution, desertification and to the loss of bio-diversity.

The causes of bushfires are known to be largely the result of human actions, either unintentional or malicious. Such awareness is also what makes this ‘global dilemma’ as
something preventable. As a result, malice, offence and serious offence become notions very specific that need to be verified by jurisdictional ascertainment.

During the last decade, this knowledge has drawn attention to bushfire investigation policy and practice in several countries. Certainly, bushfires involves an entire range of geographical, social, political, environmental and meteorological considerations. Thus any attempt to comprehend its entirety must encompass a number of sectors and disciplines as well as all their possible interactions and/or combinations. This is why the investigation of the origin and cause of a fire is a particularly demanding area of expertise. Fire investigators work with incomplete evidence, in totally damaged places and facing a range of possible causes.

At present much investigation appears to be limited and fragmented. Some analysts argue for more integrated and holistic approaches. This thesis will explore the opportunities and barriers to such knowledge sharing and development.

The current chapter, presented the relevant review of the literature regarding bushfire investigation in Australia and globally, and offered some crucial insights regarding post-bushfire investigation activities and the actual hurdles in conducting such activities to their full potential. The key agencies involved in bushfire investigation share the unique characteristic of being military-type organisations. With their reciprocal differences in cultures, norms and contexts, military organisations are ‘species of its own’ (eds Soeters et al. 2010; Ydén 2005) and differ widely from business companies (Egnell et al. 2014). A review of the way emergency organisations function, and their objectives, will provide the specific context of the thesis and will be the focus of the following Chapter. This chapter will set the basis for the analytic framework of the current study, the Four Flows Model (McPhee & Zaug 2000), which will be presented and critically evaluated in the same chapter.
CHAPTER 3
EMERGENCY AGENCIES

The previous chapter introduced the context of the present PhD research and discussed current issues with post-bushfire investigation; investigation actives appear limited and somehow disjointed. By setting the scene for the present study, Chapter 2 identified gaps and developed the specific research questions underpinning the current PhD research.

The present chapter examines the type of organisations (i.e. military-type organisations) carrying out post-bushfire investigation activities and on the importance that aspects such as knowledge creation and sharing take on emergency organisations. The review of the relevant literature presented here will lead to the identification and explication of the analytic framework of the current study. The Four Flows Model (McPhee & Zaug 2000), which represents both the guiding theoretical framework and the method of analysis, is presented and compared with other relevant research in the field as well as previously adopted models.

3.1 Organisational Theory

Over the last 30 years, increasingly it has come to be realized that organisations are, in essence, vessels which define the boundaries of sets of human activities and interactions (Tekleab et al. 2005). Organisations are mini-societies reflecting the cultural norms within which they are located (Abegglen 1958; Clegg & Dunkerley 2013). However, each organisation, even within the same culture, will differ. These variations come as a result of interaction and communication patterns derived from the formal arrangements that define an organisation and from the informal organisation that evolves to deal with the tasks facing the enterprise. Those organisations involved in bushfire investigation activities, therefore, can be examined as exemplars of particular forms of organisation.
To explore these dynamics a symbolic-interpretive perspective within the broader framework of organisational theory is deployed to analyse these organisations. From a symbolic interpretive approach, “organisations are continually constructed and reconstructed by their members’ symbolically mediated interaction” (Hatch 2012, p.15). Organisations, therefore, are socially constructed realities where meanings promote and are promoted by understanding the self and others that occurs within the organisations context.

Based on Weick’s enactment theory (Weick 1995; Weick et al. 2005), the symbolic-interpretive perspective focuses on the organisation as a community sustained by human relationships. Instead of treating organisations as objects to be measured and analysed (modernist perspective), symbolic-interpretivists treat organisations as webs of meanings that are jointly created, appreciated and communicated.

One feature of organisational activity is the inter-relationship between two or more organisations. Although the investigation of causes of bushfires is a shared responsibility between Fire and Police Services, these organisations often take different paths, even within the same national culture. In Australia for instance, it may happen that police agencies do not attend suspicious fire reports, or that fire agencies do not always advise police of suspicious fires. Some reasons for the different paths, in which a joint approach between agencies is typically compromised, may include a dissimilar organisational vision, which in turn appears to strongly influence the level of commitment of the agencies. As a result, the differing bushfire investigation cultures and practices of fire and police agencies in relation to approach, training and language can be perceived either as an inhibitor or as a strength for an effective inter-organisational collaboration. This would depend mostly on how members make meaning of their job and the role that meaning-making plays in the workplace.

3.1.1 Military-emergency organisations

An important common organisational feature of those agencies involved in the post bushfire investigation (i.e. police, fire services and state emergency services) is that they are emergency service bodies structured on a military set of arrangements, particularly in terms of management and the hierarchic ranking typical of these agencies. Given the huge variety of
forms of military organisations (i.e. armed forces, para-military bodies, emergency volunteer corps, national guard, and so on), there are several definitions of such bodies (Demchak 1991). Military organisations are examined as an “ordered totality of social institutions of military violence” (Klepikov 2004, p.191). At microsocial level, a military organisation is an “ordered totality of specialized and coordinated social roles performed within the framework of the institution of military service” (Klepikov 2004, p.191).

Of note, military organisations have been defined as a ‘species of its own’ (eds. Soeters et al. 2010; Ydén 2005). The main reason for this set of distinctions has been that while military organisations operate like other conventional organisations during the so-called “cold peacetime” (eds. Soeters et al. 2010, p.1), they also have to deal with “hot conditions” (eds. Soeters et al. 2010, p.1). Military-type organisations, and above all emergency organisations, usually operate in or have to deal with life threatening circumstances and confusing events. In such circumstances, the time to interpret and manage the unpredictable is often restricted (Kolditz & Brazil 2005). Unfortunately, “without interpretation there is no action, and this is the reason why interpretation and sense making are so important to study in the military” (eds. Soeters et al. 2010, p.10). These perspectives are drawn upon in this study.

Another feature of military and other ‘uniformed organisations’ is the specific state-conferred authority that they acquire (Egnell et al. 2014). In this sense, it has been stated that military-type organisations have a marked political vein (Feaver 2003). They are, in fact, “the executive power of politicians in the field of national and international security, safety and public order” (eds. Soeters et al. 2010, p.23). They have to deal with and respond to the impact of politics, public opinion and in particular the more recent 24/7 mass media. Furthermore, military organisations are a technology-intensive sector with a strongly public nature. They face the complex issue of an effective collaboration that utilizes advanced technologies, relies on scientific understandings, and thus promotes complex relations between the private and public spheres.

It is evident how much military-type organisations differ from business companies (Egnell et al. 2014). Military-type organisations are not subject to the supply-demand market role; their
supply is the ‘collective good’ and their existence is politically determined and so guaranteed (Clement & Smith 2009). As a result, leaders and staff of military-type organisations do not follow the traditional market and price mechanism, but rather they are focused on operations (Mol & Beeres 2005). As such, quite often military-type organisations have to cope with a lack of clarity in terms of results they have to achieve and, above all, on how to measure or analyse these results (Rietjens et al. 2011; Call 2008). In other words, “when and how do they know they are successful?” (eds. Soeters et al. 2010, p.4). In working with a continuous improvisation and coping with a high degree of uncertainty (Van Creveld 1985), the concepts of after-action-reviews, lessons-learned and knowledge management become essential (Mintzberg 2001) for the entire military/emergency organisational system.

In such a technological and multimedia era, knowing by doing is probably a less cost-efficient way of transmitting knowledge. However, as stated by Pfeffer and Sutton (2000) “the evidence and the logic seem clear: knowing by doing develops a deeper and more profound level of knowledge and virtually by definition eliminates the knowing-doing gap” (Pfeffer & Sutton 2000, p.251).

Several theorists have shown the advantage of a more practical and action orientated approach (see also Pfeffer 1998; Huselid 1998; DeRue et al. 2012). There are two main strengths to such an approach. First, it facilitates the learning mechanism, which would surely be more difficult and less efficient if not grounded in real experience. Second, and linked to the first one, it contributes to a cultural switch from a society completely focused on planning and decision making to a new one focused on action; “talk and analysis without action are unacceptable” (Pfeffer & Sutton 2000, p.251).

As an emergency military-type organisation, the concepts of doing and action review become even more crucial. Regardless the quality and efficiency of a decision making and training system, these organisations, more than others, need to understand if transmitted knowledge is then implemented as part of an organisation’s actions and operations (DeRue et al. 2012). This represents the ultimate way to evaluate how much the organisation’s policies and procedures are efficient and, above all, practicable in the emergency world (Pfeffer & Sutton 2000, p.251).
2000). This is also why a structured reflection through After-Action-Reviews (AAR) promotes experience-based leadership development.

The After-Action-Review is an organisational learning method (Walden, 2009). It is a review mechanism that analyses any potential gap between what was planned and what really happened. It therefore focuses on the process rather than on the results; on why things happen rather than on the judgment of success or failure. From an emergency organisation point of view, understanding the causes of specific outcomes or activities is essential to identify and decide what has to be done to sustain or improve how the next disaster event can be addressed (US Army Combined Arms Center 2011). This is, in other words, learning from experience.

Of note is the fact that adopting an After-Action-Review model any organisation can become a horizontal and, therefore, a learning organisation. Indeed, all employees, from the lowest to the highest rank can become involved in such organisational feedback process, forming a never-ending cycle (Garvin et al. 2008). This is why organisational learning plays such an important role in the creation of a ‘culture of reliability’, which is critical to operate in very dynamic and high risk environments (Marais et al. 2004).

All those activities that lead to the creation, sharing and transfer of knowledge are called Organisational Learning Mechanism (OLMs) and include for instance expert meetings and management development programs. In this context, the After-Action-Review is undoubtedly one of the most applied OLMs within military and emergency organisations (Stevens-Adams et al. 2010; Baird et al. 1997). If well adopted, it constitutes a specific way of operating through which managers can promote safety climates in high-risk environments (Allen et al. 2010). Partly based on reflection and feedback processes, “The core questions of an AAR are: What happened? Why did it happen? How to fix it?” (eds. Soeters et al. 2010, p.232). The knowledge obtained from the AAR is, then, utilized for checking the initial organisational strategies and priorities as well as changing them, if necessary.
3.2 Learning and learning organisations

One of the most challenging aspects for disaster emergency organisations is defining the results that have been achieved (Rietjens et al. 2011). During non-emergency time, their goal is aimed at preparation for the time of action. This process makes it difficult to judge their objectives in terms of effectiveness and achievement. According to Soeter and colleagues (2010), any organisation is the result of a cycle of activities that starts with a decision-making process and, through practical actions, ends with an assessment of the specific actions undertaken. The assumption behind these key elements is the concept of the ‘planning-and-control cycle’ (Soeter et al. 2010).

When talking about emergency organisations, following and monitoring this scheme becomes rather crucial. The six agencies involved in the current project (see Chapter 3), share an uncertain environment. This makes the learning process from their actions and experiences a crucial way to improve effectiveness. Following the external- and context- based requirements, each organisation plans its own strategy and sets out its priorities. These outcomes are then translated into practical actions through the internal coordination and command. Once the disaster event has been managed and the operational actions are no longer needed, the sense making and feedback system take centre-stage. It is only through interpretation and sense making that military-based organisations can monitor and learn from their actions (eds. Soeters et al. 2010).

According to Pedler and colleagues (2011), a “Learning Company” is an organisation that facilitates the learning of all its members and consciously transforms itself and its context. These authors adopt the term ‘company’ to capture the conviviality of working together, in contrast with the more mechanical and lifeless ‘organisation’ (Pedler et al. 1997). According to them, organisational learning occurs within a dialectical process. This means that organisations are necessarily involved in continual transaction with their internal and external environments which are constantly changing both as a result of forces external to the organisation, and as a result of organisational responses to their situations (Argyris & Schön 1978; Nonaka 1994).
The whole process of interaction, therefore, is strongly based on the concepts of interpersonal communication and information flow. Through these interactions, organisations do things such as obtain knowledge. As a consequence, if knowledge remains scattered among members of the corporation, organisational learning itself will be inhibited.

There is growing interest in making organisations into effective learning environments (Billett 2001; Eraut 2004). The leading reason for such attention is the need for organisations to respond to rapid and continuous change in the organisation’s external environment (Bryson 2011). This approach typically looks at the employees as “generators and implementers of new ideas and processes which originate from interaction of employees rather than from assigned tasks” (Høyrup et al. 2012, p.8).

The importance of continuous learning by employees has become widely recognized as crucial to organisational effectiveness (Torraco & Elwood 2002). Likewise, it also becomes important when learning comes from members learning from their peers, for instance, that an environment-based on the sharing of knowledge is fostered. As presented in Chapter 2, an improved understanding of the complex interactions of fire behaviour and data collection can only occur if knowledge is shared and collaboration occurs across agencies and state boundaries. Maximizing co-operation and overcoming the barriers to sharing between fire stakeholders may be critical for reducing and preventing bushfire.

Bushfire investigation is a complex procedure, primarily requiring co-operation between police and fire agencies. In Australia, fire agencies and police have separate and complementary roles in the investigation process. The initial decision as to whether a bushfire is investigated as arson rests with the fire-fighters who attend the fire. In most large urban centres, such decisions are made by paid fire-fighters, whereas in rural areas the decisions often rest with volunteers. Land management agencies in some relatively minor instances also conduct their own investigations and mount prosecutions. With limited resources, these agencies usually draw on support from other agencies and police in their region for serious cases of arson. The role of the fire investigator is to determine the origin and cause of the fire (including time, location and source of ignition), the path the fire took, the impact of the fire, types of materials ignited, and any factors that contributed to the spread of the fire.
3.3 Knowledge management

A strong relationship between police, fire and land management agencies, including well understood protocols of responsibility and efficient information sharing can increase capacities for the successful investigation and prosecution of bushfire arson. Whereas explicit encouragement from the agency is missing, there is still the possibility that investigators have informal opportunities to share their experience. Studies on knowledge creation and organisational learning show that the activities of knowledge sharing are strongly influenced by employees’ values (Jennex 2007; Matthews 2003). Research also suggests that an organisation’ performance depends on the degree of which its cultural values are shared (Ohana et al. 2013; Lauring & Selmer 2012). Also, organisational culture is believed to be strongly influenced by the national culture of the place in which an organisation is located (Jung et al. 2008; Lindholm 2000).

During the last few decades, knowledge management has become a central aspect for organisations (Kothari et al. 2011). Since the amount of information that agencies have to obtain, manage, and provide to the broader community is ever increasing, knowledge has become the new powerful form of capital of the 21st Century (Hicks 2002). This is particularly true for those working in the emergency sector. Hence, the creation of new types of knowledge and the translation of this knowledge, through sharing, into innovative and efficient actions are the priorities of many companies as organisations (Landoli & Zollo 2008).

As Tan stated, to be successful, a company has to be able to produce new knowledge and in a consistent manner, as well as to disseminate this knowledge particularly for its quick use into new products or services (Tan 2000). For this reason organisational knowledge is described as “the only one sure source of lasting competitive advantage” for all companies (Nonaka & Takeuchi 1995, p.22). In this context, knowledge management is considered a valuable resource not just during change processes or crisis but also in resolving day-to-day issues and conflicts (Mullins 2005). If a common rating of risks and a common list of requirements are to be achieved (Browne & Ramesh 2002), it is necessary that experts from the different disciplines involved dedicate part of their time to sharing experiences and insights to improve
the decision-making process and to develop strategies that are not only efficient but also coordinated (Schein 2010; Zack et al. 2009).

The discussion on best practices and effective knowledge sharing should include knowledge in all forms: “know-how (e.g., how to accomplish a task), know-why (e.g., the cause-effect relationships of a complex phenomenon), know-what (e.g., the results of a test), and know-who (e.g., the experiences with others)” (Eppler 2006, p.4). Two major types of knowledge were fund to encompass all the above forms of knowledge and their importance was also highlighted by Nonaka and Takeuchi (1995). These two types of knowledge are the explicit (or written) knowledge and the know-how, that is that kind of knowledge that is difficult to codify and transfer to others (Collins 2001), also referred to as ‘tacit knowledge’ (Miller et al. 2006). Since the explicit knowledge is more formal and measurable, as well as easily quantified and transferred, this kind of knowledge is often the prime object of study. Nonetheless, tacit knowledge is equally essential to the development of the organisational efficiency. In fact, it represents that knowledge acquired through practice and experience (Brohm 2006). This is the ultimate reason why both formal and informal learning systems have to be analysed in order to understand how and to what extent organisational learning may become effective (Catignani 2014).

Another way to explain the differences between the two kinds of knowledge is by looking at the specific skills involved. Tacit knowledge refers to “the translation of cognitive skill into technical skill or action of some kind” (Blackmore 2004, p.113). In other words, it is a way in which to apply the knowledge. Thus, it cannot be captured and apprehended as explicit knowledge; it must be inferred from one’s actions or statements (eds. Sternberg & Horvath 1999; Walczak 2008). Examples of tacit knowledge are creative inputs, personal experience, mental models, intuition and personal characteristics (Kothari et al. 2011; Von Krogh et al. 2000).

An organisation’s success and endurance depends on its ability to connect employees’ energy, knowledge and expertise (Bennet & Bennet 2008). There is mutual benefit to be gained from the development of skills able to fulfil the goals of the organisation as well as to meet the
individuals’ aspirations (Suhasini & Babu 2014). The question then becomes which skills should be developed in order to achieve the benefits?

Encouraging creativity, intuition, and personal initiative are of growing interest to assess the fulfilment of both individuals and organisational goals. The reason resides in the fact that tacit knowledge is likely to evolve more quickly than explicit rules and to have the potential of leaving more room for improvement and innovation (Bennet & Bennet 2008; Eraut 2000). Tacit knowledge is not as codified and structured; it is not formatted in such a rigid way. As such, it can rapidly evolve (Von Krogh et al. 2000). Also, know-how is a resource that needs to be developed by each individual independently, and so it is unique (Eraut 2004). It is dynamic, because it is linked to the evolution of each person.

At any rate, the goal of knowledge management is “to organize, codify, distribute, and maintain knowledge resources. The predominant focus of many KM [Knowledge Management] strategies is on technology and management of explicit and tacit forms of knowledge” (Kothari et al. 2011, p. 198). As such, knowledge management includes the transfer of both kinds of knowledge; the explicit and the tacit (Russell et al. 2004; Bate & Robert 2002). These characteristics are also well recognized in the context of emergency organisations (Wybo & Lonka 2002). Knowledge and experience acquired on the field by disaster practitioners can be of a tacit kind and, therefore, of a private nature. This aspect brings the focus back to the importance and fundamental role of sharing good practices and lessons, particularly those concerning the community infrastructures, in order to improve current disaster migration strategies (Pathirage 2010).

In the context of bushfire investigation, different importance could be attributed to the following of rules and protocols (explicit knowledge) or the relying on personal initiatives and creative inputs (tacit knowledge). The specific focus of the current project on the formal and work-related communication, rather than on those interactions spent on personal matters, will allow an answer the question on which of these two distinctive types of knowledge is considered to be the most important for a bushfire investigator.
3.3.1 Intra-agency knowledge sharing

Different levels of knowledge, usually grouped into the individual level, group level, and organisational level can be identified (De Long & Fahey 2000). During the last decade, particular attention has been given to that knowledge focused on individuals and people in organisations (Leidner et al. 2006). Part of the interest was then directed to the connections between the individuals belonging to that specific organisation (Brown et al. 2005). Such knowledge, shared between members of the same organisation, is referred as intra-agency knowledge (Becker et al. 2006).

The creation, sharing, and use of knowledge within a specific organisation have been the focus for many researchers due to the recognition of its role as an important resource for a company (Lauring & Selmer 2012). In particular, intra-agency knowledge sharing attracted interest on the view that the action of sharing practices and information would optimize the organisation’s goals and success (Ipe 2003). Thus sharing of knowledge is an opportunity for the development of ideas and strategies about the activity of an organisation. Nonetheless, the literature on knowledge transfer indicates a number of barriers to successful knowledge transfer (Becker & Knudsen 2006). These usually concern the organisation as a whole and may include inadequate organisational structures or unfriendly and segregating organisational cultures (Davenport 1998). In this context, causal ambiguity (Reed & DeFillippi 1990), tacitness of knowledge (Cohendet & Llerena 2009; Polanyi 1967), and lack of motivation to share knowledge with other colleagues (Schwartz 2006) can all be potential barriers and impediments. Within the bushfire investigation network, it is necessary to understand how and to what extent knowledge is shared and managed amongst members of the same organisation. Paradoxically, the reduction of the barriers that may prevent knowledge sharing is a key managerial task (Becker & Knudsen 2006).

3.3.2 Inter-agency knowledge sharing

Another form of partnership is that involving departments or sections, subsidiary organisations or entire organisations. This partnership is called inter-agency co-operation (Lindsay et al. 2008). In the context of fire investigation, inter-agency knowledge sharing offers
significant advantages such as improved and integrated services as a result of this inter-agency co-operation (Cairns et al. 2012).

As with the case of intra-agency knowledge and information sharing, participating agencies may also encounter barriers at an intra-agency level. These typically concern the differing social, economic, and political principles and values of each of the organisations involved (McCaffrey et al. 1995). These barriers should be investigated and the importance that the sharing of knowledge with colleagues from other agencies in increasing their organisation’s value should be recognized. An investigation of how knowledge is exchanged within the emergency organisations involved in the current study will be carried out.

To identify whether bushfire investigators are aware of the real meaning and importance of their investigation activity, as well as whether they understand what are the main aspects of having an effective post bushfire investigation, is key for the entire investigation process. A process that is based on a strict and well-organized chain of reports and communications should be understood and followed by all staff members. For the same reason, it is important to understand how an organisation learns from its staff. Commonly, this occurs via reports and feedback.

According to Foss and Klein (2012), to build up expertise requires: (1) feedback on decisions and actions; (2) active engagement in getting and interpreting this feedback; and (3) repetitions, which provide the opportunity to practice making decisions and receiving feedback (Foss & Klein 2012). As stated earlier, organisational learning occurs within a dialectical process that should ideally be bi-directional. This process represents what Luthans (2010) defined as the ‘knowledge of results’; the way through which members of an organisation can know how they are performing in their job. Employee engagement has become a central business issue. The assumption is that when staff members feel valued by the organisation, they are more likely to commit themselves to the department’s success (Robinson et al. 2004). A high correlation between the engagement in decision-making process and motivation as well as satisfaction for the job has also been demonstrated (Vance 2006).
3.4 Professional communication in learning organisations

In 1980s, Dutton and Thomas drew attention to conflict situations in organisations. These, they stated, can range from open hostility to complete avoidance of interaction. In between these extremes, lie expressions of distrust and disrespect, information distortions, or simply the lack of assistance or co-operation. Lack of co-operation and avoidance of interaction may be extremely difficult to observe. As a result, Dutton and Thomas (1984) traced the observable indices of conflict to specific local conditions. These included aspects such as individual differences, group characteristics resulting from differentiation, operative-level goal incompatibility, rewards and performance criteria, common resources, and communication obstacles.

Several authors, since then, have looked at those factors and the barriers to collaborations and inter-agency activity (Daft 2010; Rahim 2011). These factors vary from ideology to external environmental influences, leadership, resources or power. One central and recurring factor that is mentioned by analysts is communication (Nicotera & Dorsey 2006; Rahim 2011; Smith 2002). The argument here is that communication is a central concept to consider (Carroll 2013). Poor communication, indeed, is seen as a major factor in having a lack of understanding of business strategy and a lower productivity, which lead to a high level of employee dissatisfaction, absenteeism and turnover. These aspects are strictly linked to the organisation’s operating costs and its efficiency (Osborne 2012). This is why the ability to communicate is considered extremely valuable for maintaining successful job performance (Morreale et al. 2000) to the point that communication is seen as an essential modality for organisations since “without communication, there would be no organisation” (Ashcraft et al. 2009, p.7).

Organisations are constituted by their members. The improvement of the organisational performance and effectiveness relies on those people who make up the organisation (Robinson & Morrison 2000). So, organisations may reinforce thinking patterns and behaviours, and individuals may in their turn maintain and encourage such patterns (Mullins 2010). Of note, organisations are currently facing a significant transformation in their nature
that sees in the adoption of group or team approaches the key for their success (Mullins 2007). As a result, co-operation, participation and empowerment have become the foundations of the new organisational world. In this context, organisational communication has the double role of balancing organisation’s expectations and constrains as well as maintaining individuals’ autonomy and creativity (Herriot 2002). The achievement of this delicate balance would in turn lead to an effective communication and therefore a functional organisation. Organized actions, good management, hierarchic lines, and tasks accomplished are undoubtedly essential aspects for any kind of organisation, particularly military-type organisations (Ydèn 2005). However, without individual autonomy and inventiveness, concepts such as flexibility and ability to adapt to changes would be rather difficult to realise (Weick & Sutcliffe 2001). Effective professional communication and miscommunication become then the measurement of the quality of this balance (Coupland et al. 1991).

Communication represents the main tool through which membership is negotiated over time. Role expectations, group/organisational norms, formal and informal structure, power relationships, control and autonomy are the direct result of the current organisational membership negotiations (Scott & Myers 2010). This is the reason why monitoring and negotiating the relationship between colleagues and/or managers is essential for an efficient organisation.

3.5 Intra and inter-agency communication dynamics: a review of the literature

During emergency activities, several agencies are brought together. In this context, their actions become interdependent, their goals are shared and their labor divided according to their responsibilities and capacities. This forced cooperation requires them to communicate effectively.

However, in an emergency setting, communication can be hindered by several factors, such as: time pressure, severe resource shortage, disruption of infrastructure (electricity, telecommunication or transportation), infrastructure interdependency, multi-authority involvement, extensive personal commitment, conflict of interest between organisations etc.
If, despite these obstacles, information is available, it undergoes a series of processes including but not limited to collection, selection, elaboration, enrichment, validation and distribution. Bearing in mind that in a non-disaster setting every agency has a different role in society, it is easy to understand that the processing of the available information is highly subjective and depends on the individual or the organisation that performs it.

A key focus of the current research is knowledge sharing within and between bushfire investigative related agencies. The rationale behind the study is that agencies are unlikely to provide effective investigation activity in isolation (Dwyer & Esnouf 2008). In this context, intra and inter-organisational communication is crucial to develop an integrated all agency approach. To look at both inter- and intra-organisational communication a comprehensive and yet simple framework was needed. In this section, some of the most relevant theoretical models within this field are described. These models have been selected from the literature given their focus on inter-agency communication dynamics.

3.5.1 Inter-organisational communication and coordination in emergencies - Kapucu model

As communication between the different parties is considered paramount in the context of emergency management, knowledge and information sharing have attracted research interest. In particular, inter-agency communication and coordination has received much attention since the World Trade Center attacks of September 11, 2001. In a study published in 2006, Kapucu analysed the relationships that emerged between organisations, during and after these attacks, highlighting the obstacles that the emergency agencies and local communities had to face. The “Interorganisational Communication and Coordination in Emergencies” scheme that emerges from Kapucu’s study is illustrated in Figure 3.1.
Emergency events are associated with high-risk conditions and often with partial or total loss of infrastructure that reconfigure pre-existing relationships and networks within and between the emergency actors. The framework states that normal, day-to-day relationships are disrupted by three main factors:

- Firstly, the sudden increase of intra- and inter-agency communication. During a disaster, interaction between members across hierarchical levels increases. As compared to normal conditions where the exchange of information follows mainly a managerial to employee or a peer-to-peer direction, emergency communication tends to flatten the hierarchies and promote communication from the lower levels towards the higher ones.

- Secondly, usual networks are decentralised, which is crucial to avoid delays and interruptions in communication due to the loss of a central node in a centralised system.

- Finally, emergencies are accompanied by a greater level of uncertainty, which creates a need for accurate and rapid information sharing.

These distinguishing characteristics, global increase of communication, and decentralisation of networks and high uncertainty levels, help create the conditions for improvement in information and resource sharing during an emergency event. The author suggests two factors that can contribute to this: boundary spanners and information technology (IT). Boundary
spanners are agency members that are responsible to connect their organisation to others and the environment. By possessing a good understanding of how their agency is embedded in the organisational network and environment they are fundamental in distributing information and in decision-making processes. Their role is dependent on an effective use of information technologies, which are central in emergency management. A robust IT network is needed to distribute information across organisations and across hierarchical levels, thus allowing a greater amount of information to be communicated with minimum loss of content due to subjective processing or collapses in infrastructure.

The model presented by Kapucu implies that by developing boundary-spanner relationships and IT networks, organisations can communicate more efficiently and take well-informed decisions. In turn, this should result in a better outcome for both the emergency agencies and the population. The author concludes by stressing the importance of building inter-agency relationships and implementing IT systems prior to disaster events, in order to develop trust and familiarity with both the human and technical systems under normal conditions.

In this study, Kapucu chooses to focus on inter-agency communication and coordination. While this aspect is undoubtedly essential to effective disaster management, it offers an incomplete analysis of agency communication in an emergency setting, as it disregards the intra-organisational dimension. Before sharing information with other entities, any agency needs to be aware of its internal situation before it can communicate with the exterior. A hint of this communication facet is the reference to the disruption of hierarchical flows of communication in emergency, with the lower ranks becoming more involved in information distribution and decision making. This aspect of Kapucu’s analysis appears to be appropriate for the present project and was included in our framework model of analysis.

3.5.2 Te’eni model of communication

Te’eni (2001) puts forward another relevant model in the field of organisational communication. By extracting patterns of current communicational behaviours this model attempts to make sense of how people choose both the message and the medium, depending on the goal and the situation. The ultimate intention of the model is to facilitate the
development of new technological designs to support communication. In order to do this, the design needs to be realistic. According to the author, this means taking into consideration three dimensions: input, process and impact.

The input to the communication process is affected by the nature of the task to be performed (e.g. more urgent tasks will be dealt with differently to non-urgent ones), the sender and the receiver’s characteristics (e.g. the ability to work independently, the degree of trust in each other, etc.) and the values or norms of the communicators (e.g. inter-cultural dimension).

Communication uses a range of both cognitive and affective processes. These resulted in the choice of one (or more) communication strategy, the form of the message to be delivered (e.g. its size and distribution pattern within the organisation) and the medium or channel used.

The impact can be subdivided in mutual understanding between the sender and the receiver. This includes the relationship aspect, which builds the commitment between the receiver and the sender if the communication process is trustworthy and appropriate.

Te’eni’s Cognitive-Affective Model aims to balance different aspects of the communicative processes: relationships and actions, the cognitive and affective dimensions and the message and medium chosen. The approach presented is highly focused on new technology designs that can improve the communication processes. The limits of this kind of approach are evident in situations where emergency responders are brought to work together in a face-to-face situation, where there is no use for a technological interface. However the model raises some important points such as the choice of the media that are chosen to distribute a message or the level of affective proximity, to be understood here as a level of trust and commitment between communicators.

3.5.3 Agency coordination in emergency situations – Bharosa study

In a more recent work, using a case-study approach combined with a questionnaire, Bharosa (2010) analysed agency coordination in emergency situations. Starting with the assumption that information access is the main bottleneck for an effective inter-organisational response,
the study aims to identify the factors that positively and negatively affect information sharing, offering a starting point for future emergency strategy development. The study identifies several factors, both technological and sociological, that can influence information sharing and classifies them among those that have an impact at the community (macro) level, at the agency (intermediate) level or at the individual (micro) level.

At the community level, information sharing can be promoted by implementing laws and regulations that reinforce the need for the different actors to communicate with each other. Alongside these laws, a system of incentives should be put in place. This system would promote communication by publicly acknowledging how a given problem was solved by the information shared, thus contributing to the success of the mission. From the IT perspective, a concern regarding the processing of information is raised. Information sharing processes require the selection of relevant as opposed to irrelevant/redundant information and this can lead to filtering out details that might be superfluous for one organisation but crucial to another. In this context, the presence of interface mediators and easy-to-use IT systems could be a valuable solution.

At the agency level, Bharosa draws attention to the lack of a unified view, even within a single agency, when it comes to most issues related to information sharing. In this scenario, it is clearly difficult to work cooperatively towards a common goal if the members of an organisation have diverging views. In addition to that, the absence of financial rewards for volunteering information drives the responders to focus on their own tasks. The information shared is therefore limited to a set of very relevant data, to avoid distraction from the main response activities. From the technological point of view, the study highlights the need for inter-organisational information sharing systems that are easier to use than the ones available and that can be integrated into everyday practice, instead of being limited to emergency situations.

Finally, the individual level presents challenges linked to the amount of information and timing that the responders have to face. The subjectivity linked to information handling, such as sense-making and filtering (Bharosa 2010), makes any information sharing process a hard task.
This duty is even harder when the individuals from one agency have limited knowledge of the role of other agencies. Therefore, a fine balance needs to be found between sharing all the available information, which can lead to cognitive overload, and filtering out relevant information by fear of distracting other co-workers with irrelevant data. In other words deciding if a piece of information is valuable or irrelevant to others is one of the main challenges faced at the individual level.

Bharosa studies inter-organisational communication within and between three distinct subjects: the community, the agency and the individual. This offers a different perspective from the one that has been chosen for the present work, which focuses exclusively on the agency level. Within the current study, individuals are not studied per se but as part of the organisation they work for. In other words, it is their role as employees that is relevant to this work. In addition, Bharosa’s research focuses exclusively on inter-agency communication. Even though the model acknowledges a flow of information between and within the three levels, it does not focus on them. We believe that, to achieve a better understanding of inter-agency communication, intra-agency communication is essential and needs to take place alongside any inter-agency cooperation. Despite these differences of view, Bharosa’s study raised a few points that influenced our research methods. Firstly, it inspired us to search for a theoretical framework that would take into account the different levels between which communication needs to occur. Secondly, it pointed out that information sharing is an additional task that is added to the responders’ main tasks and this requires them to juggle their time and resources between the two. Finally, it underlines the asymmetrical perception of the importance of sharing information: while the majority of the stakeholders agree on its importance, they are primarily concerned with gaining knowledge, rather than sharing the information that they have at their disposal.

3.5.4 The need for an interpretivist approach – Communication Constitutes Organisations

According to Crotty (1998) Knowledge is constructed through the interactions occurring between human beings and their worlds, and then developed and transmitted within an essential social context (Crotty 1998). This understanding allows a consideration of fire agencies as social organisations, rather than focusing particularly in their functional and
technical capacities. Addressing organisations in this way, the focus is on the texture and detail of the social relationships that characterize the organisations, and in this case the ways in which investigation is undertaken in relation to bushfire. It looks at communication as a “symbolic process producing, maintaining, repairing or transforming reality” (Carey 2009, p.19).

The present study draws on interpretivist methods to explore how that social life-world is culturally derived and historically situated. As anticipated earlier, although the need for collaboration between bushfire agencies is fairly clear, accomplishing this may be a real challenge because of the potential barriers between these agencies, often deeply rooted in differences in structure, outlook and focus. Impediments to effective collaboration can range from ideology (i.e. differing ideologies, values, and beliefs) to motivation, external environment influences, communication, leadership, power or resources (e.g. lack of necessary personnel, time, and skills to contribute to the effort).

The argument here is that communication is a central concept of analysis. Although several definitions of communication have been proposed in the literature, this research project adopted that of Price:

“An activity in which symbolic content is not merely transmitted from one source to another, but exchanged between human agents, who interact within a shared situational and/or discursive context” (Price 1996, p.5).

The idea that communication is the means used by individuals to coordinate action is at the basis of the Communication Constitutes Organisations (or CCO) school of thought. According to CCO, organisations are not simply constituted by their members but are built and shaped by interlocking networks of communication episodes. This view is therefore more dynamic since, by putting communication at the centre of organisational structure, it emphasizes the constantly negotiated character of meaning, therefore taking into account the historical, cultural and political aspects of an organisation. It also allows reconciliation of the role of communication at the micro- intermediate and macro-level; a concern that was present in the study by Bharosa presented above. It is important to understand that it is not the single
communication episode that builds the organisation, but it is the interaction and networking of the different episodes that end up constituting the organisation.

The CCO perspective has been adopted and adapted by three different streams: 1) Luhmann’s Social Systems, 2) the Montreal School and 3) McPhee and Zaug’s Four Flows. For all of these schools organisation does not precede communication, but rather results from it. The differences between the schools are in the type of communication that constitutes the building blocks for this process.

For Luhmann, organisations are simply the result of a network of communication episodes leading to decisions. This view does not exclude the existence of other types of communication within the organisation, but according to the author, by making a choice and ruling out the alternatives, decisions have the power to shape the organisation. The Montreal School offers an alternative view at the other end of the spectrum, as it assumes that all communication acts have the power to construct and maintain the organisation. The School goes to the extreme of including non-human actors in the communicative process such as textual forms (rules, protocols, etc.) (Ashcraft et al. 2009).

Thirdly, McPhee and Zaug’s Four Flows constitute somehow a mid-ground between these two extreme views. The authors identify four communications flows that are distinctive yet interrelated and that, together, constitute and shape organisations. Communication is what gives life to the organisation (Brummans et al. 2014). With these premises, the four flows model of McPhee and Zaug does not only represent a comprehensive and yet adaptable model but it is also and above all a theoretical framework; a school of thought that considers an organisation as an always changing entity resulting from its internal and external communication dynamics. This is the reason why such a framework was chosen for this analysis.
3.6 The Four Flows

The main idea of the Four Flows model is that there are four quite different processes that operate in constituting organisations. The term used in this context, ‘flows’, allows for and integrates multiple forms of analysis. In each flow, social structure is generated through interaction. The framework demonstrates the realization that the organisation is shaped by different types of realities that necessitate the study of a variety of message flows. McPhee and Zaug (2000, 2009) recognize that communication is the basis of organisation itself and must be seen as the blood flow that keeps it alive – circulating throughout the enterprise. McPhee and Zaug propose a concept of flow as “a kind of interactive communication episode, usually amounting to multi-way conversation or text passage, typically involving reproduction of as well as resistance to the rules and resources of the organisation” (2009, p.33). The concept of flow, in other words, indicates that information flows through the organisation in an interactive way.

As shown in Table 3.1, the Four Flows link the organisation to its members (Membership Negotiation); to itself reflexively (Self-structuring); to adapt interdependent activities to specific work situations and problems (Activity Coordination); and to the broader environment (Institutional Positioning).

Table 3.1 Communication constitutes organisation (CCO) theory – four flows

<table>
<thead>
<tr>
<th>Membership negotiation</th>
<th>Who are we?</th>
<th>Typified in job-seeking and recruitment, a process of on-going reputation and courtship, power-claiming and spokemanship.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational self-structuring</td>
<td>What rules do we operate by here?</td>
<td>Managerial activities. Official documents, decision making and planning forums, announcements, organisation charts, manuals, employee surveys and feedback.</td>
</tr>
<tr>
<td>Activity coordination</td>
<td>What work are we doing together?</td>
<td>This flow recognises that organisational self-structuring directives can never be</td>
</tr>
</tbody>
</table>
local work activities. completely understood. It emphasizes the way that people co-ordinate to solve problems.

<table>
<thead>
<tr>
<th>Institutional positioning</th>
<th>What external forces provide legitimacy and what kinds of communication are necessary to please them?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This flow is set at a more macro level, where communicators are “boundary spanners” building an image of the organisation as a viable relational partner.</td>
</tr>
</tbody>
</table>


Thus, the flows fall into four types of messages or interaction processes: (1) Membership Negotiation is the process by which relations with organisational members are maintained; (2) Organisational Self-Structuring represents the setting of organisational norms and internal relationships; (3) Activity Co-Ordination is the processes by which work activities are adjusted and work problems solved; (4) Institutional Positioning refers to the manner in which the organisation communicates with other organisations and manages inter-organisational relations. Therefore, an organisation is shaped by different types of realities that necessitate the study of a variety of message flows. Complex organisations can be understood with the analysis of these four different communicative flows, connected, interactive, and yet analytically distinct. Figure 3.2 provides a graphic representation of an organisational system and the four directions of flow.

Figure 3.2 Organisational system and the four directions of flow

Source: McPhee & Zaug, 2000
McPhee and Zaug believe that continuous processes of membership negotiation occur since organisations are inclined to draw a clear-cut distinction between their members and non-members (McPhee & Zaug 2009). Similarly, communicative processes of reflexive self-structuring are required by organisations so as to distinguish themselves from forms of social gatherings such as neighbourhoods or mobs. A third kind of communication process is engaged by organisations to coordinate its activities toward the purpose of the organisation. Finally, since organisations are embedded into society at large they also create complex communicative processes of institutional positioning. These processes assist organisations in negotiating their status in interaction with stakeholders and other institutions.

An instructive example of how the Four Flows model can be utilised and extended is presented by Lutgen-Sandvik and McDermott (2008). Their study aims to understand how communication can contribute to the development and maintenance of Employee-Abusive Organisations (EAOs); i.e. organisations in which employees experience prolonged emotional abuse, through unfair and hostile communication. Their study identifies specific communication behaviours that can foster or, at the very least, legitimate abuse, and relates them to one or more of the Four Communication Flows.

During the employee recruitment process, for example, employee-abusive membership negotiation practices include hostile attitudes during the interview, forewarning applicants of the fast-paced environment they are about to enter, relating horror-stories, etc. All these examples are aimed at encouraging the applicants to self-opt out if they consider themselves too weak for the job, while at the same time legitimating a working atmosphere that puts the individuals under pressure.

Organisational self-structuring elements, although they cannot be overtly promoting abuse, can condone the misuse of power. This is evident in policies that allow contract termination, on behalf of the organisation, without cause or notice (the so-called “at-will” employment policies). This is also the case when the organisation chooses not to intervene or the measures taken fail to stop abuse. This belittles the employees, who feel that have little value to their organisation, and contributes to create an inimical work atmosphere.
Activity coordination is by far the most studied of the Four Flows in terms of employee-abuse organisations. Abusive supervision through excessive criticism, micromanagement or unreasonable work delegation is a classic example. Other less evident behaviours include non-verbal communication (snorting or eye-rolling), inaction or even ignoring the employee’s presence or questions. Activity coordination also includes the behaviours observed between co-workers. Bullying, sabotaging and standing-by in silence when witnessing abuse all contribute to the spread of fear and feeling of isolation.

Institutional positioning can also play a role in allowing the onset of employee abuse if there is a lack of laws protecting the individuals from bullying, for example. The emotional abuse coming from the feeling of being under pressure can be related to the marketplace, in instances where the economy imposes restructuring and downsizing.

The authors then add a fifth Flow that they call “Syncretic Superstructure”. This flow accounts for the cultural and historical dimensions of communication. These are often reflected by the assumptions with regards to appropriate behaviour and are often taken for granted. An easy example is reverence for the hierarchy. Showing admiration for high-placed, ambitious individuals and a lack of questioning of managerial decisions sculpts the organisation in specific ways that often condone harassment and impunity. Similarly, when profit is the organisation’s ultimate and only goal, the human factor tends to be overlooked. Alternatively, the idea that workers need close supervision and increased pressure to overcome their laziness and “get the job done” is yet another abuse-related practice.

This study highlights how the Four Flows work concomitantly in day-to-day practices to create organisations. Indeed, gossip, personal criticism and horror-stories not only transmit a message but also create the hostile environment that they talk about. An interesting analytical point raised by the authors, and that was not previously highlighted, is the non-verbal component of communication. Ignoring the interlocutor or simply eye-rolling or using an aggressive tone of voice are all elements that are frequently omitted in the analysis of communication. Finally, the choice of adding a fifth flow to the model is an interesting extension to McPhee and Zaug’s framework. This flow is definitely important in aspects of organisational life such as abuse. However, in the current analysis of emergency
communication this dimension seems less relevant since it is more related to the society in which the agencies are embedded, rather than to the emergency organisations themselves, which are the subject of our study.

Importantly, the Four Flows model has been adopted by different researchers to study military organisations. These studies are particularly relevant because emergency agencies are often structured following a military-type hierarchy. Browning and colleagues (2008) describe communication both within and between organisations by observing an Air Force maintenance squadron. Their study uses the Four Flows model to identify communication behaviours that are at the basis of the organisation (constitutive communication) and that keep communication in a dynamic mode.

Their case study is built around the US Air Force’s implementing process improvement method. The subjects of this study are the aircraft repair technicians, who have the mission to repair the aircraft but are also responsible for finding the cheapest yet safest ways of doing so. Once their proposed methods have been approved by a board of civilians, the technicians are encouraged to sell their solutions to repair teams from other military bases, thus contributing to their available budget.

Browning links the change in organisational culture, brought about by the creation of this new “entrepreneurial technician” position, to the overlapping of the Four Communication Flows. An example of how the Flows combine, thereby dictating the organisation’s nature, is given by the directives that provide general guidance to the technicians. The directive examined is extremely brief and is characterised by lack of specific details. This allows the technicians a high degree of interpretation and creativity, which in turn allows for innovation. The instruction here (self-structuring flow) established at the managerial level, enables the technicians to undertake their tasks with a high degree of freedom (activity coordination flow). Another example of alteration of the organisation’s reality is given by combining the two flows of membership negotiation (“who are we?”) and activity coordination (“how do we work together?”); this is illustrated by the relationship between pilots and technicians. Despite the pressure to reduce repair costs and despite the hierarchical and financial differences
between pilots and technicians, the general perception is that technicians would never put a pilot in danger. An example of the support role offered by the technicians to the pilots is the last security check before a flight, which is performed by the technicians and not by the pilots themselves. This builds a sense of membership and trust that is unexpected given the inherent power imbalance between the two groups. It also builds power-blocks, whereby pilots support technicians in their search for new funding with the civilian board.

The two examples of flow pairing (1- self-structuring with activity coordination and 2- membership negotiation with activity coordination) constitute a valuable extension to the Four Flow model. The first example (pairing self-structuring with activity coordination) shows that the self-structuring nature of non-stringent norms and directives allows a re-definition of membership identity, by changing the actual work requirements. The second example (pairing membership negotiation with activity coordination) shows how combining both membership negotiation and activity coordination pulls teams together and establishes new power relationships that can eventually impact institutional positioning between the military base and the civilian board.

3.6.1 A revised version of the Four Flows

Of note, most agencies involved in the post-bushfire investigation are also emergency service bodies structured on a military set of arrangements, particularly in terms of management and hierarchic ranking. As emergency and military-type organisations, they have to operate in confusing and high risk environments. As a consequence, Organisational Learning Mechanisms (OLMs), such as after-action-review, lesson-learned and knowledge management, become essential concepts for these agencies. Such organisations should be the result of a cycle of activities that starts with a decision-making and, through practical actions, ends with an assessment of the specific actions undertaken. It is necessary, therefore, that experts from the different disciplines involved in bushfire prevention dedicate part of their time to sharing experiences and insights, to improve the decision-making process and to develop strategies that are not only efficient but also coordinated.
In this light, knowledge management and the sharing of this knowledge have become the new powerful form of capital for any organisation. Knowledge that members within the same organisation share with each other is referred as intra-agency knowledge sharing. When such sharing occurs between companies it is known as inter-agency knowledge sharing. The sharing of knowledge is now considered as an opportunity not only for improving the organisation’s effectiveness by spreading ideas and practices, but also in terms of saving time. Experts, in fact, can learn from their own mistakes as well as from those of others, so to be more prepared and effective after each event. This is why analysts agree in believing that the action of sharing practices and information optimizes the organisation’s goal and success.

Organisations may fail to take into account their members’ opinions and preferences. Consequently, formal information concerning policies and procedures should be communicated in a variety of ways so to meet employees’ preferences on the way of receiving communication in regard to policies and procedures. When bushfire investigators send their communications these should be listened and they should receive feedback again in a continuous communication process. Employees’ engagement can only be reached if employees are able to give their feedback and contribution to their department. If the organisation gives feedback on a member’s feedback, or calls the member to ask their opinion, then the importance of employees’ feedback is recognised. On the contrary, if a member never receives feedback from their organisation, the organisation is not developing, encouraging or enhancing the ‘system of feedback’. These aspects play an important role and should all be considered during the analysis of those barriers occurring in the sharing of knowledge.

The Four Flows model of McPhee and Zaug was specifically adopted in this study to analyse the strengths and weaknesses of the sharing of knowledge within and between emergency and military-type agencies involved in bushfire investigation. The main idea of the model is that the organisation, as social constructed entity, is shaped by different types of realities that necessitate the study of a variety of message flows. These four flows link the organisation to its members (Membership Negotiation), to itself reflexively (Self-structuring),
essential steps to be able to adjust work activities and solve work problems (Activity Coordination), and to the broader environment (Institutional Positioning).

The reasons for choosing the Four Flows model have been highlighted in the previous sections. First of all, according to the rationale behind the current research project, the model considers organisations as dynamic entities built around communication. Secondly, the model has already been used by other research groups to study military and hierarchical organisations, similar to the ones presented here. Thirdly, and more importantly, it provides a standardized and ‘scientific’ framework essential for setting and asking questions in a systematic way, as well as for conducting a research of similar organisations but in different contexts. Nonetheless, the model does not provide the researcher with a comprehensive picture of the intra and inter-organisational dynamics.

The four flows’ model is based upon an assumption that managers’ perspectives and expectations are the same as the organisation’s staff members. The model lacks a ‘theory of subject’. It focuses on the exchange of information from the higher levels of the organisation (i.e. managers) to the lower levels (i.e. the subordinates). In other words, the model adopts a point of view that can be classified as “top to bottom”. Such a perspective has also been highlighted by the Montreal School (Cooren & Fairhurst 2008) which argues that the Four Flows model adopts a too reductionist, top-down stance toward organisations (Schoeneborn 2011). The model, according to critics, is more focused on the top-to-bottom point of view, with the top being the organisation and the bottom its four different audiences (Schoeneborn 2011).

The distinctive focus of the analysis in this thesis is that the focus is not on managers as the subject; instead the focus is on the investigator in the six agencies. Investigators are the subject. In this view, these investigative agencies rest on the investigators and in this research it is the managers who respond to the investigators. The assumption here is that policy and procedures should be based on the feedback and learning of these investigators. As relatively new organisations, developing practices as they proceed, the argument here is that this approach opens up an understanding of the dynamics of organisations in distinct ways.
The problem with the current model is that the assumption is that an organisation has four communicative audiences and the staff constitutes one such audience, who the investigators are and what do they do? A more adequate way of analysis is to start with the audience, namely the staff, in their own right. This approach then centre stages the investigators and thus allows the development of policies and practices which are grounded in the organisational experience and focus. A more fully developed analysis would look at both managers and investigators, and then provide an assessment. The ambition in this thesis, however, is to demonstrate the value of overcoming the hierarchy of authority implicit in the model, as it has been applied to date.

This focus has a methodological implication for the model. In future, prior assumptions should not be made about the authority and perspicacity of managers *qua* managers. In this case, the majority of bushfire investigators did not fulfil managerial roles within the organisation. This approach allows the investigators’ point of view to emerge. The assumption is that bushfire investigators, through their communicational dynamics as well as formal and informal relationships, constitute the fire investigation units themselves. Moreover, in a relatively new area of expertise and practice (less than 20 years), the investigators’ point of view becomes essential in defining and re-defining bushfire investigation policy and procedures.

The approach adopted in the present study is partial but informative. The model is a starting point, a framework for analysis, with the investigators as the subject. Thus the analysis allows the following questions: what are the conditions for employees to sharing their knowledge? Are the rules of the organisation understood by the investigators? The point is that when organisational rules are not realized or followed by the investigators, then questions are raised about the policies that inform the rules of the organisation. This is why re-focusing the model has been important for the current research project.

By re-assessing the four flows’ model, new insights emerge. Investigators, taken and/or analysed as individuals, carry out their work tasks in particular ways: as staff committed and loyal to their own organisations. When the focus of the analysis shifts to the institution as a whole, inadequate procedures were found to be in place. Undoubtedly, research that included managers would bring a further level of understanding of the issues investigated. Nonetheless,
the four flows model as applied here serves to dissect the communication flows found not only within one organisation, but six.

Moreover, the model was extended to include a comparison between a set of organisations addressing the same question (investigation) in different contexts (Italy and Australia). In this way, the thesis address one of the weaknesses attributed to the model, which is to focus on intra-agency communication. More generally, emphasis is placed on the ‘intra’ organisational dimension compared to ‘inter’ agency dynamics. The model itself presents an unbalanced focus since three dimensions address intra-agency aspects and only one (Institutional Positioning) looks at the ‘inter’ dimension. This is a critical gap particularly since, strong relationships and collaboration with other stakeholders operating in the same field is increasingly recognised as one of the most important aspect of organisational efficacy and efficiency (NCHRP 2011).

In this last respect, it could be argued that the present study could have developed the fourth flow (Institutional Positioning) further. The innovation of the present research project is that the Four Flows has never been employed in a cross-organisational study nor in a cross-cultural study. By according more attention to what happens between agencies, an attempt has been made to re-balance the overall analysis and restore the importance of networking between stakeholders. This is seen in the current study as an essential condition for organisational efficiency. The comparison allows the specificity of these relations to be identified and elaborated.

Yet, the innovative way of employing the Four Flows model was done within the boundaries of an established framework. This all-encompassing model offers a multi-theoretical explanation of human communication in complex systems (Browning et al. 2008). It provides a theoretical framework that takes both micro- and macro-level dynamics into consideration in analysing the communicative constitution of organisations. It is syncretic and synthetic at the same time (Browning et al. 2008).
3.7 Summary

Given the multidisciplinary nature of bushfires, several organisations are involved and have to deal with the investigation of causes of this global dilemma. Thus, an effective collaboration and a well-established working integration between all fire stakeholders are seen as the key to investigate and manage the risk of bushfires.

In this context, it is important to understand what are the main factors that facilitate or inhibit an effective inter-organisational collaboration. To address this research question, all organisations involved in the current study have been analysed through a symbolic-interpretive perspective within the broader framework of organisational theory. According to this approach, organisations are socially constructed realities, communities shaped and sustained by human relationships, where meanings are jointly created, appreciated and communicated.

Of note, all agencies involved in the post-bushfire investigation are also emergency service bodies structured on a military set of arrangements, particularly in terms of management and hierarchic ranking. As emergency and military-type organisations, they have to operate in confusing and high risk environments. As a consequence, Organisational Learning Mechanisms (OLMs), such as after-action-review, lesson-learned and knowledge management, become essential concepts for these agencies. Such organisations should be the result of a cycle of activities that starts with a decision-making and, through practical actions, ends with an assessment of the specific actions undertaken. It is necessary, therefore, that experts from the different disciplines involved in bushfire prevention dedicate part of their time to sharing experiences and insights, to improve the decision-making process and to develop strategies that are not only efficient but also coordinated.

In this light, knowledge management and the sharing of this knowledge have become the new powerful form of capital for any organisation. Knowledge that members within the same organisation share with each other is referred as intra-agency knowledge sharing. When such sharing occurs between companies it is known as inter-agency knowledge sharing. The sharing of knowledge is now considered as an opportunity not only for improving the organisation’s
effectiveness by spreading ideas and practices, but also in terms of saving time. Experts, in fact, can learn from their own mistakes as well as from those of others, so to be more prepared and effective after each event. This is why analysts agree in believing that the action of sharing practices and information optimizes the organisation’s goal and success.

Organisations may fail to take into account their members’ opinions and preferences. Consequently, formal information concerning policies and procedures should be communicated in a variety of ways so to meet employees’ preferences on the way of receiving communication in regard to policies and procedures. When bushfire investigators send their communications these should be listened and they should receive feedback again in a continuous communication process. Employees’ engagement can only be reached if employees are able to give their feedback and contribution to their department. If the organisation gives feedback on a member’s feedback, or calls the member to ask their opinion, then the importance of employees’ feedback is recognised. On the contrary, if a member never receives feedback from their organisation, the organisation is not developing, encouraging or enhancing the ‘system of feedback’. These aspects play an important role and should all be considered during the analysis of those barriers occurring in the sharing of knowledge. These themes are examined via the Four Flows model of analysis (McPhee & Zaug 2000, and 2009).

In the next chapter the approach and methodology of the study is presented.
CHAPTER 4
APPROACH AND METHOD

The majority of bushfires are caused by humans and, as such, this implies their potential prevention (De Sisto 2011). As already discussed throughout chapters 2 and 3, while fire suppression activities and plans are important, emphasis also should be placed on the investigation and treatment of fire causes. Fewer fires and diminished impact on people and the environment may be the positive consequence of this extension of focus.

4.1 Purpose and aim

The investigation of bushfire reasons and causes is a complex procedure, since many factors should be considered by more than one of the agencies (Webster 2008). This makes an effective bushfire investigation a challenging task that may involve a joint undertaking between fire officers, police officers, crime investigation personnel, forensic scientists and representatives from insurance and other emergency service organisations. The assumption is that strong relationships between partners, particularly police, fire and land management agencies, as well as protocols of responsibility and efficient information sharing can increase capacities for the successful bushfire investigation. For this reason, understanding the complex interactions of fire management, as well as the data collection and fire investigation knowledge is necessary. It may be the case that these interactions should be better developed and, above all, shared within and across agencies and state boundaries (Lewis 2010).

As observed by several authors (see paragraph 2.5 for details), agencies cannot provide effective investigation activity in isolation, particularly in a complex event, such as bushfire. Currently, such a view is shared not just across Australia but globally (Tomkins 2005; Northumberland Gov. 2009). Despite this, national- and international-level collaboration-building efforts between and across sectors are limited. In order to improve an integration and application of efficient forensic investigation activities by fire and police agencies, it becomes
necessary to identify and understand those connections and dynamics occurring at an inter-organisational level. Attention will be given to those impediments to the realization of a system based on the sharing of knowledge and information within and between the agencies involved.

The project aims to investigate the extent of knowledge that is shared within and between bushfire investigative related agencies. Specifically, the analysis will identify the strengths and weaknesses of such a knowledge sharing. The rationale is that, even though the investigation of the causes of bushfires is seen as a shared responsibility within and between fire and police services, these agencies do not always act in this way. A possible reason for the different paths undertaken by the agencies involved may reside in the organisational vision, which in turn appears to strongly influence the level of commitment within the agencies. Differing bushfire investigation cultures of fire and police agencies in respect of thinking, approach, training and language may constitute either inhibitors or strengths for an effective inter-organisational collaboration (Abou-Zeid 2005; Mitchell 2003).

This project co-locates within the discussed context of “basic” versus “applied” research. It is a commonly used the distinction that sees basic research as aiming at the management and increasing of knowledge generally; and applied research as aiming at the solution of practical problems or application of knowledge to the real world (Roll-Hanses 2009; Fitzpatrick & Wallace 2011). However, the several attempts to distinct the two types of research should not be seen as a way to separate the two worlds, but rather as a way to acknowledge the differences so as to find and understand the possible interactions. The current project focuses on human experiences and dynamics with the aim of generating knowledge to solve problems through and within the bushfire investigation practice. Being funded by the Bushfire Cooperative Research Centre, it will further the CRC’s perspective and contribute in terms of social improvements by offering interpretations of problems in bushfire investigation. As such, the project is both basic and applied at the same time; it serves both special interests and communities at large (Hellman 2015).
4.2 Research design

From a methodological point of view, this study looked at the intra- and inter-agencies dynamics and events through the lens of professional communication. With the aim of identifying and understanding the specific dynamics within and between fire and police investigation units, the study approached these aspects also, and above all, in terms of communication impediments, at agency, national and international levels. The study should be considered an example of translational research (Rubio et al. 2010) not only as it fosters multidirectional and multidisciplinary research with the long-term aim of improving the wellbeing of the public, but also because it aims at enhancing the adoption of best practices in the community (National Institutes of Health 2007).

To explore the research questions a comparative analysis, based on case studies, was proposed.

4.2.1 Case Study Approach

The design chosen for the present study is based on the case study methodology since it offers the best possibility for understanding how individuals make sense of and interact in their social and organisational worlds (Denzin & Lincoln 2011). Indeed case study is an ideal methodology when holistic, in-depth investigation is needed (Tellis 1997). It allows data to be intensively investigated and creatively analysed (Zikmund 2000). Case studies suit research in which the investigator has limited control over the subject of research, and in which the primary focus is on a contemporary phenomenon within a real-life context (Yin 2003, 2011; Noor 2008; Robson 2002), such as agencies and other organisations. It is also a promising strategy to investigate phenomena where little is known or, alternatively, to provide a fresh perspective on a subject that has been extensively studied but does not benefit from current, up-to-date perspectives (Eisenhardt 1989). According to Ghauri (2004), case study approaches have been a common research strategy in the field of business and organisations to achieve understandings of real-life events.

According to Yin (2003) there are three main different types of case studies: exploratory, descriptive and explanatory. The first one, exploratory, is commonly used when the situation
in which the intervention has been conducted has no clear or single set of outcomes. Descriptive cases aim to describe both the intervention and the related real-life context. The third type of case study, explanatory, is focused on the complex causal links in real-life interventions (Baxter & Jack 2008). The current study represents an inclusive and pluralistic view (Yin 2012). A multiple-case study (Yin 2003) or collective (Stake 1995) research method adopts all three purposes: exploratory, descriptive and explanatory.

The thesis starts with an accurate description of practices and procedures in terms of bushfire investigation. More specifically, the nature and the extent of the current inter-agency collaboration are analysed. Examining the context and the complex conditions related to the cases is fundamental to understanding the cases as a whole. However, the existence of several “what” questions also justify the exploratory nature of the thesis; while the numerous “how” questions show its explanatory purpose (Tellis 1997; Zikmund 2000). The aim is to explain how the investigative process can be improved. This is possible through an in-depth description and exploration of both strengths and weaknesses of the communicational dynamics that are in place amongst the six agencies involved in the study. The steps that organisations need to take in order to obtain improvement of the investigative system will be identified along with a detail explanation of how to fulfil each of these steps and move to the next one. Through this explanatory, exploratory and descriptive method (Yin 2003, 2012), the researcher is able to draw out key outcomes to the research questions, while bringing together an inter- organisational network that will continue to learn from each other and to improve on its own cooperative and systemic way of working.

4.2.2 Cross-national comparative case study research

The design is based on comparative analysis (Bryman 2012). Comparative research design involves a decision over what to compare—what is the general class of ‘cases’ in a study—and how to compare, a choice about the comparative logics that drive the selection of specific cases (Goodrick 2014). In the usual categorisations, comparative studies are motivated by the need to borrow, advise, evaluate and the curiosity-motivated need to find out. The strength of a comparative research design consequently also rests on its ability to foster concept- building, theory-building, and the identification of causal mechanisms (Azarian 2011). Various
researchers have claimed when there is an opportunity for iterative data collection and analysis over the time frame of the intervention, comparative analysis is useful and when there is an understanding of the context it is seen as being important in understanding the success or failure of the intervention (Joppe 2000).

This thesis will look at the collaboration between bushfire investigative agencies in Italy and Victoria (Australia) through a case study design (Yin, 1982; 2003; 2009; 2012). A cross-national comparison has been embraced with a “normative perspective” in order to define common social phenomena or issues and determine whether such shared phenomena can be the result of similar causes (Hantrais 1995; Azarian 2011).

This international comparative analysis will enable us to understand and explain similarities and differences amongst six post bushfire investigative departments in terms of their inter-agency collaborative practices. Such awareness will enable us to increase the generalizability of findings and/or to deepen our understanding of bushfire investigation procedures in different national contexts. The rationale for using international comparison is that of evaluating different solutions adopted for dealing with common issues or of assessing the transferability of certain solutions and policies between states (Hantrais 1995). The final aim is to enhance the learning process of each party. In this light, comparing similar countries, or perhaps other states across Australia, may miss these transnational differences with the risk of being encapsulated in a mono-cultural knowledge.

Following such a desire, in the current research, a comparison is made between Victoria, Australia and Italy to determine the standards of interagency collaboration in emergencies such as bushfires. As a method strategy, the strength and of comparative analysis and its beneficial power to the field of research is that it can be applied to the study of almost any topic and from different angles (Suzuki, 2010). This can range from comparative study of the working conditions across nations, to the examination of the changes of life values within a single social context, to the examination of the contrasts of face-work in various cultures or, yet, to the study of the varieties of written documents in different countries (Allik et. al. 2010; Drobni 2010; Droogers 2005; Magun & Rudnev 2010; Merkin & Ramadan 2010; Suzuki 2010).
In conclusion, the current research study adopted a comparative research design since one or more implementations were being applied across multiple contexts, and there was little or no opportunity to manipulate or control the way in which the interventions were being applied [Bloemraad 2013]. As a design option, a comparative case study has been considered as the best tool in carrying out the analysis given the ‘how’ and ‘why’ questions posed around the processes or outcomes of an intervention [Goodrick 2014]. As also suggested by Hantrais (1996, 2013), comparative case studies are the most suitable way to observe and investigate issues or phenomena in two or more countries with the explicit intention of comparing their characteristics in different socio-cultural settings (institutions, values systems, traditions, and language), with the use of the same research instruments.

Such a comparative case study has been undertaken at international level in order to increase the likelihood of generalizability as well as the reliability and validity of the results (Lorr 2011). Despite the effectiveness of comparative research methods, according to Hantrais (1995), relatively few social scientists feel they are well equipped to conduct studies that seek to cross national boundaries, or to work in international teams. This reluctance may be explained not only by a lack of knowledge or understanding of different cultures and languages but also by insufficient awareness of the research traditions and processes operating in different national contexts (Azrian 2011).

4.2.3 Why Italy and Australia

The choice of countries, Italy and Australia, is deliberate, as will be explained. Three major reasons have determined this choice. The reasons are presented below.

1) **Bushfire incidence**

According to the Centre of Fire Statistics (CTIF) at the beginning of the 21st century, the population of the Earth was 6.3 billion, who annually experienced a reported 7 - 8 million fires with 70.000 –80.000 fire deaths and 500.000 –800.000 fire injuries (CTIF 2006). These numbers referred to both structural fires and bushfire (or wildfire).
In this scenario, the population of Europe is 700 million, who annually experience a reported 2-2.5 million fires with 20,000 – 25,000 fire deaths and 250,000 – 500,000 fire injuries. Amongst these, almost 86,000 is the average number of forest fires (or bushfires) per year occurred in Europe between 2000 and 2008. Such fires have been responsible for the destruction of more than 500,000 hectares per year (Table 4.1).

Table 4.1 Average bushfires in Europe per year (2000-2008)

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>NUMBER</th>
<th>AREA (HA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>709</td>
<td>15,944</td>
</tr>
<tr>
<td>Croatia</td>
<td>4,800</td>
<td>46,926</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>933</td>
<td>356</td>
</tr>
<tr>
<td>Estonia</td>
<td>143</td>
<td>995</td>
</tr>
<tr>
<td>Finland</td>
<td>837</td>
<td>616</td>
</tr>
<tr>
<td>France</td>
<td>4,362</td>
<td>22,935</td>
</tr>
<tr>
<td>Germany</td>
<td>942</td>
<td>430</td>
</tr>
<tr>
<td>Greece</td>
<td>1,765</td>
<td>50,782</td>
</tr>
<tr>
<td>Hungary</td>
<td>382</td>
<td>1,889</td>
</tr>
<tr>
<td>Italy</td>
<td>7,463</td>
<td>85,047</td>
</tr>
<tr>
<td>Latvia</td>
<td>875</td>
<td>1,007</td>
</tr>
<tr>
<td>Lithuania</td>
<td>699</td>
<td>367</td>
</tr>
<tr>
<td>Poland</td>
<td>10,371</td>
<td>7,566</td>
</tr>
<tr>
<td>Portugal</td>
<td>24,819</td>
<td>157,066</td>
</tr>
<tr>
<td>Romania</td>
<td>272</td>
<td>1,449</td>
</tr>
<tr>
<td>Slovakia</td>
<td>433</td>
<td>570</td>
</tr>
<tr>
<td>Spain</td>
<td>18,664</td>
<td>125,687</td>
</tr>
<tr>
<td>Sweden</td>
<td>5,290</td>
<td>2,662</td>
</tr>
<tr>
<td>Switzerland</td>
<td>62</td>
<td>216</td>
</tr>
<tr>
<td>Turkey</td>
<td>2,128</td>
<td>11,067</td>
</tr>
</tbody>
</table>

Source: EFFIS (European Forest Fire Information System) 2009
Such elevated number of fires reported across Europe could be one of the reasons why both of the most active institutions at an international level in the gathering of data on wildfires are based in Europe. These agencies are the UN agencies (FAO globally and the UN/ECE for the European continent) and the European Commission (EC - for the 27 member countries). In particular, the Joint Research Centre (JRC) of the EC has been publishing for almost a decade an annual report, Forest Fires in Europe, that gathers and comments on the salient data of member states from the previous year. The publication of this data is part of the JRC *European Forest Fire Information System* (EFFIS), a broader project that also includes non-EU Mediterranean countries. It focuses on the technical-scientific structures that carry out research into wildfires through a specific web platform. The aim is to collect and harmonise the information on forest fire, including their causes, across several countries.

In this context, Italy is not just one of the most affected European countries for hectares of land burnt every year (see Table 4.1), but it is also one of the main actors in terms of international collaboration and co-operation. Some representative examples of this involvement are the following 2009-international initiatives:

- Participation along with Greece, Spain, Portugal and France in the European project denominated FIRE 5 (Force d’intervention Rapide Europeenne 5). The project aimed to develop Fire Investigation Training Modules capable of being delivered in all European countries through the sharing of activity reports and case studies based on visits and exchanges between organisations. The final scope was that of becoming “expert” in the process of exchanging of information, experiences and knowledge.

- Participation in the Second workshop: Forest Fires in the Mediterranean Prevention and Regional Co-operation, held at Latakia, in Syria, 13-17 November 2009. The meeting, attended by 13 countries, tackled the issues of wildfires in the Middle East and North Africa with the aim of developing international co-operation.

Thus, Italy constitutes an appropriate comparator as well as a representative country for the European fire arena. Not only does it experience a significant level of bushfire (or equivalent),
but it has also been actively involved in international forums, providing the bases for collaboration and co-operation. Not many countries are integrated into such international (or inter-state) co-operation.

In the Southern hemisphere, due to its hot and dry climate, Australia is also one of the most fire-prone countries on Earth. Each year 'disaster-level' bushfires (where the total insurance cost of the event was more than $10 million) cost Australia an average of $77 million. In Australia more people were injured by bushfires than all other disasters combined, creating 48 per cent of the total death and injury cost from natural hazards (AIC 2004). In this context, Victoria is not just one of the most affected states across Australia but one of the most affected places in the entire world in terms of its bushfire death rate. As also stated by the Victorian Bushfires Royal Commission Chairman Bernard Teague (2010), Victorians have to deal with the fact that they might witness a higher risk of bushfire fatalities than any other country. Victoria’s bushfire history is dramatically well known around the globe. Black Thursday and Red Tuesday, back in 1851 and 1898 respectively; Black Friday in 1939 followed by three devastating years such as 1942, 1943 and 1944 with thousands of hectares burnt and dozens of lives. There were also the Dandenongs’ fires in 1962 or those of Ash Wednesday in 1983 with a total of over hundred people killed and 3,700 houses burnt. In the new century the flames have returned with even more devastating power. From 2002 to 2007 lives and properties have become an yearly target until, in 2009, the worst bushfire was witnessed in Victoria; Black Saturday. In few weeks, the February 2009 fires destroyed more than 2,000 homes and claimed the lives of 173 people (Franklin 2009). Given this situation, Victoria has been selected as representative of bushfires in Australia, and suitable for comparison with Italy.

2) **Bushfire investigation**

While Australia and Italy may differ in many aspects regarding bushfire investigation strategy (i.e. policy, procedures and even the organisations involved), they also have common features. Both countries have to deal with the same devastating problem and with the same degree of alarm; have more than one organisation involved within the bushfire investigation network; and are in the need of an efficient form of professional communication (intra and inter
organisation). Finally, key agencies of Italy and Victoria, Australia, such as police, fire services and state emergency services, have a common organisational feature; they are traditionally organised emergency service bodies. As such, the main characteristic of these agencies is their military style structure, especially in terms of management and ranking (see also section 3.1.1) (Lang 1965; Soeters et al. 2010).

Italy and Victoria, Australia also share the circumstance that the incidence and causes of bushfires has been a debated topic during the last decade. In 2008, the Australian Institute of Criminology (AIC) completed the classification of the number and causes of bushfires in Australia (Figure 4.1).

Figure 4.1: Proportion of vegetation fires in Australia by assigned cause

![Pie chart](image)

Source: Bryant 2008.

Note 1: It is based on an analysis of nearly 300,000 records from 18 fire agencies over five years, from 2000 to 2006.

Note 2: This figure and its 100% refers only to vegetation fires where the fire agencies, CFA and DSE, attend. In reality 40% of the total vegetation fires occurring in Australia are yet not attended by an agency and, therefore, not reported in this figure.

The major cause of bushfires in Australia (37%) is the classification ‘Suspicious’. This means that it is necessary for further investigation by police agencies in order to understand if the fire was ignited either in a deliberate or accidental way. In both cases, it is likely related to human action. The second largest group, representing 35% of all causes behind bushfires is the classification of “Accidental”. If we add the 13% classified as “deliberate”, 85% of all bushfires are caused by human action. Natural causes represent just 6% of the total.
There is a similar pattern in Italy, even if proportions are slightly different (Figure 4.2).

Figure 4.2: Proportion of vegetation fires in Italy by assigned cause

As can be seen in Figure 4.2 (Italian Forest Corps 2010), this is particularly true for ‘Deliberate’ fires which, with at 67%, represent the major cause of all Italian fires. The second major group, representing 20% of ignitions, corresponds to ‘Unintentional’ causes, followed by ‘Suspicious’ that counts as 11% of the total. This statistic indicates that human action remains the major cause of fires in both countries; approximately 98% in Italy and 85% in Australia (Victoria).

The phenomenon of bushfires is a global issue. Approximately 40% of all bushfire across Australia do not have a cause assigned or, at the best, they are defined as suspicious or uncertain by the responding fire and police agencies (Bryant 2008). The situation is not so different around the world. As also noted by the Victorian Bushfires Royal Commission (2009) the extent and causes of this global dilemma are not well understood. A series of workshops conducted by the Australian Institute of Criminology (AIC) and discussions with front line police indicate that in most jurisdictions, due to the pronounced shortage of qualified investigators, it is not possible to attend, or to investigate the causes of all bushfire events. This means that fires are generally only actively investigated where there has been severe personal or property damages (Tomison 2010). Many small fires are not investigated and/or reported and if these are the result of arson, this crime is underreported as with many other
crimes (Doley 2009). Such a lack of reliable data is an impediment to the interpretative aspect of fire investigation (Drabsch 2003).

3) Researcher background

The researcher, with a Master’s degree in Psychology, and an expert in Juridical Psychology and Criminology, is a qualified researcher in both Italy and Australia in relation to fire investigation and, in a broader context, to fire prevention.

His interest in fire behaviours and, more generally, in bush fires, started in 2000 when he did his military service in the Italian Fire Brigade in Rome (Italy). He transformed the practical knowledge acquired into an academic interest. His final thesis for the Degree of Doctor of Psychology at the University of Rome “La Sapienza” (Italy), titled ‘Pyromania: Causes and consequences of destructive behaviours and injuries to self and others with fire’, is a research project on the psychological profiling of fire setters. In addition and thanks to his Doctoral research into the psychological aspects of starting fires, he has collaborated with the Chair of Criminology at the University “La Sapienza” of Rome and with the National Health Service of the Fire Brigade. These experiences provided the researcher with his personal commitment to study fire causes and his interest in practice in the bushfire area. These efforts led him to publish the article “Man and Fire - from Pyromania to other challenges for the Fire Brigade”, printed in “Objective Safety”, the official publication of the Italian Fire Brigade – Ministry of Interior (June 2003). He subsequently authored the monograph, ‘Pyromaniac or Fire setter?’, which was published, in Italian language, in the Forensic and Psychological Services Series AIPC Editor (Italian Association of Psychology and Criminology 2005).

Since arriving in Victoria (Australia), his studies in the field of bushfires have continued. He was contacted after the events of Black Saturday for on-air and newspaper interviews as an expert in bushfires and, particularly, on the criminal profiles of fire-setters. In 2010, due to his academic history and relevant experience in the field, the researcher was awarded the Bushfire CRC grant to undertake a PhD research project regarding intra- and inter-agency collaboration and communication processes. This thesis, conducted at RMIT University and
within the Centre for Sustainable Organisations and Work (CSOW), represents the final work of the project.

This research knowledge as well as the strong bushfire network built in both countries has assisted the researcher in the conduct of the present study and particularly on the selection of the participating agencies.

4.2.4 National culture awareness – Hofstede model

International comparative research is deemed as vital as it is a tool that encourages avoidance of mono-cultural knowledge. Therefore, the international scale was employed in the current study to push the boundaries of knowledge and to enhance the beauty of this design concept. In line with the multi-cultural knowledge perspective, to which this study aims, cultural differences and similarities between Italy and Victoria have also been analysed through the lens of the 6-D model of Hofstede (1980).

The model is considered one of the most adopted tools in the field of cross-cultural comparative research (Shaiq et al. 2011). It comprises six dimensions: Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long term orientation and Indulgence (Hofstede 2003). It is important to bear in mind that these dimensions need to be conceptualised as explicative of 50 per cent of the measured value of differences among countries. The remaining differences are linked to country-specific aspects such as governance, history, legal system, economy as well as to individual-specific aspects such as family, personality, personal wealth (just to mention a few). These categories cannot be explained from universal dimensions (Hofstede & Hofstede 2001). Shaiq and colleagues (2011) clearly summarized and defined the first four dimensions of Hofstede as following:
Power Distance “refers as the degree to which unequal distribution of power is accepted. It can be determined by the hierarchal level in an organisation and distance between social classes” (p.102); Masculinity “refers to a degree to masculine traits such as performance, authority and assertiveness which are prevailed or preferred over female traits like relationships, welfare. It measures whether masculine or feminine traits are prevailing in society” (p.103); Individualism “refers to the degree of social integration. It measures whether people prefer to work in group or alone”; Uncertainty Avoidance “refers as a degree to which people avoid uncertainties or threatened by lack of structure and the extent to which they have control over their future” (p.103).

In 1991, after an independent study carried out in China, Hofstede added the fifth dimension: long term orientation. This new category represents the time horizon of a given society. The past is kept in high regard but the focus is on the present and, more important, on the future of that society. The last dimension, indulgence, was implemented in 2010 and it refers as the ability and level of a society and its individuals to maintain control over their impulses and desires such as enjoying life, individual happiness and well-being.

Together, the six dimensions of culture provide an effective way of comparing and contrasting different nations (Milner et al. 1993). Hofstede’s model has been employed in the thesis not only because of its value in the field of cross-national comparison but also and above all because of its specific focus on those values, or indices, across which employees of different countries may be meaningfully compared. It represents a comprehensive analysis on how organisational contexts and values are shaped by the national culture. It also helps organisations to understand how they can collaborate more efficiently and effectively from an intercultural communication perspective. Given the fact that culture does not represent the main focus of the current review, national culture and the way it shapes the organisational context has not been analysed in-depth. However, Hofstede’s dimensional model of culture remains an important step for the thesis in order to obtain an overall understanding of similarities and differences between the two countries and six agencies involved chosen for the project. Based on the 6-D model, the table below illustrates the differences between Italy and Victoria as identified with the Hofstede model (see Table 4.2).
What emerges from the table is that in both countries control and strict supervision are disliked (low power distance). Communication between managers and employees is informal and participative even if in Italy managers tend to be less accessible than the Australian counterpart (higher score in power distance) as well as both societies result highly individualistic and “masculine”. This means that, especially amongst colleagues, competition, self-reliance and personal initiative are concepts strongly felt and encouraged.

Despite these similarities, the culture of the two countries differs a lot on the last three dimensions. Italians do not feel comfortable with ambiguous and uncertain situations. Therefore, formality such as procedures and norms become crucial aspects for the entire Italian system even if not always followed. Furthermore, Italy is a pragmatic society with the ability of adapt traditions to a changed conditions but a tendency towards cynism and pessimism (“restrain” culture). Australia, on the other hand, is a normative culture and an “indulgent” country. This results in a positive attitude with a focus on achieving quick results. For Australians traditions are essential elements and the strong respect paid to them can be
read in the difficulty of changing or adapting such traditions to new situations.

4.3 Sample

The sampling design and selection depends on the access the research has on the population (Creswell 2013). In those cases in which the researcher has access to names in the population and can sample participants directly, a single-stage sampling procedure can be adopted. If this is not the case and the researcher finds it impractical or problematic to gather all the necessary elements composing the population, then a multistage (or cluster) sampling would be the ideal way of proceeding (Babbie 2007). This may also be a more suitable and easy way to access population in those societies characterised by a higher level of Individualism and hierarchy (Hofstede 2001). These aspects have been also discussed in more details during the previous section (see 4.2.4), but for what concerns the access to the specific population, a multistage sampling process was adopted in the current study to select cases from both countries.

The first step in a multistage procedure is the identification by the researcher of the groups or organisations (called the clusters) to be involved. Then the potential individuals within those clusters are identified and, finally the researcher can sample within them (Creswell 2013). For this study, the researcher, as an expert in arsonist profiling, lecturer for fire and police agencies, and having a background as a fire-fighter within the Italian Fire Brigade, had the opportunity to establish preliminary communication with the main agencies in the broad field of fire prevention and suppression such as Food and Agriculture Organisation (FAO), Italian Forest Corps, and Victoria Police. These first meetings were conducted with the aim to identify the key actors in bushfire investigation, and to seek their involvement in the study. As a result of this process, six departments became involved in the project, three in Australia and three from Italy. These were: Arson Squad (Victoria Police); Fire Investigation Unit (Country Fire Authority - CFA), and Fire Investigation Unit (Department Sustainability and Environment - DSE) in Victoria; Fire Investigative Unit (Italian Fire Brigade - NIA), Anti-Forest Fire Investigation Unit (Italian Forest Corp - NIAB), and Forestry and Environmental Surveillance (Sardinian Forest Corp in Italy - CFVA).
4.3.1 The Six Agencies

Emergency agencies have aims and ambitions in accordance to the external context requirements and necessities. While the organisations involved in the current project may differ in many aspects regarding the bushfire investigation strategy (i.e. policy, procedures and organisations involved), these agencies present common characteristics that should be acknowledged. In both countries, agencies have (1) to deal with the same devastating dilemma and with the same degree of alarm; (2) have more than one organisation involved within the bushfire investigation network; and (3) are in the need of an efficient and efficacy extent of professional communication (intra and inter organisation).

In terms of bushfire investigation, in Victoria, there are two protocols that have to be followed (Victorian Fire Investigation Policy & Procedures 1999). The first one is for Coronal investigations and the second is about all other investigations. As can be seen in Figure 4.3, every bushfire scene is initially under the command of the Fire Services – Country Fire Authority or Department of Sustainability and Environment – while the outer perimeter of the scene is to be secured by the local police. It is essential that fire agencies provide a meticulous and efficient preliminary investigation. The understanding of the causes and origin of fire is not only an unavoidable step within the risk management process but also a fundamental practice to prevent and investigate fire crime within Australian communities.
Furthermore, the specific cause of a fire event has a strong impact on the nature and extent of inter-agency collaboration. The number of agencies as well as the leading agency depends on the cause of that fire event.

For causes of fire such as undetermined, natural and accidental, the fire scene investigation remains under the jurisdiction and responsibility of the fire agency in charge, either CFA or DSE (Country Fire Authority 1958, section 98; Forests Act 1958). When the fire is recognized as suspicious or, even worse, when it involves serious injury or death, the leadership for the investigation activity is within the Victoria Police – Arson Squad along with the Victoria Forensic Science Centre – while the examination of the scene is always conducted using a team approach.

In Italy, the bushfire investigative scenario sees the Italian Forest Corps as the technical body with police functions for the protection of the Italian natural environment (art. 57 c.p.p., co.
1°). The exception is for the five special statute regions (Sardinia, Sicily, Aosta Valley, Trentino-Alto Adige and Friuly-Venezia Giulia) and in the three autonomous provinces (Trento, Bolzano and Aosta). These particular areas have their own Forest Corps operating within their regional borders, such as the Sardinian Forestry and Environmental Surveillance. Nonetheless, every special statute region and autonomous province have to communicate their ‘bushfire data’ to the Italian Forest Corp at the end of each year for national statistical purposes. The exception is when the point of origin of any bushfire is found to be within a property such as a house, a factory or a company (see Figure 4.4).

Figure 4.4 Bushfire investigation process in Italy
In this context, the responsibility of the preliminary investigation is under the jurisdiction of the Italian Fire Brigade, which operates at national level including most of the special status and autonomous regions/provinces (except Aosta Valley, Bolzano and Trento). If, then, the Italian Fire Brigade defines the cause of the fire as suspicious, the investigation passes to the command of Italian Forensic Science Centre. In all other causes, the responsibility of the investigation remains with the Italian Fire Brigade (art. 348 c.p.p., co. 4°). What emerges from this scenario is that, in the Italian context, the causes of fire are not the only element in shaping and determining the level of inter-agency collaboration required; the point of origin seems to be another crucial aspect in understanding the leading agency.

Therefore, according to the current legislation in terms of fire investigation, the main stakeholders are:

- In Australia (Victoria) – Victoria Police; Country Fire Authority; and Department of Sustainability and Environment.
- In Italy – Italian Forest Corp; Italian Fire Brigade; and Sardinian Forestry and Environmental Surveillance, as representative of the special statute regions.

The agencies are:

1) Victoria Police - Arson and Explosives Squad

The Arson and Explosives Squad, under the direction of the State Coroner, is specialised in the investigation of more serious fire and bomb incidents where serious injury or death are likely to result. Recently, the Victorian Arson & Explosives Squad has altered its focus away from purely reactive to more targeted investigations aimed to prevent or disrupt serial or recidivist bushfire arson activity.

The Arson and Explosives Squad does the following:

(For references, see Victorian Fire Investigation Policy & Procedures 2009)

- Investigates all cases of fire involving suspicious circumstances where the amount of damage is of a substantial nature.
• Investigates all cases of fire which involve death or serious injury likely to cause death or where the incident appears to be part of a series of events or relates to another investigation.
• Investigates all cases which involve bomb explosions, not including Molotov cocktails.
• Provides Regional Crime Investigation Units throughout the state, with investigative assistance for fire related investigations.

2) CFA - Fire Investigation Section
(For reference, see Wildfire Investigation Learning Manual (CFA & DSE 2009)

The CFA sits under the Victorian Department of Justice and reports directly to the Minister of Police and Emergency Services. It is constituted by more than 60,000 members of which approximately 59,000 are volunteers, funded mostly by insurances contributions. The CFA covers the entire country area of Victoria, just outside the metropolitan fire district, excluding all forest, national park or protected public land. The state of Victoria is divided into eight CFA regions with twenty CFA districts in order to respond to bushfires, house fires, industrial fires, road accidents, rescues and a range of other emergencies.

In this context, fire investigation is a critical component of CFA’s responsibilities. Its objectives are:

• To determine the origin and cause of the fires.
• To obtain accurate information for further analysis.
• To ascertain or identify the presence of any criminal activity.

The CFA has a legislative responsibility to investigate the cause and origin of all fires that occur within the Country Area of Victoria. The agency is also a signatory to the “Victorian Fire Investigation Policy & Procedures”, a multi-agency guide to Fire Investigation within Victoria.

3) DSE – Wildfire Investigation Unit
(For references, see Wildfire Investigation Learning Manual - CFA & DSE 2009)
The Department of Sustainability and Environment (DSE) is Victoria’s lead government agency for sustainable management of water resources, climate change, bushfires, public land, forests and ecosystems. This department manages fire on Victoria's 7.6 million hectares of public land, or roughly one third of the State. This includes reducing the risk of fire, containing outbreaks and managing environmental effects. It is DSE responsibility to prevent, suppress and investigate fires in every state forest, national park, and public protected land.

DSE performs its range of functions in close partnership with its service delivery partners. These partners are:

- Environment Protection Authority Victoria
- Sustainability Victoria
- Catchment management authorities
- Parks Victoria
- Water authorities
- Local governments.

4) Italian Fire Brigade - Fire Investigative Unit (NIA)
(For references, see Guidelines for Fire Investigation 2009)

The Department of Fire-Fighters, Public Rescue and Civil Defence comprises eight central directorates with strategic/technical functions, all located in Rome (established as such by the Royal Decree of 27 February 1939); eighteen regional offices; and one hundred provincial commands, with approximately eight hundred stations throughout the country. National Fire Corps is part of the Department, which is under the Ministry of the Interiors. The Fire Investigative Unit (NIA) was established in 2001 within the department. It has a strategic and technical responsibility for fire investigation and related topics. The main tasks of NIA are studying, researching and analysing the causes of fire. NIA supports the Court, the investigative Police and the Local Fire Stations in their investigative activities both in cases of accidents caused by fire and in the case of explosions.
5) Italian Forest Corps - Anti-Forest Fire Investigation Unit (NIAB)
(For references, see Bushfire Technical Manual (2008) and Fire Management: voluntary guidelines (FAO – Forestry Department (2006))

The Italian Forest Corps is under the jurisdiction of the Ministry of Agriculture, Food and Forestry. It is a special body with police functions responsible for protecting the Italian environment, countryside and ecosystems, especially in case of protected public land. With the introduction of the law n. 353 of November 21 2000 (“on Forest Fires”), under the Title VI of the penal code (public safety), the Anti-Forest Fire Investigation Unit (NIAB) was established. It operates throughout the national territory, except in the special statute regions and in the autonomous provinces, with the specific aim of coordinating the information gathering and investigation activities concerning all forest fires. The NIAB is responsible for the prevention and repression of bushfire arson at both central and local levels.

NIAB provides operative, investigative and logistical support to the territorial offices of the Italian Forest Corps, also by conducting research into findings made at the scene of a fire for the devices and primers used to start the fire. This activity is supported by the scientific department of the state police in Rome and by the National Research Institute in Padua. The NIAB collaborates with 75 Investigative Units of Forestry and Environmental Surveillance (N.I.P.A.F.) and with 1.100 central forest stations.

6) The Forestry and Environmental Surveillance (CFVA) – Investigative units (NIPAF)
(For references, see Establishment of investigative units 1996)

The Forestry and Environmental Surveillance (CFVA), established by the regional law 26/85, is a technical body with police functions for the protection of the natural environment of the Sardinian region (one of the five special statute regions). It operates throughout the region with more than 1400 people, 3 central departments, 7 regional services, 82 forest stations and 10 naval bases.

LR 5 November 1985, n.26 (1). Establishment of Forestry and Environmental Surveillance of the Sardinian Region.
**Article 1**

Within the framework of regional planning, the Body provides the following functions:

- technical and economic protection of forests
- technical and economic protection of forestry and pastoral heritage of the municipality and public bodies
- protection of parks, reserves and other areas of special natural interest identified with laws or administrative measures
- protection of flora and vegetation
- protection of mountain pastures
- forestry and environmental propaganda
- soil erosion
- control of seeds and planting forest
- whatever is required for the defence and protection of forests
- any other function assigned by law or regulation.

The agency is responsible for the supervision, the prevention and the punishment particularly for the following subjects:

- hunting
- inland and sea fishing
- forest fires and, according to the annual regional programs of intervention, in suburban areas
- police forestry
- river police.

The agency also provides statistics, forest inventory and any sort of study of forestry interest specially focus on soil conservation and forest management. They are also assigned duties to collaborate with other Corps in the activities related to civil protection.

The Forestry and Environmental Surveillance consists of:
• an operative unit with overall responsibility for planning, coordination and control activities
• 7 territorial units referred to as "Inspectorates” based in Cagliari, Oristano, Nuoro, Sassari, Iglesias, Lanusei, Tempio, coordinated by the Regional Unit
• 82 forest stations and supervisory environment that operate under the command of units in the previous letter; each in its own territory.

4.3.2 Case selection

The three Italian agencies were selected by the researcher based on his previous work experience and involvement with these agencies. He drew on personal contacts and the knowledge of key participants. The result was a selection of three key agencies in Italy. This final work was carried out between 2010 and 2011. In contrast, the selection of the Australian cases was facilitated by the CRC Bushfire. Once identified the main agencies in the field of bushfire investigation, the researcher followed a familiarisation procedure to make his overall knowledge of the six agencies comparable.

Once the agencies were identified, the researcher conducted a preliminary survey with the most senior investigators of each bushfire investigative department. These interviews (see Appendix C) were conducted with the aim of understanding the history and context of each unit/department. This phase was preparatory to address the next stages of the study (i.e. policy analysis, see Chapter 5). Information gathered covered the establishment of the unit, the original and actual purpose to the establishment of the department, any major changes since the department was formed, and the major partners and participants in it.

The next stage of the selection process of the sample in Australia involved direct observation of and participation in the investigation system. Direct observation and participant observations are considered important parts of the data collection process in a variety of research methodologies (Dahlke et al. 2015; Merriam 2014). They provide unique understanding of both the participants involved in the study as well as their context and, as a result, they have the potential to inform theory development. The value in the use of participant observation is also recognised by the fact that such involvement with the group under study can aid the researcher in gaining the trust of the members of the group. This in
turn would considerably increase the response rate (Brewer 2014). Always mindful of the potential negatives such methods may involve (i.e. influence participants or affect their responses), the researcher attended relevant practical bushfire investigator courses held in Australia (e.g. the Wildfire Arson Investigation Management Course provided by the Attorney-General and from which the researcher obtained a qualification). This procedure also led in a helpful way to more informal introductions to investigators.

As a result of the researcher’s attendance and direct participation in investigation-related courses, the researcher could also recruit volunteers for the focus groups. Participants were recruited on the basis of their direct involvement with the fire investigation unit. Those members of the selected agencies working in departments other than investigative units were excluded from the study.

The three focus groups held at the end of each course (Appendix B) saw respectively the participation of 6 members for CFA; 5 DSE employees; and 2 members from Victoria Police. The focus groups, the direct observation obtained during the courses, and the surveys to the most senior investigators, all contributed to improve the researcher knowledge of the six agencies. As Patton (2002) states, “Creative fieldwork means using every part of oneself to experience and understand what is happening” (p 302). These phases of the project and the awareness reached also guided the development of the face-to-face interviews questionnaire.

Finally, the selection process proceeded with the identification of the population for the interviews. Four out of the six involved agencies are subdivided in districts or regions. At this stage the researcher, together with the head of each department, carried out an analysis of the departments’ internal statistics and fire-related events so to identify the two most bushfire affected or prone districts. With regard to the Victoria Police and NIAB, these agencies represent an exception; their departments are centralized and no other branches are present in other areas of the State and Country in the case of NIAB. For this reason, these agencies did not need to select their relevant districts and thus interviews were conducted in their headquarters.

The heads of the department identified voluntary investigators from the relevant districts.
Participants were recruited on the basis of their direct involvement in the fire investigation unit, that is, only those members of the selected agencies working in the investigative departments were included in the study. Face-to-face interviews were conducted at the headquarters or in the specific district selected by the head of the department. The face-to-face interviews were conducted with 6 departments in two countries involving two districts for each agency (Appendix A). Altogether, 31 members agreed to be interviewed: 18 members from Australian agencies and 13 from Italy. In Australia, 7 members were from CFA, 6 from DSE and 5 from Victoria Police. In Italy, 2 members of NIAB participated in the study, while 6 were from CFVA and 5 from NIA. While a limited number of respondents, they were selected by their position as a typical investigator in each case, and country. It should also be noted that the number of investigators in each domain is relatively few, ninety altogether, forty-nine in the Victorian organisations and forty-one in the Italian ones.

Those who agreed to participate were provided with a copy of the Invitation to Participate and the Consent Form. Participants were asked to read the documents, written in plain language, before completing the Consent Form. Return of the signed consent form to the researcher constituted enrolment into the study.

4.3.3 Characteristics of the sample

All the agencies identified as relevant during the selection process agreed to participate in the study. In total, forty-seven members agreed to participate in the study: thirty-one members from Australian agencies and sixteen from Italy. These interviews were complemented by focus groups activities and senior investigator interviews. The majority of participants were males, forty-one men and three women. The age distribution appeared fairly broad between 31 and 60 years old, with little to no representatives in the extremes. Forty-three per cent (15 members) were in 41 and 50 years age, 31% (11 participants) between 51 and 60, 23% (8 people) between 31 and 40, and 3% (just one member) over 60 years. In terms of years of employment and experience, the majority of fire investigators had been employed in the agency for more than 10 years but none of the investigators interviewed had over 20 years of experience in the bushfire investigation unit.
4.3.4 Setting

This study was conducted in several locations, respectively in Italy and Australia (Victoria). The interviews were conducted in the participants’ offices, either the headquarters or the districts of origin. Participation was voluntary and all the investigators interviewed were introduced by their head of the department. Data were collected during the period from May 2011 to September 2012.

4.4 Research methods/data collection

The study involved the use of qualitative methods to generate theory and understanding. Typically, case studies combine different methods to gather data. These include interviews, questionnaires, and observations (Creswell 2003; Robson 2002; Tashakkori & Creswell 2007). In this study, internal practices and procedures in undertaking bushfire investigation were examined in the six investigative departments of two countries with the use of focus groups, face-to-face interviews, documents/policies analysis, and interviews with the most senior investigators. The use of qualitative measures assisted the researcher to gain an insightful understanding of what people think about a situation, topic or problem. The researcher adopted the role of facilitator and distanced himself from the approach that treats participant as mere objects of the research process (Hammersley 1995). In doing this, he kept the original and specific meaning that participants gave to their life experiences (Majetić 2014). Rather than simply seeking and presenting the data and information, the researcher endeavoured to understand the importance of the subjective experience that each individual has in creating their social world (Cohen et al. 2000; Yin 2012).

4.4.1 Focus groups

Three focus groups were conducted with Australian investigative members, with a maximum of six participants per group (Bryman 2012; Morgan 1998). Participants for the focus group were selected among the key members of each department (see also section 4.3 Sample). Since the best quality data can emerge from the real and natural interaction of the group
(Kitzinger 2005), focus groups were thought to allow and encourage this interaction within the group who discussed the topic provided by the researcher. Given that communication and collaboration between different agencies a major focus of the current study, the researcher explored the possibility of conducting inter-agency focus groups so to also explore dynamics and themes emerging from direct interactions and brainstorming. However, the difficulty in arranging focus groups with all the agencies involved prevented the use of a multi-agency group. Arrange a time for focus groups when participating members of just one agency could all attend was very challenging. This problem might be overcome in future research and with a more assiduous help of technology and social media. At the time of the study, online communication between bushfire investigative departments, if not considered a proper language barrier, was seen as a drawback affecting rather than supporting the nature of the study (Deakin & Wakefield 2013; Hamilton & Bowers 2006).

Through the use of focus group, participants’ knowledge and experiences were explored, their views on procedures and knowledge exchanged, as well as the ways they might improve (Kitzinger 2005). Of note, these focus groups conducted before the face-to-face interviews, allowed the researcher to develop his understandings of Australia (Victoria).

One of the main advantages of using this method is that the researcher could reach an understanding of the many different forms of communication that people use in day-to-day interaction (i.e. jokes, arguing, anecdotes and teasing), a form of local language. Gaining access to this communication was helpful in highlighting (sub) cultural values or group norms (Kitzinger 2005). The observation of these types of communication introduced the researcher to a common and shared knowledge as well as to participants’ views.

The focus groups questions were designed according to the Four Flows model (McPhee & Zaug 2000). Questions covered the four areas of membership negotiation (i.e. from your perspective, what are the key factors that make for a good fire investigator?), organisational self-structuring (i.e. are there any feedback items that you need to provide and/or receive regarding to the quality of the work you have done?), activity coordination (i.e. what do you understand are the key activities involved in the bushfire investigation?), and institutional positioning (i.e. in dealing with post bushfire investigation, which if any organisation is your
department in partnership with? And, how would you describe the nature of the relation with them?).

4.4.2 Face-to-face interviews

Interviewing is one of the most intensively used methods of data collection in the social sciences and is used in other familiar kinds of investigation (Bryman & Burgess 1999). Interviewing ranges from the more or less unstructured interview to the interview in which each respondent is asked the same series of questions, although they may be given freedom in answering and the sequence of questions. This ‘semi-structured’ interview is one of the most common approaches to interviewing in qualitative research (Bryman & Burgess 1999). The researcher engaged in thirty-one in-depth face-to-face interviews, 18 in Australia and 13 in Italy, with staff members of each department. Based on the results obtained through the examination of the focus groups activity, the interviews comprised a series of open-ended questions to enable “respondents to provide a free response in their own terms, to explain and qualify their responses and avoid the limitations of pre-set categories of response” (Cohen et al.2000, p.248). Interviews may be time consuming, however they provide an in-depth description of the communication environment from the participants’ perspective (Creswell 2003).

As with the focus groups, the interview questions were designed following the four areas of communication identified by McPhee and Zaug (2000, 2009); membership negotiation, organisational self-structuring, activity coordination, and institutional positioning (see also Appendix 3). Those who agreed to participate were asked to discuss their experience and understanding of bushfire investigation activity, and their awareness and information within their organisation. Themes addressed in the interview included participants’ awareness and knowledge of the policies and procedures adopted in the fire investigative department and the outcome of providing information. Participants were also given the opportunity to discuss other areas, if they wanted to do so. The interviews lasted approximately an hour.

Two different interviews were administered: (1) the Communication Question List – Interview, and (2) Interview with most senior investigators - Unit context. The Communication Question
List was based on and analysed consistently with the model of the Four Flows (McPhee & Zaug 2000, 2009, see Chapter 3). During the face-to-face interviews, some demographic information was collected in an effort to identify the figure of the bushfire investigator and add insight into this study. Specifically, the purpose was to understand who the bushfire investigator is, what responsibilities s/he has and what kind of skills and/or attitudes s/he needs to provide in order to carry out an investigation.

As Bryman and Burgess (1999) stated, while qualitative methods are capable of generating a great deal of rich data, the large amount of information generated presents the researcher with the difficulty of knowing how best to analyse the largely unstructured information that is typically generated. For this study, analysis consisted of creating and classifying data to identify patterns and themes. In this way, the researcher is in a position to make connections and gain understandings of respondents’ perspectives and preferences (Creswell 2003; Robson 2002). Both sets of interviews comprised structured but open-ended questions to give respondents the opportunity to answer in their own terms without suggesting answers. This facilitated the exploration of new areas and areas in which the researcher had limited knowledge. The transcribed tapes were coded in preparation for analysis. Similar procedures were followed for the documentary analysis. All data obtained in the research were classified in a series of different themes and analysed using NVivo 9 software (QSR 2009). As a result, a thematic exploration of the extent and quality of professional communication among six fire investigative departments as six selected case studies was conducted.

As also reported in the literature (Braun & Clarke 2006), the selecting of the right methodology to be adopted in order to carry out a “good fit” analysis presented at the start some conceptual challenges. This was due to the often confusing or vague boundaries between the so-called content analysis and that identified as thematic analysis (Vaismoradi et al. 2013). The terms are often used synonymously and their similarities and differences unspecified (Sandelowski & Leeman 2012). However, a main difference between the two approaches relies in the way the text under analysis is considered and handled. A typical content analysis would involve a systematic coding and categorizing phase in order to determine trends and patterns of the words used in the text. Words are categorized and counted in terms of
instances occurring in a text. What it is then recorded and analysed are the frequencies of these words, their relationships and how the words structure in order to create communication (Gbrich 2007; Mayring 2000; Pope, Ziebland & Mays 2006). In doing so, content analysis examines who said what, to whom, and what was the effect of this communication, with the final aim of describing the characteristics of the document's content (Bloor & Wood 2006). Content analysis can be somewhat seen as a quantitative method due to the importance given to the frequencies of the occurrence of particular categories. A major critique to this method is that it would remove meaning from its context.

On the contrary, thematic analysis can still offer the methodological rigor of content analysis (i.e. frequency of codes) while also investigating the meaning in context. With the aim of identifying, analysing and reporting themes within data (Braun & Clarke 2006, p. 79), thematic analysis presents the advantages of the subtlety and complexity of a truly qualitative analysis. Principles and procedures remain similar to the content analysis where, for instance, the terms ‘code’ and ‘theme’ are used interchangeably. However, themes are considered as specific patterns of interest found in the data. What this method adds to qualitative analysis is the potential to grasp, along with more observable or manifest data, some valuable or latent aspects of transcripts emerging for instance from implicit references or uncommented aspects. This kind of data requires interpretation of developing themes (latent contents) so to understand meaning of more manifest aspects. For the present study, the researcher initiated the developing of categories (manifest contents) with the aid of NVivo 9 software (QSR 2009) so to classify all data obtained in the research. He then continued the analysis by developing themes and results are presented accordingly. The thesis is also enriched by brief extracts of transcripts so to support and disclose the analysis of latent aspects of the investigation.

4.4.3 Document analysis

While surveys and interviews are considered “interactive research methods” (Gray 2013, p. 498), other methods involve the use of non-active sources, although they may be socially based. These include archival analysis, physical evidence and documentary evidence. Document analysis, as a qualitative research method, is a systematic procedure for reviewing or evaluating documents (Bowen 2009). The researcher examines and interprets data in order
to gain understanding, meaning and develop knowledge (Corbin & Strauss 2008; Rapley 2008). While document analysis has also been used as a stand-alone method, it is more often used in combination with other qualitative research methods. In terms of its applicability, document analysis has been applied to case studies (Stake 1995; Yin 2011) as constituting a helpful source of evidence that complements interviews and directs participants’ observation (Yin 2003).

The term ‘documents’ is used to intend a very wide range of different kinds of source (Bryman 2012). These typically include note, case reports, contract, drafts, annual reports, and others (Wolff 2004b, p.284). For the purpose of this study, legal and standardized documents were collected. A complete list of these documents can be found in Appendix 4. The material collected for this study, strictly related to bushfire investigation, included manuals, memorandum of understanding, procedures and guidelines incorporating principles and strategic actions of each agency.

While documents are typically considered standardized artefacts (Bowen 2009), this study adopted a more dynamic definition (Prior 2008) that considers documents in terms of fields, frames and networks of action. In this view, documents are not just simple representation of facts or reality, but rather they are intended as means for communication, able to influence episodes of social interactions and schemes of social organisation (Prior 2008). As Atkinson and Coffey (1997) stated, documents should be considered as ‘social facts’, which are produced, shared, and used in socially organized ways (p.47). Documents can be included in research for a variety of purposes (Bowen 2009). Of particular interest to this study was their function in providing the context within which research participants operate. Relevant information such as the historical roots of a specific matter, background and the conditions of the phenomena under investigation can be grasped through documents. In such ways, documents can facilitate the contextualization of other data, such as those collected during interviews. Furthermore, the document analysis can help in the formulation of questions to be asked in other phases of the research (Goldstein & Reiboldt 2004). In this study, document analysis helped generate the interview questions.
Some of the documents produced by an organisation are in the public domain (i.e. advertisements, press releases, mission statements, etc.) while other documents, such as manuals or organisational charts, are not publicly released. The latter are mainly the kind documents gathered for the present investigation. However, the level of access to this material varied between the agencies involved in the study. The researcher found three different levels of access. Agencies such as the CFA, DSE and Sardinia Forest Corp allowed full access to the non-public domain documents required for the investigation. Other agencies (i.e. Victoria Police) only allowed on-site consultation. With regard to the principal bushfire investigative agency in Italy, the Italian Forest Corp, the researcher did not obtain access to the full range of necessary documents. Such a variety of level of access did not always allowed for a systematic review of the bushfire investigative policies and procedures undertaken by the six agencies. In those cases where the access to documents was not fully granted, the researcher relied more on “interactive research methods” (surveys and interviews) in order to obtain an understanding of the bushfire investigative mechanism existing in that specific agency.

The documentation review and archival records, drawn on observation, historical research, and records of the main organisational documents represented an important step in the data collection phase. Documents and archival records provided specific details and information to be compared with other sources. The analysis of the policies and procedures of the six agencies involved, along with the direct observation and the survey conducted in the field, helped the researcher to understand each organisational context, their aims, as well as contributed to the design of the questionnaires to the most senior investigators and the surveys.

4.5 Rigour in qualitative research

The present research project is a qualitative analysis based of data collected from focus groups, face-to-face interviews and manuscripts. Typically, this type of study yields a staggering volume of data that needs to be processed and interpreted by the researcher, which could easily lead to biased readings and premature conclusions. To avoid this, a series of
commonly accepted strategies were implemented (Eisenhardt 2008). These give the researcher the highest chances of achieving internal validity (the interpretation of the data is correct) and generalizability (the results are applicable to other contexts and not limited to the specific case at study) (Yin 2013). Different strategies were used at each stage of the research project: data collection, data analysis and data discussion. These strategies are outlined in the paragraphs that follow.

4.5.1 Data collection

Document analysis was based on 19 items: 11 documents from the Victorian agencies, 8 documents from the Italian organisations (see Appendix E – List of documents collected). These documents offer an official, objective framework of the fire investigators’ reality to the researcher, as they delineate the policies and procedures that frame their work. The study of these documents prior to any direct interaction with the participants decreased the risk of introducing a bias due to the researcher’s lack of knowledge of the procedures used. It also allowed an unbiased approach in the subsequent phases of this study, by basing the focus group and interview questions around the knowledge that was gained during this phase.

The focus groups were conducted with the three Australian agencies (CFA, DSE and Victoria Police) at the beginning of 2011. Data were collected from five questions (Appendix B) that were informally facilitated by the researcher to the participants as well as from participants’ engagement in the subsequent discussions and sharing of opinions (Silverman 2016). Discussions were carefully kept focused, rather than led, on the main topic (Newcomer, Hatry & Wholey 2015). The researcher, always with a facilitating rather than leading approach, prevented the discussions to be dominated by one or a few members, so to allow a more balanced and representative collection of the data (Gill et al 2016). The process of focus groups activity took a total of 150.99 minutes and saw, respectively, 59.46 minutes with CFA, 48.52 minutes with DSE and 43.01 minutes with Victoria Police.

The face-to-face interviews were carried out between May 2011 and September 2012. A first stage took place in Victoria, Australia, followed by a second stage in Italy. According to Miles and Huberman (1994), research studies based on data observed and reported first-hand are
much stronger than studies relying on indirectly reported data. For this reason, all the participants interviewed carry out the investigative role personally. In total, the interview process took 710.64 minutes, with interview durations spanning from 13.41 minutes to 37.20 minutes. The researcher chose to tape-record all the interviews and this choice was based on the needs of objectivity and neutrality (Sharkey 2005). Indeed, he chose tape-recording over note-taking to avoid the inexactitude and incompleteness of relying exclusively on annotations during the interviews. On the other hand, he needed an unobtrusive tool that would minimise the risk of artificial answers that could be given in the presence of external instruments used for data collection, such as video recorders (Onwuegbuzie 2003). The interviews were professionally transcribed (and translated, in the case of the Italian interviews) by an external professional agency, so to maintain an unbiased and rigorous approach. Rigour was also tested by comparing the quality of transcription with the tape recordings. Clear inscriptions marked when the words uttered were unclear or inaudible.

### 4.5.2 Data analysis

To avoid bias during the analysis phase, Eisenhardt (2008) suggests sifting cases into categories and subsequently looking for similarities within groups and differences between separate groups. Alternatively, the author suggests selecting pair of cases and finding the similarities and differences between pairs. This approach forces the researcher to look for differences in apparently similar cases and to look for similarities between different groups. In other words, it forces the researcher to ‘think outside the box’, going beyond the initial impressions and looking at the data from different angles. Multi-site comparisons, in particular, can increase the external validity (Onwuegbuzie & Leech 2005). Accordingly, the researcher have grouped and compared the six agencies under study following two criteria: the country of origin (Victoria vs. Italy) and the agency role (police vs. fire-fighting). By looking at the same data with these two lenses, the risk of result misinterpretation was reduced, while at the same time a more sophisticated reading of the present comparative study was created.
4.5.3 Data discussion

As discussed previously, one of the challenges associated with qualitative research is the ability to report the wealth of material that it produces in a way that is understandable, faithful and easy to read. Inserting verbatim quotations in the main text is one of the strategies used by qualitative researchers to achieve these goals (Becker 1970; Corden & Sainsbury 2006). Despite it being a commonly used technique, the use of spoken words in research studies has attracted criticism, which have ultimately lead to the common belief that the writer should achieve a fine balance between narrative and quotations, to maintain scientific neutrality. The point was made that concepts supported by a quotation might appear more important than the other ideas exposed exclusively in the text. Alternatively, the author might use an example of spoken words to convince the reader of the point he/she is trying to make, thus introducing a bias in the discussion of the data. To avoid these pitfalls, the author of the present study has followed the guidelines presented by Corden & Sainsbury (2006). Accordingly, the quotations used in this study were not selected based on their length, due to restrictions of the output format (as they might have been for a journal article, for example). The main reasons for their selection are:

- as illustrations: to illustrate the theme being explained;
- as words of explanation: to better understand where the speaker “is coming from”;
- to deepen understanding: spoken words often convey better the depth of the speaker’s feelings than prose does;
- to enhance readability: as spoken words often increase the reader’s focusing ability.

To make a clear distinction between spoken words and the narrative a special format was adopted. The quotations were indented, italicised and embedded within quotation marks.

Similarly to quantitative research, qualitative studies are subject to the emergence of exceptions, especially in the data collected. To avoid the temptation of disregarding or discrediting such observations (Miles & Huberman 1994), the present study categorised these outlying responses as “Other” or “None of the above”. Alternatively, if the answer given spanned across all the categories listed, an additional “All of the above” category was created.
The data is also presented in form of tables so to give the reader a more direct and numerical understanding of the participants’ distribution.

4.6 Research outcomes

There are some natural limits and problems common to all research (Connell 1985; Flick 2014; Hammersley 1995, 2012). Even when it is a PhD project, the study has limited scope and the knowledge generated by the researcher will not necessarily be accepted by all.

One of the main disadvantages always been attributed to qualitative approaches is the problem of generalizability. Questions are often raised about the value of case study research, including generalizability of findings. Indeed, in qualitative analyses results cannot be extended to broader populations with the same degree of assumed certainty found in quantitative analyses (Bryman & Burgess 1999). These concerns have often focused on case study research (Yin 2003). The debate is about representativeness and generalizability of findings (Bryman & Burgess 1999). Qualitative research does not aim to discover whether findings are statistically significant or causally obtained. Rather, it aims to be useful for theory building and understanding situational activity. More weight is placed on a full contextual analysis of fewer events or conditions and their interrelations (Cooper & Schindler 2003). Thus, the intention of a case study is not generalization, but rather drawing theoretical understandings from the analysis (Blumer 1969; Kaplan & Maxwell 1994; Maxwell 2012; Stake 1995). The aim is to understand behaviours rather than to generalize and predict causes and effects. An interpretivist researcher is focused on meanings and subjective experiences which are time- and context-related (Hudson & Ozanne 1988; Suddaby & Greenwood 2009).

As described by Yin (2003), a case study fulfils three rules of the qualitative method: describing, understanding, and explaining. The focus of the debate should be on whether the researcher using qualitative methods ensures ‘objectivity’. In other words, that his/her personal perspectives are filtered in order to maintain unbiased information gathering (Creswell 2003). Following Harding (2002), the goal is to balance objective and subjective dimensions present at every stage of the research, mindful that this is the only way to guarantee the integrity of the research. As Hammersley (1995) states “research should not be
directed towards the realisation of any ultimate value other than truth, and should not make evaluation of such ultimate values” (p.118). Accordingly, the current study is directed to no other immediate goal than the production of valid and relevant knowledge.

Taking into account these limitations, this study offers a number of potential advantages relative to the nature and dissemination of its findings. The thesis can serve as a basis and point of departure for further studies and publications, locally-focused and international in its reference.

This investigation can be seen as a starting point in offering agencies a better understanding as well as, possibly, facilitating organisations in the process of sharing their knowledge, so as to become more empowered and better coordinated. More holistically, fire and land management agencies will improve the bushfire investigation mechanism not just by realising the major weaknesses in their own investigation but also by maximizing communication and co-operation with all fire stakeholders.

An area of potentially longer-term policy influence and benefit is the creation of a self-aware and empowered panel of experts within the key fire agencies, which is envisioned as continuing beyond the timeline of the project itself. This pool of organisations, however small, once supported by a well-integrated and coordinated fire network provides for a second-order mechanism for the influence of policy and procedures, as well as the dissemination of relevant findings. In analysing strengths and weaknesses to the sharing of knowledge between fire investigation agencies as well as to grasp their internal limitations in undertaking bushfire investigation, this examination endeavours to use the information on the dynamics identified with the aim of creating a starting point for any agency linked to the investigation of bushfire risk. This self and reciprocal awareness is the basis for a better understanding, essential to provide these agencies with an adequate level of power and knowledge, required in any process of continuous improvement. Always mindful that the key to reducing and preventing bushfire arson is through maximising co-operation and overcoming the barriers of interoperability between all fire stakeholders, the outputs produced during this project will be made available to arson practitioners and investigators working across Australia and subsequently to the rest of the world.
In the next chapter, each of the six fire investigative departments involved in the current study is described and the different methods adopted in gathering data along with the procedures utilized to interpret such data are provided.
CHAPTER 5
INVESTIGATIVE POLICIES AND PROCEDURES

5.1 Introduction

This chapter presents a comparative documentary analysis of the six investigative organisations across the two countries selected for analysis – Australia and Italy. Utilizing the “Four Flows” method of McPhee and Zaug (2000, as described in detail in section 3.6), all available documents of these organisations setting out their policies, procedures and operational manuals have been examined. The words wildfire, bushfire or vegetation fire have been kept in their original version according to the manual or policy adopted by the relevant agency and considered as synonymous in the thesis. The analysis focuses on operational procedures and compliance requirements concerning bushfire investigation. Emphasis is placed upon documents, which set out organisational responsibilities, boundaries between organisations as well as how a ‘good’ investigation should be conducted.

From the review of these documents four key elements are identified:

• hierarchy and bureaucracy (the ability to deal with similar problems in a consistent fashion) (Beetham 2013);
• the ability to capture the learning derived from experience (the ‘learning organisation’) and to transfer this new knowledge to activity on the ground;
• the differences in assessing of performance – how success and low effectiveness are judged;
• the extent to which there exists a ‘culture of reliability’ in these organisations (Black& McBride 2013).

The assumption behind these key elements is the concept of the ‘planning-and-control cycle’ (eds. Soeter et al. 2010). According to Soeter and colleagues, any organisation is the result of a cycle of activities that start with a decision-making process and, through practical actions, ends with an assessment of the actions undertaken.
The six agencies examined in this project all work in an uncertain environment. This makes the learning process from their actions and experiences one way to improve in relation to the external and context based requirements. The organisation plans its own strategy and sets out its priorities. These outcomes are then translated into practical actions through internal coordination and command. Once the disaster event has been managed and the operational actions are no longer needed, the sense making and feedback system takes centre stage.

One of the most challenging aspects for disaster emergency organisations is assessing and evaluating their results. Indeed, during non-emergency time their goal is to prepare for the time of action. This makes it difficult to judge their objectives in terms of effectiveness and achievement. Nonetheless, the After Action Review is undoubtedly one of the most applied OLMs within military organisations and, more generally, widespread in organisations that must demonstrate a high degree of reliability (Baird et al. 1997). Firmly, based on reflection and feedback processes, “the core questions of an AAR are: What happened? Why did it happen? How to fix it?” (eds. Soeters et al. 2010, p.232). The knowledge obtained from the AAR is, then, utilized for checking the initial organisational strategies and priorities as well as changing them, if necessary.

In this context, policies and procedures represent the main path for reading and following this organisational cycle. Policies are written in accordance to the contextual, external and strategic aspects. Procedures, learning manuals and guidelines theoretically indicate to organisation members how to be well prepared for any type of operation. Post incident analyses and feedback reports represent the ‘ending’ elements through which the organisation can learn and improve its next strategy process; which is where the cycle starts all over again.

This chapter takes up these themes with a content analysis of the main statements, manuals and related printed material produced by these organisations. This material is complemented by a consideration of the legal arrangements under which each organisation operates. To use Bowen’s words:
“The kind of content analysis that I recommend excludes the quantification ...
... rather it entails a first-pass document review, in which meaningful and
relevant passages of text or other data are identified” (Bowen 2009, p.32).

In this sense, documents are seen as social facts created in and for a specific context (Prior 2008). Therefore, the analysis of such data requires a detailed examination and interpretation in order to gain understanding. As also set out by Prior in a more dynamic and use oriented definition:

“We must consider them in terms of fields, frames and networks of action. In fact, the status of things as ‘documents’ depends precisely on the ways such objects are integrated into fields of action, and documents can only be defined in terms of such fields” (Prior 2003, p.2).

The chapter starts by highlighting the importance of using documents in research. In section two, the key documents are presented. The agencies’ manuals and protocols are analysed according to the Four Flows model in section three. This is followed, in section four, with a summary of the analysis.

5.2 Using documents

All fire and police agencies have translated their vision and the related mission statements into standardized documents such as organisational policy, codes, fire management guidelines, and learning manuals. Moreover, some agencies signed partnership agreements with other agencies and/or states through several ‘memorandum of understanding’. Once in place, these documents act as guidelines to strategic action.

Emergency organisations need to have both an effective resource management plan and an efficient fire management plan. These plans are necessary to set out all possible activities and procedures that should be adopted in order to accomplish the legislative, institutional or individual mandate. In all cases, the overall mission is meant to be the protection of civilians and of the environment. For these reasons, a ‘corpus of documents’ from each agency have been assembled and analysed. Given the high number and huge variety of the documents produced by such institutions as well as the narrow and specific focus to which this research
project aims, only those documents specifically related to bushfire investigation have been analysed.

Systematic procedures involving the review and/or the evaluation of documents material are commonly known as “document analysis” (Bowen 2009, p.27). This analytical method is highlighted by Goldstein and Reiboldt (2004), showing how these different methods can be of support to each other in an interactive way. The documents collected are seen as means for communication rather than mere representations of facts (Lempert 2007). The term ‘documents’ applies to different types of sources such as public records, biographies, media, and private papers (Bryman 2004, p.380). For the purpose of the current research, organisational policies, procedures and learning manuals focusing on bushfire investigation have been analysed (see Appendix E). Regardless of their form, these documents – as with any other sources of data – have some specific characteristics. Firstly, they “have not been specifically created for the purpose of social research”. Secondly, they have been “preserved as data to become available for analysis” (Bryman 2004, p.381). This means that they have not been created for research but have been preserved so are available for analysis.

In assessing documents, four criteria have been identified: “1) authenticity; 2) credibility; 3) representativeness; and 4) meaning” (Scott 1990, p.6). ‘Authenticity’ refers to the origin of the document. The ‘credibility’ denotes documents free of biases and errors. ‘Representativeness’ is a source of typicality, when this is compared to similar sources. Lastly, the ‘meaning’ refers to the clearness and comprehensiveness of a document. Documents are conceptualized as something produced, shared and used in socially organized ways (Bowen & Glenn 2009; Atkinson & Coffey 2009; Prior 2008; Flick et al. 2004). They are the final product of the specific environment in which they are created. In this light, documents are social facts not something objective or free from error (Bryman 2004).

The approach here is to:

- First, to classify all documents, seen as a resource of evidence, according to the coding provided in the interview schedule (see appendix - research questions). Their content has been, therefore, read and categorized following the four flows model.
Second, once selected and classified, these documents have been examined through their social and organisational-context functions in terms of the research questions. The focus of the analysis becomes, then, if and how these documents are used and integrated into the organisation network, as well as how they are exchanged within such network.

Thus, documents are records of organisational procedures and necessary information for legitimizing how things are done in such organisational routines.

5.3 The manuals and protocols

The documents are presented in relation to the ‘four flows’ framework of McPhee and Zaug (2000; 2009). The value of adopting this specific approach has been explained in chapter 4. Organisational documents are here grouped into four thematic headings. These are:

1. Membership Negotiation
   a) Who is the investigator?
   b) What is the investigator’s position in the organisation?

2. Organisational Self-Structuring
   a) What does the investigator do?
   b) Who decides/who does it/how do they learn?

3. Activity Coordination
   a) Who do they communicate with?
   b) When is an investigation complete?

4. Institutional Positioning
   a) When is there an investigation?
   b) Does the investigator work with others? If yes, in what cases?

To explore these themes, the procedure is to draw on the learning manuals as the critical reference point for investigators, with reference to other documents when appropriate. Of
note, the agencies use the terms wildfire, forest fire and bushfire interchangeably. The agency terminology is used in this analysis.

Four divergent descriptions of organisational processes are evident. The first recounts the struggle of individuals to master or influence their member roles, statuses, and relations to the organisation (research questions n. 1). The second articulates how organisational leaders design, implement, and suffer problems with decision and control mechanisms (research questions n. 2). The third focuses on members engaging in interdependent work or deviating from pure collaborative engagement (research questions n. 3). The fourth describes the organisation as a partner, often anthropomorphized, in exchange and other social relations with other organisations (research questions n. 4).

5.4 Mission statement

Most agencies have mission statements which set out the remit and focus of the organisations, and these six fire investigative departments are no exception. They are:

_Arson Squad – Victoria Police:_ Victoria Police focus on the investigation of suspicious fires and/or fires that involve death or serious injuries. At fire investigations, Victoria Police aim to collect evidence for the purpose of apprehending and prosecuting offenders.

_Fire Investigation Unit – Country Fire Authority (CFA):_ The CFA has legislative responsibility to investigate the origin and cause of wildfires. The CFA Act 1958 (ss 20, 98 and 99) provides the power to investigate all fires within the country area of Victoria.

_Fire Investigation Unit – Department Sustainability and Environment (DSE):_ According to the Code of Practice for Fire management on Public land (revision 1) DSE must attempt to establish promptly the origin and cause of all wildfires.

_Fire Investigative Unit (NIA) – Italian Fire Brigade:_ Located within the Department of Fire-fighters Public Rescue and Civil Defence, the NIA was established in 2001. It has a
strategic and technical responsibility for fire investigation and related topics. The main tasks of NIA are the study, research and analysis of the causes of fire.

*Anti-Forest Fire Investigation Unit (NIAB) – Italian Forest Corp:* The NIAB was established with the introduction of the law n. 353 of November 21/2000 (“on Forest Fires”), under the Title VI of the penal code (public safety). It operates throughout the national territory, except in the special statute regions and the autonomous provinces, with the specific aim of coordinating information gathering and investigation activities concerning all forest fires.

*Forestry and Environmental Surveillance (CFVA) – Sardinian Forest Corp:* The CFVA, established by the regional law 26/85, is a technical body with police functions for the protection of the natural environment of the Sardinian region (one of the five Italian special statute regions).

The six agencies have a mandate to seek to understand the origin and the cause of any fire event. Their operative aim (mission) is to investigate all fire events so as to understand all possible causes behind bushfires. Such awareness is essential to achieve their organisational goal (vision), which is to prevent and reduce the number of fires for the community and environmental safety.

### 5.4.1 Applying the Four Flows model

Each agency has a set of guidelines that can be analysed via the ‘Four Flows’ methodology and framework. This analysis provides a comprehensive but focused overview of the remit for each agency.

#### 5.4.1a Membership Negotiation

The role of the investigator is seen by all agencies as someone requiring specific knowledge and training. Each agency sets out a series of statements about the ways in which investigators should approach their investigative tasks. Each will be dealt with in turn.
Australia

The two agencies, CFA and DSE, both state that the approach to wildfire investigation (including bushfire) should be “systematic” (Wildfire Investigation Learning Manual 2009, p.1). Investigators must follow a systematic investigation methodology and approach to locating a wildfires area of origin. As stated in the jointly published Wildfire Investigation Learning Manual (2009), wildfire Investigators should avoid attempts to prematurely locate the area of origin and not succumb to pressures to hastily complete an examination.

As indicated, the agencies stress the importance of system, patience and a clear idea of how to approach the job (‘methodology’). To accomplish this step, they have produced a code of ethics (CFA/DSE/and MFB – J11.01). In regards to the bushfire investigator’s role, the only difference between these two agencies seems to be that only the CFA, in accordance with their status, can and does have either paid or unpaid (volunteer) members operating as bushfire investigators.

The Victoria Police also emphasizes systematic approaches, patience and a broad consideration of the issues. However, the police do not have a targeted manual for wildfire investigation. Rather the investigators undergo the training and education as police investigators (detective). Therefore, police detectives have knowledge for a broad range of crimes and focus on investigation techniques in order to identify offenders and take them to court. Their knowledge also includes many other aspects of an effective criminal investigation such as criminal law, finding evidence, completing reports, and taking control of and managing crime scenes (Haia 2011). Nonetheless, in relation to bushfires, there is now recognition that investigators working on bushfires should extend their expertise beyond ‘basic detective work’: detectives are now encouraged to gain an understanding of fire behaviour as well as of the types of accelerant that can be used. To this end, detectives undertake an additional specific training program in bushfire investigation with experienced investigators from fire agencies, such as CFA and DSE (aufgvicpol 2012).

Italy

In Italy, bushfire investigative departments follow a similar approach to those operating in Victoria. For both the NIAB and the Sardinia Forestry and Environmental Surveillance, a
relevant aspect of an investigator is to demonstrate method; with an emphasis on patience, thoroughness and accuracy are also essential (Wildfire Scene Investigation). In the case of NIA-Lazio Fire Brigade, there is an emphasis on knowledge, specific training and attention in collecting data (see Guidelines for Fire Investigation). The time factor is also stressed as, all physical evidence needs to be collected and reported within a reasonable time. Once again, investigators are required to have understanding of the main procedures and operate with a set method (Guidelines for Fire Investigation 2009).

Of note, the NIAB is the only Italian agency with full time paid members exclusively focused on bushfire investigation during the whole year. However, due to their geographical position (based in Rome) and their limited workforce (11 members in total), they now have more of a consultant and teaching function rather than physically being in the field (except for major and complex bushfire events).

**Summary**

The manuals and protocols of the different agencies and departments are similar in focus in that:

- Investigators must follow a systematic investigation methodology.
- The investigator is someone able to apply relevant legislation and departmental policy while conducting bushfire investigations.
- Bushfire Investigators should be patient and analytic enough to avoid any attempt to prematurely locate the area of origin which would be, otherwise, the result of a psychological pressure in completing an examination.
- A person who has received specialized training in bushfire investigation.
- With a spirit of genuine co-operation, collaboration and goodwill being in the pursuit of team goals.
5.4.1b Organisational Self-Structuring

Organisational self-structuring refers to the rules that define the agency. This dimension covers a range of managerial activities, how the agency is organised to deliver its remit.

Australia

As cited in the CFA manual:

“The information obtained from an investigation will:
• identify fire related issues within a community and the preventative actions required to eliminate these issues;
• support changes and additions to law, regulations and standards; and
• assist with the development of fire prevention strategies” (Structure and Vehicle Fire Investigation, p.1).

As a result of this preventative as well as informative approach, the manual published jointly by DSE and CFA contains specifications on their self-structuring dimension, particularly on the knowledge required to the role of wildfire investigator and on those procedures investigators have to adopt in accordance with the Victorian Fire Investigation Procedures (Wildfire Investigation Learning Manual 2009).

Of note, CFA and DSE staff members, regardless of their specific role, are all provided with fire investigation awareness programs. Consequently, it is expected that fire-fighters from both agencies will appropriately preserve a fire scene, activate a Wildfire Investigator to attend the scene, and share their observations including the suspected cause of a fire with the Wildfire Investigator (CFA & DSE Partnership Guidelines 2006). Failing to provide such activities would compromise the efficacy of the entire bushfire investigation system. Indeed, a wildfire investigator intervenes in all those cases of human-caused fires (either negligent, deliberate or accidental) or when the cause of a fire cannot be determined by an initial investigation. In these cases, “investigators are to be dispatched to wildfire incidents as soon as possible after the incident is first reported” (Wildfire Investigation Learning Manual 2009, p.61).
The DSE and CFA procedures also focus on other aspects such as the divulgence of data collected on fire trends. Once again, this stresses the importance of sharing knowledge. As quoted:

“The State Fire Investigation Coordinator shall: In conjunction with the District Fire Investigation Coordinator, analyse fire trends for statistical purposes. The analysed data shall be reported to key stakeholders for development of appropriate risk treatments in line with agency objectives; Liaise with relevant Authorities and organisations in relation to fire investigation outcomes and findings; and Monitor and report to the Chief Officer on the performance and skills maintenance of Fire Investigators as per the requirements of the Fire Investigation Manual” (CFA – Standard Operating Procedure 2011, p.5).

Besides, the Wildfire Investigation Learning Manual (2009) indicates the major stages of a wildfire investigation (i.e. examining the fire scene; canvassing and/or interviewing potential witnesses; interviewing suspects; and preparing a final report) as well as how information needs to be collected. Necessary information includes the location, date and time of a fire, weather conditions at the fire, nature and extent of the fire, and relevant documentation (topographical maps, aerial photographs, etc.). Attention is also given to the preparation of protective clothes, preservation of the scene, and to the care of investigator’s physical and mental conditions.

In emphasizing the importance of effective arson investigation, Victoria Police focuses on gaining the ‘right training’ or experience in fire behaviour along with their knowledge in the broader field of criminal investigation. With this aim, as already mentioned, detectives within the Arson and Explosive squad undertake an additional specific working program in wildfire investigation with experienced investigators from different fire agencies. As a police agency, the Arson and Explosive Squad will assume control of any wildfire scene involving a fatality (Victorian Fire Investigation Policy & Procedures 2009).

Other aspects emerged, regardless of the country of origin, including the need for well accurate reports in accordance with organisational and legislative requirements (such as accuracy; usefulness; completeness and clearness), and the sharing of knowledge. As summarized by the CFA and DSE:
“Each Fire Service Fire Investigation Unit/Section will provide on-going liaison, data and information exchange relating to analysis and research issues evolving from the fire investigation process. In this context, all stakeholders will maximize opportunities to collectively build a sustainable workforce through routine information sharing, joint training activities, mentoring and exercises” (CFA & DSE Partnership Guidelines 2006, p.16).

As noted in Victoria, the Department of Sustainably and Environment developed the FireWeb (DSE – Fire Management Manual 8.1: Fire Suppression 2006), which details ways of working in relation to data and suppression information. The Fire Management Instructions and Manuals and the Glossary of Fire Terminology are both available through this website (fireweb.dse.vic.gov.au).

**Italy**

The Sardinian Forestry and Environmental Surveillance (CFVA - Establishment of investigative units 1996) as well as the Italian Forest Corps (Bushfire Technical Manual 2008) support the importance of having well educated and trained employees. Their training includes police techniques related to the bushfire investigation. In both Italian agencies’ investigation processes are based on a rational action plan approach. As stated:

“That represents the best way for the investigative unit to operate with method, following procedures firmly logical and systematic. The only aim has to be the complete and accurate collection of evidences at a crime scene without contaminating it through personal initiatives and judgments” (Operational protocol of collecting and reporting, front page).

Protection, preservation and integrity of the area of origin also are paramount for the Italian Fire Brigade (NIA - Guidelines for Fire Investigation 2009), which considers these as a must, along with suppression and rescue. As already mentioned for the DSE-CFA, the Italian Fire Brigade also considers four basic steps as the foundation of the investigation activity. These are: “1) inspection of places; 2) description of places; 3) technical surveys; and 4) collection of sources of evidence” (NIA - Guidelines for Fire Investigation 2009, p.8). Everything must be written and recorded in reports to facilitate the investigation activity that should be conducted in a coordinated manner.
Summary
Although specific procedures may vary, all agencies promote similar types of activities. These are summarized as follows:

• It is important that Wildfire Investigators know general principle of fire behaviour and understand how liquid, gas and solid fuels burn.

• A wildfire investigation involves at least four separate stages:
  - examining the fire scene;
  - canvassing and/or interviewing potential witnesses and/or suspects;
  - collecting of sources of evidence;
  - preparing a final report.

• Wildfires investigators liaise with relevant Authorities and organisations in relation to fire investigation outcomes and findings.

• The entire investigation process is based on a strict and well organized chain of reports that goes from the bottom to the top; from the fire-fighters to the wildfire investigators and up to the state coordinator manager and/or coroner office.

• All Wildfire Investigation Reports should be written in a professional manner that conforms to organisational and legislative requirements (technical accuracy; usefulness; concise; complete, clear, consistent).

• The final objective of wildfire investigation is to determine the origin and cause of all fires.

5.4.1c Activity Coordination
With regard to what work members are doing together, the analysis of the six investigative organisations identified a set of procedures. These refer to coordinated and unified activities for specific purposes. As mentioned earlier, the major purpose of an efficient bushfire investigation is to determine the origin and cause of the fires, obtain information for further analysis and identify any criminal activity behind the event. Fire investigation is a critical element of the responsibilities of the various fire and police agencies. Critical to this process is the necessity of preparing reports and exchanging information with each other.
There is a shared belief, in fact, that a well-conducted investigation will not only result in the prosecution of criminals, but also contribute to the development of fire prevention strategies.
and could favour changes in legislation, regulations and codes. This is also the reason why all agencies stress the fact that the examination of the fire scene has to be a scientific practice focused on obtaining an accurate and complete collection of evidence, a concept expressed in almost all documents collected. In this sense, personal initiative and judgment are considered as something very likely to contaminate the entire scene and to undermine the validity of the investigation itself. Each coordinated activity, therefore, needs to strictly follow specific procedures and be documented, as well as justified.

An example of the process is that when the Wildfire Investigator arrives at the scene. S/he should immediately report to the Incident Controller or to the senior officer (Wildfire Investigation: Victorian Field Guide 2011). All her/his activities should be rigorously carried out, both at the scene and prior to leaving the site. Preparing the scene for future investigation requirements as well as handover are paramount. Everything ends with the final incident report, precisely written and processed by the wildfire investigator.

**Australia**

In Australia (Victoria) it is the Incident Controller’s duty to provide a “Situation Mission Execution Administration Command And Communications Safety Questions Briefing (SMEACS-Q)” (Wildfire Investigation: learning manual 2009, p.43) in which the reasons for requesting the investigation, any possible hazards, any special procedures or the need for additional personnel or equipment are provided. The current situation of the fire and any communications arrangements for the bushfire investigators should also be reported.

In the case of fires where the suspicion is that the cause is other than natural, a different procedure has to be adopted and a different report completed: the ‘Wildfire Investigation – Preliminary Report’ (Chief Officer’s SOP: Fire investigation 2011, p.5). Once the investigation takes place, the report should be completed within 48 hours, submitted to the Fire Management Officer/District Manager, and attached to the FireWeb Incident Report. The Manager Fire and/or Fire and Emergency Management Division has the authority to require a full ‘Wildfire Investigation Report’ (DSE – Fire Management Manual 8.1: Fire Suppression 2006). This report is a very detailed document in which information includes a summary of the
fire, its origin and how the origin was determined, time of ignition, cause of the fire and other relevant documentation. The full report is to be completed within two months.

Reporting activities also include an initial verbal report to be provided within 72 hours of the fire by the Fire Investigator to the District Fire Investigator Coordinator, and then, a Fire Investigation Report containing details of all aspects of the investigation. This last report will be submitted (via FIMS) within 21 days (Chief Officer’s SOP: Fire investigation 2011). Once received by the District Fire Investigation Coordinator, the report will be reviewed within 28 days of the fire occurring. Moreover, it is responsibility of the District Fire Investigation Coordinator to provide monthly reports to Operations Manager, Manager Community Safety and the State Fire Investigation Coordinator of numbers of investigations, trends and overall results. At the completion of the investigation, the Wildfire Investigator submits a Fire Investigation Report, which outlines the findings into the origin and cause of the fire. The report is passed by the State Fire Investigation Coordinator to Victoria Police for inclusion in the Police Brief that is presented to the Coroner.

The CFA–DSE manual also specifies the possibility/desirability to conduct the wildfire investigation with more than one investigator. Past experience indicates that the best outcomes occur when two investigators conduct the investigation; ideally with one investigator knowledgeable in fire law and rules of evidence and the other skilled in wildfire behaviour (Wildfire Investigation: Learning Manual 2009). In the case of two investigators, specific procedures are provided. As stated:

"When more than one Wildfire Investigator is conducting an investigation a pre-investigation meeting should be held. This meeting should address the following issues:

- Appoint the Wildfire Investigation Team Leader
- Identify the investigation aim and strategies
- Identify the boundaries to be observed
- Clarify team member roles and reporting lines
- Identify working arrangements with other organisation
- Identify protective clothing and resources to be used
- Identify reports to be received from other personnel
- Discuss conditions at the scene, access and safety precautions"

It may also be the case that the event involves both DSE and CFA staff. In these instances, the DSE-CFA Partnership Arrangements (2006) guide the investigation. Pre-investigation meetings should be arranged to address a series of important matters such as the agreed investigation aim and strategies. Likewise, member roles, resources, specific competencies, and other working arrangements – including with other organisation – should be defined during the meeting.

Due to the importance of the obtaining information for the determination of the origin and cause of a fire, consideration is given to the methods to be adopted for recording it. The manual in particular specifies some appropriate methods a bushfire investigator should adopt, such as field notes, fire scene sketches, and fire scene photography. Templates of field notes are provided to the investigator and allow the collection of the details at the scene. The information collected from witnesses should be reported verbatim. Field notes also allocate a page for scene sketches, as an effective support for photographs. These processes point to the preparation for knowledge exchange. Recording methods need to be carefully considered and these vary depending on the incident type and circumstances. Planning how the investigation will be recorded constitutes an essential activity of a bushfire investigator and this should be done prior arriving at the scene. In this regard, in the DSE-CFA manual, attention is also given to each agency’s respective area of expertise (Wildfire Investigation: Learning Manual 2009).

Specific boundaries need to be considered. In Australia (Victoria), a bushfire investigator cannot demand one’s details unless voluntarily given as well as information to the media and others. Accordingly with the CFA SOP 9.16 – Media Management and the DSE Fire Suppression Manual (see FM8.1, Chapter 7), these aspects are police officers’ competences. In Italy, all agencies involved in the study, including the Italian Fire Brigade, can and do act as police officers. They are, therefore, entitled to interview possible witnesses in case of emergency.

Italy
In Italy, both the Sardinian Forest Corp and the Italian Forest Corp also refer to the reporting activity as something that needs to be well scheduled, organized and, above all, followed. As stated:
“All reports concerning a fire crime must be transmitted:

• for competency, to the Prosecutor’s Office;
• for information, to the Inspectorate of belonging and to the General Body Coordinator’s office;
• a copy will be kept within the operating station” (Practical methods of collecting, packaging, labelling and transporting evidence; Wildfire scene investigation).

Moving from the practical aspect of collecting evidence, the Italian Fire Brigade also promote the view that a comprehensive investigation can provide lessons to avoid the occurrence of similar fires and/or other crimes related to fires (NIA - Guidelines for Fire Investigation 2009).

As with the other Australian agencies, the Italian ones also recommend prompt investigation of the causes. From a fire agency perspective, such a principle becomes even more important as they are, quite often, the first arriving on the place of the event. “The ‘golden rule’ is: act immediately. The longer you wait the more traces may spread” (NIA - Guidelines for Fire Investigation 2009, p.6). The rationale behind this rule is the awareness that after such an event the ability of a witness to evoke it diminishes with the passing time; hence it is important to be prompt in collecting this crucial information. These agencies also have laboratories to analyse the physical evidence collected at the crime scene. Further the Italian Fire Brigade also has a forensic science laboratory.

Summary

Similarities in terms of investigative practices and procedures of the investigative departments are:

• Carrying out the investigation as soon as possible.
• Obtaining information from individuals at a wildfire scene can be critical to determining the point of origin and cause of a fire. As peoples’ ability to accurately recall an event diminishes with the passing of time, it is essential to identify potential witnesses and obtain information connected to a fire as soon as possible.
• To enable fire investigations to be undertaken safely and effectively, Fire Investigators must not work alone. However, the second person present on scene does not need to be a qualified Fire Investigator.
• Prior to leaving the wildfire scene, Wildfire Investigators should:
  - prepare the scene for future investigation requirements (this may include appropriate security measures to limit access and protect the scene; additional weather protection for the site, for example covering the point of origin with a tarpaulin);
  - handover scene responsibility (report hazards to those accepting responsibility for the scene; report on progress of the investigation; notify the Incident Controller/RDO - Regional Duty Officer and note that the scene handover has occurred).

• At the completion of the investigation, Wildfire Investigator’s submit a Fire Investigation Report which outlines the findings into the origin and cause of the fire. The report, if necessary, is passed by the State Fire Investigation Coordinator to Police for inclusion in the Police Brief that is presented to the Coroner or Prosecutor’s Office.

What emerges from the analysis of these points is that all fire and police agencies agree that the fire investigation represents the foundation on which fire prevention is developed. In this view, the outcomes for a proficient fire investigation can be seen in the improvement of the law and regulations as well as in the evaluation and development of fire prevention strategies, such as community fire safety, education programs and media safety campaigns (see also CFVA - Rural and Bush fires in Sardinia 2004, DSE/CFA Wildfire Investigation 2009). At this point, it is evident that the knowledge of a bushfire event should be produced by the investigation team but also shared, through reports, with other colleagues and/or bushfire investigative departments. Via the media, society more generally is also informed.

5.4.1d Institutional Positioning

Institutional positioning focuses on each agency’s jurisdiction and responsibility (see agency’s mission statements, earlier in this chapter) and on the way and the extent of collaboration including any formalized partnership between such agencies. Bushfires are complex events and, as such, likely and expected to involve professionals from various disciplines. The importance of co-operation and collaboration between those involved agencies is specifically included in their manuals.
Australia

Due to the multi-jurisdictional complexities of joint agency arrangements, the Victorian agencies share the same approach to emergency management. As specified in the State Emergency Response Plan, it is believed that an “all-agency integrated approach” (Victorian Fire Investigation Policy & Procedures 2009, p.1) to wildfire investigation would be of help to increase the level of skills and training of investigators as well as to maximize the resources available.

The vision of an integrated approach is well established, in both the DSE and CFA, agencies inside and beyond the State of Victoria. The DSE-CFA Partnerships Arrangements states:

“The DSE-CFA Heads of Agreement outlines the commitment of both agencies to work together in a partnership that is characterized by co-operation, collaboration, goodwill and the constant pursuit of excellence. It also provides overarching principles within which both agencies will work” (CFA & DSE Partnership Guidelines 2006, p.5).

Cross state example is the Memorandum of understanding between CFA and NSW Rural Fire Service, which establishes arrangements between the two agencies to provide assistance in fire investigation when requested (CFA-NSWRFS Memorandum of Understanding 2010). Also, it recognizes each agency’s specific expertise and resources relating to Fire Investigation.

Similarly, DSE (Fire Management Manual 8.1: Fire Suppression 2010) has interstate arrangements with fire agencies in relation to the State border areas of South Australia and of New South Wales. The provision of mutual assistance in fighting fires also is internationally established with the United States of America, New Zealand and Canada. There is a sharing of knowledge between these agencies regarding suppression and management of bushfires (Fire Management Manual 8.1: Fire Suppression 2010).

The concept of partnerships is also strongly held by Victoria Police. The Arson & Explosives Squad operated, and developed a memorandum of understanding, with several agencies including the Victoria Police Forensic Services Centre, the DSE, Metropolitan Fire Brigade, CFA, and Work Safe and Energy Safe (Victorian Fire Investigation Policy & Procedures 2009).

A major difference in procedures between DSE-CFA and Victoria Police is about the
investigation activity itself. While the CFA and the DSE investigative jurisdiction is linked to the area of origin of the fire event, the Victoria Police takes control of the fire scene when a fire results in fatalities or, in any case, when considered the consequence of human-caused activities, regardless of the specific spot (point of origin) from where the fire started (Victorian Fire Investigation Policy and Procedure 2009). Nonetheless, Police and Forensic scientists are often assisted by CFA and DSE Wildfire Investigators in the determination of a fire’s origin and cause. Joint agency investigations suppose that Victoria Police, CFA and DSE work together and are coordinated in their approaches (Victorian Fire Investigation Policy & Procedures 2009). These arrangements are well established by the Victorian Fire Investigation Policy & Procedures (2009). The lead agency is decided by the conditions at the scene, and each agency responsibility is then determined.

The CFA Standard Operating Procedures has a specific section (SOP 11.01) dedicated to those procedures to be adopted in all multi-agency fires investigations. Specifically, the fire investigation should be conducted by the agency that has the suppression jurisdiction for the suspected area of origin (referred to as the Management Agency of Origin). In the case of inadequate or insufficient resources by the Management Agency of Origin, the support agency may conduct the investigation. Any final fire investigation report must be shared with the ‘Management Agency of Origin’ (CFA - Standard Operating Procedures SOP 11.01).

The CFA (CFA Act 1958, ss20, 98 and 99) has specific legal responsibility to investigate all those fires within the country area of the State of Victoria. In contrast, DSE does not have equal responsibility to do so (Forest Act 1958; Code of Practice for Fire Management on Public Land). Nonetheless, DSE is required to attempt to establish origin and cause of wildfires. In its area of jurisdiction (public land), the DSE legislative responsibility is to respond to fires and to support and assist other agencies during the emergency. As stated in the Code of Practice for Fire Management on Public Land 2006 (Revision 1 DSE 2006), the department’s policies on fire investigation are that:

“Where arson or negligence with fire is suspected, fire-fighters must endeavour to protect the area of origin of a fire from intrusion by any person or equipment until a fire investigator arrives and has completed the site investigation. A fire investigator must, wherever practicable,
investigate and report on every suspected human-caused fire attended by the Department on public land” (Code of Practice for Fire Management on Public Land 2006, p.32).

There also may be cases in which the area of origin cannot be determined to be in one agency’s jurisdiction. In these cases, the agencies need to agree to each investigation agencies’ responsibilities. The sharing of information, joint training activities, and mentoring and exercises is encouraged. CFA and DSE have regular forum to manage issues as well as planning safety issues within the agencies.

In all fire events, Police Officers (uniformed Branch) are required to go to the scene and, depending on specific and still unknown circumstances, assume control of the scene until it is passed to specialist Police personnel. Once at the scene, investigators may decide it is a suspicious fire. The fire scene becomes then a crime scene and the unit in charge will be the Criminal Investigation Unit (CIU). Once again, the local CIU detective will rely on CFA and DSE Wildfire Investigators for relevant information on the event and the determination of the cause and origin of the fire.

Other professionals may be required, depending on the nature of the event. The Arson & Explosives Squad members or forensic scientists from the Fire and Explosion Investigation Section, for example, may be called in by others. The Arson & Explosives Squad is responsible for investigations concerning organized, serial or recidivist offenders, while the Forensic Service Centre will conduct a parallel investigation in order to establish the cause of a death.

In conclusion, the Australian multi-agency approach requires that Victoria Police, CFA, DSE and MFB exchange their data and reports. The Victorian Fire Investigation Policy & Procedures (2009) and the CFA/DSE Partnership Guidelines (2006) include, require, or at least promote the sharing of knowledge. Such exchanges can be part of the reciprocal provision of reports between agencies.

Italy
In Italy an inter-agency collaboration approach is considered essential. Although each agency involved in the study has its own well defined sphere of jurisdiction and responsibility, their
fire operative practices are linked to each other. The participative three organisations are the main actors within the fire suppression and prevention of fire in Italy.

The Italian Fire Brigade is responsible for the suppression of all type of fires: structural, rural and wildfire. With reference to investigation activities, however, they are responsible only for structural fires and all those fires started from a housing or industrialized area (NIA-Guidelines for Fire Investigation 2009).

The Italian Forest Corp is the jurisdictional subject in charge of the investigation and for the operational coordination of all personnel (on the ground and in the air), including the fire brigade staff members, involved in the suppression of both rural and bush fires. The CFS is also responsible for forest fire prevention through the monitoring and the maintenance of fire prone territories (Bushfire Technical Manual 2008).

The Sardinian Forest Corp has the same status and jurisdictional functions as the Italian Forest Corp. It only operates within the boundaries of the autonomous region of Sardinia, one of five regions defined as ‘special statute’. This means, for example, that these five regions do not recognize the National Forest Corp (which operates in the remaining 16 Italian regions). Nonetheless, the five regions have to transmit, at the end of each year, their bushfire information and data to the Italian forest Corp which will communicate such data to the European community for statistical and research purposes (Fire Management: voluntary guidelines 2006). In the current study, the Sardinian Forest Corp (CFVA) is not only representative of the autonomous regions but it also is the first in Italy to officially establish, in 1994-1996, “bushfire investigative units” (CFVA - rural and bush fires in Sardinia 2004, p. 4).

Investigation should be carried out according to the principle of collaboration by all fire and police agencies (see also NIA-Guidelines for Fire Investigation 2009, and CFVA-Rural and Bush Fires in Sardinia 2004). The Italian Fire Brigade clearly point out the fact that fire investigation activities need involvement by professionals from various disciplines (i.e. fire or police agencies, insurers, consultants). Indeed, even if it is stated that the success of the examination at the scene depends significantly on the ability of the fire fighter crew who first arrived at the place where fire occurred (close and preserve the scene for future investigation), it is also
recognized that investigation requires different and more specialized support from experienced fire investigators (NIA-Guidelines for Fire Investigation 2009).

The approach regarding bushfire arson investigation appears similar to the above arrangements for the Sardinia Forest Corp. As mentioned, the Sardinian investigative units carry out investigative police functions. The regional investigative unit contributes to the investigation of those fires that have caused significant damage to forests and to the environment or danger and harm to individuals (CFVA-Establishment of investigative units 1996). In other words, the Central Regional Investigative Unit is responsible for all those fires classified as complex in terms of investigation. Nonetheless, their investigative role does not replace the obligations that, by law, each station has in providing an efficient approach to investigation activity. Their units work in support and in agreement with all operative stations of Forestry and Environmental Surveillance (CFVA-Establishment of investigative units 1996).

Finally, in the field of bushfire investigation the Italian Forest Corps operates at a national level. Since 2002 this has been with the support of a centralized anti-forest fire investigation unit (NIAB). As for the Sardinia Forest Corp, the NIAB operates throughout the national territory as a technical support unit for all those stations that have to deal with the investigation of forest fires (see also CFS website).

All three Italian organisations promote collaborative relationships, in terms of fire response and prevention, not just between themselves but also with other police agencies (such as ‘Carabinieri’) as well as with other volunteer emergency organisations (such as ‘Civil Protection’). The Civil Protection, more than any other volunteer agency, is essential in providing airplanes and helicopters (mostly Elitanker and Canadair) as well as extra personnel for the suppression of fires throughout the Italian territory. The importance of the Civil Protection agency also is well established in the memorandum of understanding with the Italian Fire Brigade (Italian Fire Brigade & Civil Protection, Memorandum of Understanding 2011). In Sardinia there also is collaboration with several other local volunteer organisations, including ‘Barraccelli’ (CFVA-Rural and Bush Fires in Sardinia 2004).
Summary

What emerges is that similar approaches are adopted by all investigative departments. These are:

• Joint agency investigations where all stakeholders are expected to work together in a coordinated effort. Usually, the circumstances at the event scene determine which agency leads the investigation.

• Fire investigation is a critical component of all these organisations’ responsibilities. Outcomes from fire investigations contribute significantly towards the strategic development of fire prevention, education and suppression strategies. Fire investigation is the very foundation on which fire prevention is developed.

For this reason, there is a generalized view amongst all agencies that:

• All fires should be investigated.

• Each agency will provide on-going liaison and information exchange relating to analysis and research issues evolving from the fire investigation process.

However, in terms of bushfire (and wildfire, forest fire) investigation, cultural differences between the two countries emerged. In Australia, the opportunities to collectively build a sustainable workforce through routine information sharing, joint training activities and mentoring is promoted formally. This collaboration, even though strongly linked to each organisation’s jurisdiction and responsibility, seems based on a reciprocal sense of trust between Victorian fire and police agencies. This aspect is missing in the Italian context, where no reference to formal partnerships and/or collaboration with other agencies was found in the manuals related to fire investigation. Partnerships with the aim of receiving help and assistance from other bodies are promoted in Italy although focused on fire suppression.

When the analysis moves from a national/state level to an international/interstate one, such agreements and partnerships between investigative departments are not evident. The memorandum of understanding (2010) in regards to the fire investigation between CFA and NSW Rural Fire Service represents an exception in relation to inter-State (and international) collaboration.
5.5 Summary

The chapter demonstrates:

1) The formal guidelines for investigation.
   Documents gathered from the six bushfire investigative departments allowed a first exploration of the existing policies and procedures followed during a wildfire investigation. All material collected was read through the lens of the four flows of McPhee and Zaug (2000). These four flows are considered as a continuum that starts with the individual (Membership negotiation) and, gradually moving toward the organisation itself (Organisational self-structuring and Activity coordination), ends with the whole bushfire investigative network (Institutional positioning). Of note, is the amount of information and specifications provided under each flow. In both countries, those aspects concerning the individual dimension are poorly discussed compared to those focused on the organisation.

2) Advice is provided on the procedures of an investigation.
   The importance of carrying out an effective investigation is seen as the foundation of any prevention strategy, the role of patience and meticulousness during the investigation, how and when witnesses need to be interviewed, or, yet, when the investigation is complete.

3) What is striking is:
   (a) The procedures are remarkably similar for each agency. The investigation has to be carried out as soon as possible; the investigator should not work alone during the investigation process; and the entire wildfire investigation process ends with a well organised and detailed report specifying the findings into the origin and cause of fire.

   (b) Nonetheless, the networks of agency staff that carry out the work vary from country to country. As described, in Australia the investigation of wildfires is a responsibility of CFA and/or DSE. However, if the fire event is defined, by the fire agencies, suspicious or it causes injuries or, worse, deaths the investigation comes under the Victoria Police’s jurisdiction. In contrast, in Italy, once it is established which organisation is in charge of carrying out the fire investigation (it depends on the point of origin of the blazes), this
organisation is responsible for the entire investigative process. The fact that all Italian agencies interviewed have both fire and police functions in case of an emergency may be the reason for the uneven reference to inter-organisational collaboration.

The significance of this first examination is that it allows a better understanding of and has been a guide to the study of organisational world of these agencies. Furthermore, it allows new questions to be generated and integrated into the interview cycle (see also section 4.4.3 – document analysis). Questions emerged from the analysis of the investigative policies and procedures form the basis for the next four chapters (chapter 6, 7, 8, and 9). More specifically, all questions generated during this first organisational exploration have been grouped, according to the four communication flows, and turned into a questionnaire to the most senior investigators (Appendix C), a focus group interview (Appendix B) and a specific as well as detailed face to face interview grid (Appendix A).
CHAPTER 6

MEMBERSHIP NEGOTIATION

6.1 Introduction

This chapter focuses on the first out of the four communication flows, identified by McPhee and Zaug, membership negotiation (McPhee & Zaug 2000; see also chapter 4). This particular interaction embraces all relationships between the organisation and their staff. More specifically, membership negotiation symbolizes the relation between newcomers and old-timers, in which the individual’s working identity is not only negotiated through their job performance, but also as actors within the organisation more generally (Myers 2011). The concept of membership negotiation, in fact, is to be understood as a communicative process through which organisational staff negotiates their membership both as a worker and as an actor within the agency.

Organisations are constituted by their staff, therefore by individuals. Thus, it is argued that any improvement in organisational performance and effectiveness relies on its managers and employees (staff) (Salamon & Robinson 2008). The proposition is that organisations may reinforce preferred understandings and behaviour, and staff may in turn maintain and encourage such patterns (Mullins 2002, 2007). Furthermore, over the last two decades many organisations have gone through change in their work processes, seen in the adoption of group or team approaches (Mullins 2010). As a result, co-operation, participation and empowerment have become the foundations of the current organisational world.

In this context, organisational communication has a double role referring to the balance between the organisation’s expectations and constraint and the individual staff member’s autonomy and creativity (Coupland et al. 1991). Only through this delicate balance is it possible to achieve a functional and effective organisation. Organized actions, good management, hierarchic lines, and tasks accomplished are undoubtedly essential aspects for any kind of
organisation. However without individual autonomy and inventiveness, adaptation to change would be unlikely (Weick 1979; Weick et al. 2005). There is a sort of psychological contract, a non-written bond, between the expectations of an organisation and its employees that has to be balanced; too much freedom may result in a dysfunctional organisation while too much control may result in organisational stagnation and narrow routinisation. Such tensions may be apparent in military type organisations (Coupland 2010).

It is argued that a strong sense of belonging to the organisation, a sense of excitement in the job as well as trust and confidence in management are the three pillars on which organisational commitment is built (Martin & Nicholls 1987). This commitment to the organisation from members of staff may be reflected in a better level of work performance, low turnover and less absenteeism (Mullins 2010; Luthans 2011; Kanter 1968).

There may be differences between an assessment of organisational needs and requirements and the perceptions of those who work within the organisation. The management, in fact, may seek from its employees concepts such as loyalty, agreement with its mission and approach and respect for management. On the other hand, the employee may demand more individual benefits, such as job security, career progression and more involvement with the decision-making processes. When both perspectives and needs are met, a sense of commitment from employees may be established and maintained (Ahmed & Rafiq 2003).

The proposition advanced in this analysis is that effective professional communication and miscommunication become a measure of the quality of this balance (Coupland et al. 1991). Communication, therefore, is seen as the main tool whereby organisational membership is negotiated over time. Role expectations, group/organisational norms, formal and informal structures, power relationships, control and autonomy are central to organisational membership negotiations (Scott & Myers 2010). The first step in the analysis, thus, is to understand who the bushfire investigator is, what responsibilities s/he has and what kind of skills and/or attitudes s/he needs to carry out an investigation.
The analysis rests on a two-fold comparison in the first instance, between the two countries and between agency function, either as a ‘police’ body focusing on security or as an agency, concerned with fire suppression. This matrix provides the initial foundation for the analysis.

6.2 Section 1: Who is the investigator

The analysis is broken down into four categories to provide an overall view of the profile of bushfire investigator. The four categories are as follows: years within the broader organisation; years of experience within bushfire investigative departments; age; and gender. These dimensions are a way of classifying investigators so as to locate them within the organisation.

6.2.1 Years of experience within the broader organisation

The first step in the analysis is to consider the length of service of those employed in bushfire investigation. Given that investigation comprises a set of competencies and capabilities that are acquired over time there is likely to be a positive correlation between length of service and doing the job effectively (Harter et al. 2002). Overall, only 16% of the sample has less than 10 years experience within the same organisation, with most falling in the category 10 to 20 years (45% of the sample), and 39% had acquired over 20 years of experience (Table 6.1).

<table>
<thead>
<tr>
<th></th>
<th>LESS THAN 10 YEARS</th>
<th>BETWEEN 10 AND 20 YEARS</th>
<th>OVER 20 YEARS</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE AGENCIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OVERALL</strong></td>
<td>5 (16%)</td>
<td>14 (45%)</td>
<td>12 (39%)</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td><strong>AUSTRALIA</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td><strong>ITALY</strong></td>
<td></td>
<td></td>
<td></td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>
The data implies that an investigator is an individual who is employed by the same organisation for an extensive amount of time (greater than 10 years), and therefore is likely to demonstrate loyalty towards the organisation. To take the analysis further, I consider whether there are systematic differences between Australia (Victoria) and Italy. It may be the case that one country has a more experienced and longer serving workforce than the other. This may provide an insight into possible cultural differences and practices. This profile is presented in the above table (6.1).

The data shows that in Victoria the workforce is more evenly spread in terms of the number of years employed within the same organisation, with a slightly higher number of the sample falling in the category of more than 20 years employment. Whereas in Italy, all investigators had been employed within the same organisation more than ten years, with a third employed by the same organisation for more than 20 years. While it may be the case that the Italian workforce is more experienced, it also may point to a developing problem in relation to replacement. Since the majority of its investigators in Italy have been employed for more than 10 years, Italy may face a problem in future relating to new recruits or “new blood” within their investigation departments.

This type of data make the Australian sample very similar to the Italian, not just for the length of service of those employed as bushfire investigators but also in regard to the replenishment issue. The fact that there is such a low number of ‘young investigators’, with less than 10 years of experience within the organisation, could be explained by the requirement that they have to work for many years within the same organisation before they can fill the role of bushfire investigator.

6.2.2 Years of experience within bushfire investigative department

None of the investigators interviewed has over 20 years of experience in the bushfire investigation unit (Table 6.2).
Table 6.2 Experience in bushfire investigation

<table>
<thead>
<tr>
<th></th>
<th>LESS THAN 10 YEARS</th>
<th>BETWEEN 10 AND 20 YEARS</th>
<th>OVER 20 YEARS</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>19 (61%)</td>
<td>12 (39%)</td>
<td>0</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>11</td>
<td>7</td>
<td>0</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>ITALY</td>
<td>8</td>
<td>5</td>
<td>0</td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>

In contrast to the previous table (6.1), the majority of the sample here have accumulated less than 10 years of experience while the remainder 39% have between 10 and 20 years of experience, specifically as bushfire investigator.

A first observation (comparing Table 6.1 & Table 6.2) is that most of the respondents have worked more than 10 years within their organisation but less than 10 years as a bushfire investigator. This discrepancy can be explained as follows. The bushfire investigation units in all of the six agencies are relatively young institutions, established less than 20 years ago. This would explain why none of the participants has developed a 20-year experience in the bushfire area. In addition, as already mentioned in the previous section, the agencies might request that their workers accumulate a certain amount of time and/or experience before they appoint them as investigators. This is better explained by some of the comments made by investigators:

Australia (Victoria):

“I think it was two years ago I did the course[...]In the early days you had to go through and do the structural fire investigator before you could go and do the bushfire” (auf/tcf/a3).

“Probably fire investigation is I suppose, a new type. It’s not something that we’ve done for a long period of time so it’s only been in Victoria for what, probably 20 years, which isn’t a long period of time” (auf/tcf/a2);
Italy:

“…I’ve got lot of experience in structural fire and sometimes even bushfire. I started in 1997 with the Italian fire Brigade and four years ago I was transferred to this fire investigative unit” (itftfnia4);

“I was in charge of the investigation activities at the beginning in 1994. We have been the first institution in Italy to establish the investigative units” (itftfnipaf1).

In both countries, bushfire investigation units were established less than 20 years ago. As indicated or implied by the manuals, management sought investigators from existing and experienced staff in the agency.

The concept of years spent by investigators in building their bushfire knowledge is undoubtedly tied to that of age. It is important to understand at what age investigators start their professional career and, above all, at what point of such career they find themselves acting as bushfire investigators.

6.2.3 Bushfire investigator’s age

Most investigators are mature people, with prior experience thus skewing the age profile. Indeed, the age distribution of the investigators interviewed is as follows: 45% (fourteen members) had between 41 and 50 years of age, 32% (ten participants) between 51 and 60, 19% (six people) between 31 and 40 and finally 3% (just one member) had over 60 years. None of these persons were less than 30 years (Table 6.3). This age profile is related to the requirement that the investigators need to be trained for a number of years before working as bushfire investigators.
As shown in the table (6.3), the age distribution is between 31 and 60, with one exception. There is a broader spread of ages in Victoria, more or less equally distributed between 31 and 60. In Italy there is a much narrower spread with all investigators between 41 and 60 years old, with the majority aged between 41 and 50. One possibility is that the Italian investigators may only be asked by managers to become investigators after they have a substantial amount of experience. Alternatively, the results might reflect the fact that the recruitment of new investigators in both Italian fire and police agencies has slowed down during the last decade, with no new position becoming available for younger employees.

To finalize the profile of a typical bushfire investigator, it is important also to consider gender. Given the hierarchical structure and the traditional masculine environment of the six emergency agencies, the managerial perception may be that this is ‘men’s work’.

### 6.2.4 Bushfire investigator’s gender

Very few investigators are female. The majority of the participants interviewed were males, twenty-eight men and three women (Table 6.4).

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**Table 6.3 Bushfire investigators’ age**

<table>
<thead>
<tr>
<th></th>
<th>LESS THAN 30</th>
<th>BETWEEN 31 AND 40</th>
<th>BETWEEN 41 AND 50</th>
<th>BETWEEN 51 AND 60</th>
<th>OVER 60</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>0</td>
<td>6</td>
<td>14</td>
<td>10</td>
<td>1</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td>VICTORIA</td>
<td>0</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>ITALY</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>4</td>
<td>0</td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>
Table 6.4 Bushfire investigators’ gender

<table>
<thead>
<tr>
<th></th>
<th>MALE</th>
<th>FEMALE</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>28 (91%)</td>
<td>3 (9%)</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td>VICTORIA</td>
<td>17</td>
<td>1</td>
<td>18</td>
<td>48</td>
</tr>
<tr>
<td>ITALY</td>
<td>11</td>
<td>2</td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>

These data highlight the male-dominant culture in all of the six departments. As a result, women might find themselves functioning in an unfamiliar masculine organisational culture, while men can take their own involvement for granted (Martin 1992; Rosen et al. 2003). This feature may be a reflection of a male-driven culture in these agencies in which women are still considered a new presence. This may be amplified within military traditions where women seem to remain marginal (Jansen 2006). Of note, the three women investigators occupied senior positions in their organisations.

It is not clear if this situation is just a mere coincidence or the result of something else; something rationally created and wanted by the organisations. More extensive, longitudinal and comparative studies are warranted to examine the women’s roles, women’s issues as well as the role of gender in shaping effective leadership styles within bushfire investigative departments.

6.2.5 Summary

In this first section we have tried to outline the profile of bushfire investigator. From the analysis it can be inferred that, regardless of the organisation or the country, the investigator is someone likely to be loyal and committed to his/her organisation. Indeed, s/he has been employed by the same organisation for almost twenty years. Nonetheless, the specific nature of such organisational commitment (affective, continuance or normative) remains unclear. The majority had worked less than ten years in investigation. This gap between years spent in the broader institution and those spent within the investigative department may suggest that
in order to become a bushfire investigator an extent of bushfire work or policing is required by these organisations. This can also explain why investigators are not younger than thirty years old, with the majority aged between forty and sixty years. It is worth noticing that over 90% of the participants interviewed were males, confirming the masculine culture in the investigative departments. Furthermore, the data suggest that the agencies that perform police-related functions (such as Victoria Police, DSE and NIAB) tend to be slightly more ‘male-driven’ than the fire-related bodies. However, the fact that all of women interviewed in this study hold leadership roles raises questions that require further and more detailed studies.

Having described the profile of the bushfire investigator in terms of age, gender and years of experience, I now consider the type of knowledge and professional skills that s/he brings with them as investigator.

6.3 Section 2: Knowledge Management

During the last few decades, knowledge management has become a central aspect for any kind of organisation (Kothari et al. 2011). The ever growing amount of information that agencies, especially those working in the emergency sector, obtain, manage and provide to the broader community makes knowledge a new powerful resource (Hicks 2002). Therefore, the creation of new types of knowledge and the translation of this knowledge, through sharing, into innovative and efficient actions are often features of companies (Seidler-de Alwis & Hartmann 2008). In Tan’s words:

“A successful company is a knowledge-creating company: that is one, which is able consistently to produce new knowledge, to disseminate it throughout the company and to embody it into new products or services quickly” (Tan 2000, Pg.10).

For some, organisational knowledge is ‘the only one sure source of lasting competitive advantage’ for companies (Nonaka & Takeuchi 1995). Knowledge management is considered a valuable resource not just during change processes or crisis’ time but also in resolving day-to-day issues and conflicts (Mullins 2007).
6.3.1 Skills of a bushfire investigator

In the current section the skills and types of knowledge necessary to carry out an efficient bushfire investigation are analysed (Massey et al. 2002). The focus is on the importance of capturing, sharing, and using explicit as well as tacit knowledge within daily investigative work. What emerges from the open-ended interviews is that ‘Knowledge and experience’ is a highly regarded trait for a bushfire investigator. Other professional traits, such as an ‘analytical mind and curiosity’, and the need to be ‘patient and methodical’, are also indicated. As an Australian investigator stated:

[...] “Don’t jump to conclusions, you go through a process, you use a process and I’m a process person” (auftfdse).

In this statement the formal, measurable, written knowledge is clearly emphasized in comparison to all other types of knowledge, including the implicit one (such as personal experience and intuition). According to such point of view, the process becomes the most important aspect of the entire investigative activity. The methodical following of investigative procedures along with an analytical approach is crucial for an investigator.

Despite these other traits, knowledge remains the main skill for a bushfire investigator. To illustrate the following have been selected at random from each country.

In Australia:

“I think you’ve got to have that knowledge of fire behind you, and fire behaviour. Probably - I reckon you’d need probably five to ten years looking at fire” (auftfdse3).

“You need to have an advanced knowledge and experience - so not only having the knowledge but having the experience of witnessing fire behaviour. It’s almost like rewinding the tapes, so if you’ve seen a fire then rewinding it back to when it initially started” (auftfcfa).

In Italy:

“Attention for things even for those most stupid and, apparently, insignificant. Besides, in this kind of job, to me it is essential having good social skills. Be expert in how to build relationships with others both colleagues and witnesses” (itftfnipaf6).
We can say that it is obvious that the activity an investigator conducts is not only the result of training and courses run by the agency but rather the result of the experience acquired on the field” (Itftfvf3).

Fire knowledge and experience is obtained directly in the field, key factors of a good investigator. A major difference between Italy and Australia (Victoria) resides in the different meaning attributed to the concept of ‘knowledge’. Victorian investigators consider the time spent working in the field as something essential to build fire knowledge. In Italy, in contrast, the focus is on managing social skills with the aim of building relationships. The majority of the Australian sample responses mentioned ‘knowledge and experience’ as a key skill to have, while just over a third from Italy did so. Italian investigators, in fact, rate both ‘knowledge and experience’ and ‘communicational and social abilities’ as skills that are essential to being a bushfire investigator.

This analysis may suggest that one country is focused on those technical skills that every investigator should have while the other is culturally more oriented to the development of social and personal abilities in carrying out an investigation. As a consequence, Australian investigative agencies seem to promote explicit knowledge; that knowledge easily quantified and transferred, instead of personal abilities and characteristics. This could possibly be part of the Australian culture of ‘just getting the job done’ (Letendre et al. 2008). Therefore, it could be assumed that in Australia, bushfire investigators are more skewed towards technical and process oriented skills, and the value skills that are more aligned towards a military structure. Whereas in Italy, bushfire investigators give equal importance to both technical and social skills considering personal drive and motivation as something unavoidable for any bushfire investigator. So, it may be that Australian investigative agencies encourage the development and the sharing of a more explicit knowledge, while those in Italy emphasize the importance of tacit knowledge in order to carry out an efficient bushfire investigation. This possibility is examined further in the next section.

6.3.1a Skills of a bushfire investigator: each agency

All agencies appear technically oriented. This aspect is well summarized in the following statement:
“[...] you know, the whole objective of the fire investigation is to be kind of non-biased, and present information that's there - not necessarily - you can use an interpretation of what you think's gone on, but if your objective is to be objective with what you're looking at, then you've really got to state facts. If you look at it as the end product is a court case, then you have to be pretty - you can't go off on tangents about what you think may or may have not - and it might influence it, but you shouldn't really. You've got to state the facts as they are, because I think once you start - if people start making up stories, then you know, it's not going to stand up in court” (auftfdse2).

Any bushfire investigation can end with and is produced for the court. Therefore, the entire investigative process needs to be as unbiased and scientific as possible. Objectivity becomes a crucial aspect in trying to understand who set the fire (if someone) and for what reason or purpose.

Despite this general and common principle, some differences can be found both at country and agency level. In Australia (Victoria), the DSE staff consider ‘Communication and social abilities’ as the second most important skill to acquire as a bushfire investigator. As stated:

“I think you have to be a good communicator and you have to be able to have good investigative skills and obviously you need to be able to communicate well to do that but also, you have to be able to read people a little bit and the normal thing” (auftfdse4).

This result is quite interesting since the DSE line of work is an independent role, and DSE members generally have the least amount of contact with the public compared to the other two Victorian agencies (Vic. Pol. & CFA). What is more interesting, are the other agencies who do have the most amount of contact with the general public did not rate ‘communication and social abilities’ as a key important skill to acquire as a bushfire investigator.

On the other hand, Italy appears to be more socially oriented. Nonetheless, a further breakdown of the results obtained to an agency level, shows that in reality both the NIA and the NIAB are aligned with the Australian findings in regards to the technical aspect (knowledge and experience) of bushfire investigation. As typically cited:

“Mhmm ... a technical and initial knowledge is required in order to be prepared in terms of fire behaviour. However, preparation by itself is not enough as it is the experience obtained in the field that allows you to make an hypothesis on the causes of the fire event” (itftfwf).
The NIAB respondents, in particular, failed to reference ‘communication and social abilities’ as an important skill to have as a bushfire investigator. In this scenario, the NIPAF is the only agency responsible for the ‘impression’ of Italy as more socially orientated. The NIPAF sample, indeed, considers communication and social skills as the most important skill to acquire as a bushfire investigator. The following are few examples:

“First of all, the knowledge of that specific social and cultural environment in which the fires have occurred. Therefore, it is crucial to know those social realities” (itftfnipaf4); or,

“It is very important be aware of how we relate to others. This is true especially in regards to those people that live in the country. Here in Sardinia, indeed, we have a very peculiar agro-pastoral world. Thus, if you want to work as an investigator, you need to know it, live it and approach it in the right way” (itftfnipaf6).

What is interesting about this finding is that the NIAB and NIPAF are in effect same type of organisation, concerned with forests and environment. They serve and have the same function even reporting to the same senior body in Italy. The NIAB is responsible for mainland Italy, whilst the NIPAF is responsible for Sardinia, an island off the coast of mainland Italy. The NIPAF runs independently from the NIAB due to the Sardinia’s “autonomous status”. The significant discrepancy between NIAB and NIPAF provides some support to the assumption that agency cultural differences rather than simply country diversities play a part in the skills that are perceived to be important as a bushfire investigator.

As previously mentioned the NIAB findings are aligned with the Victorian responses, with majority of participants referencing ‘Knowledge and experience’ as the key skill to have as a bushfire investigator. In addition the NIAB respondents referenced an ‘Analytical mind and curiosity’ as an equal skill to have for a bushfire investigator. It could be concluded that the NIAB agency is technically orientated, similar to Victoria expressed by its military structure. The NIPAF and the DSE participants however referred to ‘social skills’. This discrepancy could be due to cultural differences in some specific areas. Sardinia as well as the two Victorian regions analysed in the study are a closely knit communities, and express a “small country town” community cultural outlook, where individuals and families are very well acquainted. It
could be right due to this “small country town” cultural structure that the NIPAF and the DSE perceived social skills as the vital skill to have as a bushfire investigator. It may be that the DSE, which is not organised in a militaristic way, but more bureaucratic, promotes an understanding in terms of local culture. These agencies would require greater co-operation from the community and work more closely with the community, therefore also communicating with the public albeit more than the other agencies who reside in a greater populated and collaborative regions/areas.

6.3.2 Summary

At the beginning of this section the comparison between the two countries outlined a cultural difference. Most Australian interviewees considered “knowledge and experience” as the main factor to possess. In Italy this skill is believed as important as “communication and social abilities”. This distinction may underwrite a view that Australian bushfire investigators are more focused on the technical investigative process, while their Italian counterparts need social skills along with the technical ones. In reality, an in-depth agency analysis reveals that all departments are technically oriented, with the exception of NIPAF, in Italy, and to some extent DSE in Victoria, that tips the balance in favour of communicational abilities.

The next step is to consider the kind of knowledge that an investigator has to have, leading to the identification of the two major types of knowledge: ‘explicit’ and ‘tacit’. An in depth analysis of the relative importance between tacit and explicit knowledge is addressed in the next section.

6.4 Section 3: Formal Knowledge vs. Know How

The third theme focuses on the importance of the contrast between explicit or written knowledge (scientific codified) versus know-how (skill) (Catignani 2014). Know-how represents that kind of knowledge difficult to be codified and transferred to others (Eppler 2006; Collins 2001) often referred to as a form of ‘tacit knowledge’ (Miller et al. 2006). Tacit knowledge refers to “the translation of cognitive skill into technical skill or action of some kind”
(Blackmore 2004, p.113). In other words, it is a way in which knowledge is applied and revealed. It cannot be captured and apprehended as explicit knowledge; it must be inferred from one’s actions or statements (Brohm 2006; eds. Sternberg & Horvath 1999). Creative inputs, personal experience, mental models, intuition and personal characteristics are all examples of tacit knowledge (Kothari et al. 2011; Nonaka & Takeuchi 1995).

Interviewees were asked to indicate the value of ‘knowledge’ in relation to bushfire investigation. As indicated below contrasts were drawn between following rules and protocols (explicit knowledge) or relying on personal initiatives and creative inputs (tacit knowledge). For many there is a balance between both kinds of knowledge.

6.4.1 Personal Initiative vs. Protocols – Tacit vs. Explicit

Looking at the overall data, it emerged that nearly half of participants believe in a balance of the both features, personal initiatives and protocols should equally contribute to the role of a skilled bushfire investigator (Table 6.5).

<table>
<thead>
<tr>
<th></th>
<th>FOLLOW THE RULES AND THE PROTOCOLS</th>
<th>RELY ON PERSONAL INITIATIVE AND CREATIVE INPUT</th>
<th>A BALANCE OF BOTH</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>5 (17%)</td>
<td>11 (35%)</td>
<td>15 (48%)</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>ITALY</td>
<td>0</td>
<td>5</td>
<td>8</td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>

Eleven out of thirty-one participants believe that a bushfire investigator should rely more on personal initiatives than on protocols, while only five members state a that following rules and protocols is the most important aspect to be a skilled bushfire investigator. These investigators, in fact, operate in the Australian context. In Italy, no investigators felt on the
category ‘follow the rules and the protocols’. This finding is what makes Italy tacit-knowledge oriented.

At an agency level, the trend appears even more defined. All the three agencies in Italy (NIA, NIAB and NIPAF) were characterized by the tendency not to rely solely on rules and protocols. As typically affirmed:

“Within safety and legislative boundaries, all personal and creative inputs are welcome. Every idea or proposal is surely evaluated and, eventually, accepted” (itftfnipaf3);

“Yes. Creative inputs are always important in every activity. Therefore, we certainly follow internal standard procedures in terms of fire investigation but, then, an extent of personal initiative and creativity is necessary, at least to guide the investigative process” (itftfnia).

Of course, it may be that these agencies are part of complex and laborious systems, in which bureaucracy represents an obstacle rather than a frame able to favour the process (Hobday 2000). In this context, policies and procedures are seen as a starting point. However, without personal initiative and creative input it is not possible to carry out the investigation. Such feeling can be better explained through the words of some interviews. One member from the NIPAF, in particular, explained this view:

“I reckon it is needed both an individual and professional honesty to admit that working with personal believes and opinions is the foundation of this job. Otherwise, if we look exclusively at the institutional requirements it is going to be a mediocre investigation” (itftfnipaf1).

As a consequence, members of these agencies may show a lack of trust with protocols and rules. They emphasise other aspects such as personal initiative and creative input (This may also explain my difficulty in gathering manuals and other information necessary for the present analysis).

Amongst Italian agencies, the NIAB seems to be the most focused on personal initiatives:

“The personal initiative is to be read and understood as something closely linked to the world from which our officers come and in which they have to operate. We can understand the rural world better than any other police institution” (itftfniab).
Here, it is suggested not only the fact that personal initiative is something of value for an investigator, but also that we should never underestimate the environment which bushfire investigators belong to and in which they have to operate. In this sense, the debate between the employee’s initiative and the organisation’s rules goes beyond the organisation to include a broader environment. Protocols and procedures, therefore, need to be read and adapted by investigators as well as by their larger community.

There was a spread between different forms of knowledge in two Victorian agencies: DSE and Victoria Police. The majority of DSE members were rules and protocols orientated, with only one participant stating that one’s personal initiative would benefit the role of a bushfire investigator. However, two out of seven of respondents sought for a balance of both aspects. The importance given to protocols and procedures in any kind of fire investigation was well summarized by one DSE’s member:

“I don’t think you can put any creative into it and that sort of stuff, it’s all about the facts and the evidence which shows you that sort of stuff so you can’t get creative, I don’t think” (auftfdse3).

It could be assumed that these results reflect a more bureaucratic system, such as that of the DSE, in which following specific rules and protocols appear to be more central than relying on personal initiative only. In contrast, for the majority of Victoria Police members (three out of five) stated that relying on ‘personal initiative and creative input’ is very important, while the remaining participants are equally split in ‘follow the rules and protocols’ and ‘a balance of both’. As stated:

“Oh the sky’s the limit. If you’ve got ideas on how to solve something or how to investigate something, that’s fully - yeah, we all listen to each other and we all try and grab the best ideas. Yeah that’s a constant” (auftfvicpol3).

The main point is not only to stress the value of individual initiative and ideas but also to highlight the advantage in sharing these ideas and experiences with colleagues.
Similarly to the Victoria Police (Arson Squad), nobody in the CFA emphasized ‘rules and protocols’, noting personal initiative and creativity as crucial aspects for any bushfire investigator.

“Initiative? Oh well investigators are allowed to use all the initiative and I think that really does - is evident where some of the guys are probably a bit better than others, you know what I mean” (auftfcfa6).

Of note, the CFA is a fire agency based on a volunteer-s. Personal initiatives assume a central role. For the majority of the CFA’s members both aspects were relevant, while two participants stated the importance of personal skills such as initiative and creativity.

6.4.2 Summary

It has been suggested that the survival of an organisation depends on its ability to harness energy, knowledge and expertise of all employees (Rivers 2011). There is mutual benefit to be gained from the development of skills able to fulfil the goals of the organisation as well as to meet the individuals’ aspirations. Nonetheless, it is not always clear which skills should be developed. Encouraging creativity, personal initiative as well as intuition is of growing interest in the fulfilment of individuals and organisational goals. The reason resides in the fact that tacit knowledge is likely to evolve more quickly than explicit rules, since it is not as codified and structured (Kothari et al. 2011). In this sense, tacit knowledge has the potential of leaving room for improvement and innovation. This potential to rapidly evolve may be a great advantage and is one of the reasons why tacit knowledge cannot, and should not be fully reduced into written rules and procedures (Bennet & Bennet 2008).

This is also confirmed by the analysis of the six investigative departments. While at a first glance, Italy would be more focused on the so-called tacit knowledge and Australia would appear to have a more balanced approach between the following of rules and protocols and the reliance on personal initiatives and creative inputs, a careful analysis confirms that the two areas have a similar trend. Indeed, five of the six agencies involved in the study seem to be tacit knowledge orientated, with the Vic. Pol. and NIAB leading. There is only one agency, the DSE, producing a general different impression of the data, due to its more rule - and protocol-focus, a feature of a large administrative government department.
The general trend emerged can be summarized in the following words:

“It’s a grey area and it’s an area that’s just developing. So we’ve got a little way to go with it, but initiative and scope, probably plenty; probably too much in some respects. As a normal investigator, reasonably restricted, we have parameters and that sort of thing” (auftfcfa4).

Through this statement the importance of tacit knowledge perceived by investigators becomes evident. The fact that bushfire investigation is a relatively new ‘area’ makes the investigative standard procedures not always adaptable to the fast paced nature of bushfire investigation knowledge.

In the previous sections we have explored the nature and the type of knowledge requested from a bushfire investigator. In the next and final section of this chapter we will analyse if this knowledge is shared among colleagues and to what extent.

6.5 Section 4: Communicating Knowledge

The fourth analysis focuses on sharing knowledge, particularly in relation to daily work activities. To improve the decision-making process as well as to develop strategies that are not only efficient but also coordinated, all need to invest part of their time in sharing experiences and insights between each other (Rosenthal & ‘t Hart 1991). This is a necessary process in order to achieve a common rating of risks and a common list of requirements (Browne & Ramesh 2002). To be efficient, as also stated by Eppler (2006), this discussion should include the know-how (e.g., how to accomplish a task), know-why (e.g., the cause-effect relationships of a complex phenomenon), know-what (e.g., the results of a test), and know-who (e.g., the experiences with others). This is why the focus of the current analysis was on the formal and work-related communication, rather than those interactions spent on personal matters.

Participants were asked to rate their time spent in communicating knowledge. They were given four alternatives: 1) less than 20%; 2) between 20 and 50%; 3) between 50 and 80%; and 4) over 80%. The results presented below firstly give an indication of the amount of time spent
professionally talking overall in all agencies and both areas. Then, answers obtained from Victorian and Italian members are compared. Lastly, the interagency scenario is presented.

6.5.1 Amount of time spent by investigators in sharing investigative knowledge

Overall, nearly half spend less than 20% of their working time in communicating knowledge. Findings show that generally participants do not spend much time professionally talking with their colleagues (Table 6.6).

Table 6.6 Amount of time spent by investigators in sharing investigative knowledge: each country

<table>
<thead>
<tr>
<th></th>
<th>LESS THAN 20%</th>
<th>BETWEEN 20 AND 50%</th>
<th>BETWEEN 50 AND 80%</th>
<th>OVER 80%</th>
<th>MEMBERS INTERVIEWED WITHIN THE AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>13 (42%)</td>
<td>6 (19%)</td>
<td>7 (23%)</td>
<td>5 (16%)</td>
<td>31</td>
</tr>
<tr>
<td>VICTORIA</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>ITALY</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>13</td>
</tr>
</tbody>
</table>

The comments included:

a) Lack of networking within the bushfire investigation system;

“Not a lot, no. Not a lot of networking. Not enough. I don't think there’s enough networking in our wildfire investigations” (auftfse).

The feeling is that of being alone during the entire investigative process. This includes limited opportunities to meet with other investigators and share their own experiences and knowledge to improve the investigation process as a whole.

b) Competing job requirements:

“It is not so much. This is because my main job in accordance to my current position is focus on fire prevention rather than investigation. So, I review fire prevention projects, I check the level of risk of companies, shops and residential buildings”(itftfitalianfirebrigade).
For most, the majority of time is spent in fulfilling their main job, while the investigation remains a secondary and/or a seasonal responsibility.

c) Not a standardized process;

“Look, probably not as much as I’d like. Probably less than an hour a week. It’s not a programmed thing. It’s something that we’ll talk about as something happens”(auftfdse4).

Linked to the first point – not enough networking – the missing part is not having any structured and standardized bushfire investigative network. When and if such network occurs is only due to the individual willing of sharing with others; always within the time restrictions typical of emergency organisations. The time spent in communicating investigative knowledge has been found to be poor, whether due to a poor networking activity or to a lack of structured sharing process or yet to a scarce time available as working in different roles with diverse duties.

When comparing Italy and Australia, some differences are evident. In Australia (Victoria) eight out of eighteen of the agencies’ investigators spend less than 20% of the working time in professionally communicating with their colleagues. In Italy, a third of participants spend less than 20% of the time in formal communication and another third between 50 and 80% of their total working time. It seems that the Italian participants spend more time professionally talking about their job as investigators and sharing their experiences with colleagues when compared with Australia.

6.5.2 Amount of time spent by investigators in sharing investigative knowledge: each agency

Taking a closer look at the time spent by each agency in communicating knowledge, it appears the six agencies can be sub-divided into two groups; CFA, DSE and NIA (fire suppression agencies) on one hand, and Victoria police, NIAB and NIPAF (police agencies) on the other (Table 6.7).
### Table 6.7 Amount of time spent by investigators in sharing investigative knowledge: each agency

<table>
<thead>
<tr>
<th>AGENCY</th>
<th>LESS THAN 20%</th>
<th>BETWEEN 20 AND 50%</th>
<th>BETWEEN 50 AND 80%</th>
<th>OVER 80%</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFA</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>DSE</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>VIC POL</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>NIA</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>NIAB</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>NIPAF</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>14</td>
</tr>
</tbody>
</table>

Fire suppression agencies share a similar trend. The majority of CFA, DSE and NIA’s members spend less than a fifth of their time professionally talking with their colleagues with the specific goal of sharing knowledge about the bushfire investigation activities. As stated:

- “Probably not that great a deal. I mean I’m fortunate enough that Brett and myself are in the same office” (auftfcfa3);

- “Only during the summer - so on and off during the summer” (auftfdse7);

- “Nowadays, just a little bit. The everyday duties force you to follow a list of priorities and, unfortunately, this one (the investigation) is still considered as something marginal” (itftfnia2).

These reflections reinforce the main points in the country analysis.

In contrast, police functioning agencies (Victoria Police, NIAB and NIPAF) dedicate more time in sharing their investigative knowledge. These three agencies mostly fall in the category ‘between 50 and 80%’. As indicated:

- “A lot. A lot of time; it is a daily practice that of talking on a vast range of issues. We have two main stream. The first one concerns daily activities. It includes communicational relationships between us and all Forest Corps’ stations spread across the Italian territory. The second stream refers to projects, innovative research and improvements on investigative
techniques. In this case, collaboration with other research institutes or agencies is crucial. We do believe that in sharing there is always an opportunity for improvement. Knowledge is the foundation of our activity” (itftfniab);

“We discuss and talk all day. I mean, this is what we do. We are an investigative team and we work as one team. Each of us follows a specific activity but we discuss all our activities with the other members of the team. Sometimes I can’t see things because I’m too much involved with the case while someone else more external and less involved can see the broader picture and help me. This is why we work all together” (itftfniopaf2);

“Here - probably half to two thirds of my day. To other investigators here but I speak to all the other partnerships involved: the DC, the CFA, the MFB, the AFP, other internal areas within Vic. Pol., so there’s a whole heap of different, you know, Coroners Court, the Courts, yeah, so a lot of different areas - internal and external” (auftvicpol1).

To members of policing agencies, sharing investigative knowledge and experience through daily and planned meeting is a standardized practice. The general feeling is that each investigator belongs to and works in a team. The perception of loneliness found amongst fire suppression agencies is not present in the police agencies.

Therefore, it can be said that the extent of sharing with colleagues depends on the typology and nature of the agency. CFA, DSE and NIA are agencies involved both in conducting the fire suppression activity and in carrying out the post-bushfire investigation. It is likely that the person involved in the fire suppression is also the same person that later would carry out the investigation. As such, there is often scarce time for discussions and sharing of post-event information. Furthermore, fire agencies are more focused on fire suppression activities and working in emergency, while the investigation process is not considered a priority, as for police agencies.

6.5.3 Summary

The agencies attempt to base their commitment in working in teams and sharing knowledge in order to obtain an effective bushfire investigation (see chapter 3). However, because the daily time spent in communicating knowledge is rather scarce, collaboration and co-operation within and between agencies can be difficult. Interestingly, police agencies tend to dedicate
more time to sharing their knowledge. Fire agencies seem to have less time for such exchange. A possible explanation for this discrepancy is that fire agencies are generally characterized by low ratio between the number of individuals operating as investigators and the number of bushfires. Therefore, in between two bushfire events, there may be not enough time to discuss and share with colleagues previous cases and other relevant experiences obtained in the field.

6.6 Conclusion

This chapter focused on membership negotiation. The general profile emerging is that the typical bushfire investigator is male. Of note, this imbalance between genders is accentuated in those agencies with a police-related function such as DSE, Victoria Police and NIAB. However, all the women interviewed were appointed to pivotal roles, raising questions about this practice.

In terms of the individual’s age, the Victorian bushfire investigators are aged between 31 and 60, while the Italian counterpart is on average between 41 and 60. This discrepancy could be due to a more strict process of selection for Italian bushfire investigators, compared to that adopted in Victoria. Alternatively, it could be the indirect result of an economic situation that prevents these Italian agencies from opening up new positions.

In general, the bushfire investigator is someone that has spent a large number of years working for his/her organisation, an average of 20 years. In the case of the Italian cohort, no investigators had less than 10 years of experience within the same organisations. In Victoria (Australia), Victoria Police had a number of young investigators, whereas the older investigators tended to be located in the DSE.

However, despite the fact that most investigators have spent a considerable amount of time in their current department, all of them are relatively “young” in terms of bushfire investigation, with the majority of them having served less than 10 years in this area. This is highlighted in
the case of the Victoria Police and the NIA agencies. At this stage it is unclear if this gap is due to a late development of the bushfire investigation itself or to the rigor of the process with which these departments choose their investigators.

These six organisations have succeeded in promoting a climate of reciprocal trust and commitment between them and their members, which seems to be critical for bushfire investigation. This phenomenon implies that all of these organisations present an effective internal professional communication. Indeed, the quality and the extent of the professional communication adopted by an organisation is considered to be one of the main aspects for the development of commitment (Carroll 2013).

Investigators referred to a range of key features: curiosity, methodical approaches and social interaction. Many drew attention to knowledge and experience. More generally, a distinction can be drawn between technical and social expertise. While in Victoria, the most valued qualities are of a technical kind, in Italy the technical and the social skills go together. Furthermore, in the Italian cohort, personal drive and motivation seem to be an integral part of the investigator’s role. In other words, it could be assumed that in Australia, bushfire investigators are more skewed towards technical and process orientated skills, and that they value skills that are more aligned with a military structure. Whereas in Italy, bushfire investigators give equal importance to both technical and social skills, but most interestingly, also giving emphasis and importance to personal drive and motivation as a skill to have as a bushfire investigator.

The in-depth analysis of the Italian agencies makes it difficult to conclude that social skills are equally valued across them. While it is true that for NIPAF’s investigators these qualities are essential, this might be due to their unique geographical context. Indeed, NIPAF is located in Sardinia, an island on which the sense of community is strongly felt (CFVA 2004). Therefore, the ability of an investigator to communicate efficiently and cooperate with the local society is the key to becoming a valuable NIPAF member. On the contrary, NIAB’s members did not acknowledge social and communication skills as essential. While this would suggest that NIAB values more discipline and technique, it is worth noting that the same agency encourages
bushfire investigators to rely on personal initiative rather than protocols when they believe it is necessary (itffniab).

Another difference between Australia (Victoria) and Italy emerged in relation to the relative importance between explicit knowledge (mainly written rules an protocols) and tacit knowledge (including personal initiative and creative input). In Victoria, staff valued a mixture of both types of knowledge. In Italy, in contrast, the emphasis was on the bushfire investigator’s wisdom and his/her experience acquired on the ground. This discrepancy between countries, however, is mainly due to the anomaly of the DSE members. Indeed, as a general rule of thumb, it appears that the ability of the investigator to “improvise”, based on his/her personal experience, is an integral, if not preferred, part of the investigator’s role. By following their intuition rather than the rules, the investigators are stating one of two things. Firstly, it could be their way of showing their lack of trust in protocols, which might be of limited use in a practical situation. Alternatively, they might choose personal initiative rather than written rules because of its flexible nature, that allows them to adapt to the unique and emergency situation they are facing. Since it is based on personal experience, the bushfire investigator’s know-how is constantly being remodelled, with every new situation adding to the person’s tacit knowledge. Therefore, it appears that this knowledge changes and evolves much more quickly compared to the written regulations, leaving room for advancement and innovation. As a consequence, tacit knowledge should be considered of interest in the fulfilment of both individual and organisational goals. Since it is personal and subjective, the know-how is hardly transferrable from one to another. This also could explain why the number of years of investigation experience was always smaller than the number of years spent in the hosting department.

Finally, the amount of time spent by the investigator in sharing knowledge is quite small (approximately 20%) and varies according to the department of origin. For the CFA, DSE and NIA agencies, which are involved in both phases of fire fighting and post-fire investigation, this time is reduced to less than 20%. In contrast, members of police agencies such as Victoria Police, NIAB and NIPAF spend more time in sharing their experience, with most of them allocating over half of their time to verbal exchange. The discrepancy could be due to the
different realities of these bodies. For fire agencies, quite often, the same persons are responsible for suppressing the fire and conducting the subsequent investigation. Therefore, they may not have enough time at the end of a fire incident to share their experiences with colleagues and/or communicate their knowledge. Their presence may be requested on a different fire spot immediately after the previous event. Police agencies, by statute, are exclusively focused on post-bushfire investigation and so they spend more time in discussing, analysing and sharing the case within their investigative departments.

The specific focus here allows an in-depth understanding of how organisation’s members negotiate their membership not only as workers but also as individuals. Nonetheless, an organisation is shaped by different types of realities that necessitate the study of a variety of message flows. Another important aspect is that concerning how an organisation structures itself, its purpose, control as well as documentation of norms, processes, entities and relations. It is important to be aware of how manuals, internal policies, procedures and documents are communicated and divulged amongst wildfire investigators. However, we need also to understand to what extent investigators’ reports and feedback are taken into account, the focus of the next chapter.
CHAPTER 7

ORGANISATIONAL SELF-STRUCTURING

7.1 Introduction

This chapter focuses on Organisational Self-Structuring, the second communication flow identified by McPhee and Zaug (2000; see also chapter 4). Organisational Self-Structuring constitutes the setting of organisational norms and internal relationships, articulating how organisational leaders plan, implement, and experience problems with decision and control mechanisms.

Several authors have studied the different and possible ingredients for successful organisations (Heller 1997; Luthans 2011; Macmillan 1991; Mullins 2010; Watson 2007). All agree that a key element of organisational success is the importance of achieving productivity through the effective management of people, and their commitment to, and engagement with, the organisation. In this respect, Organisational Self-Structuring refers to internal relations and norms that create work processes; it refers to how the organisation functions. As such: “self-structuring is a communication process among organisational role-holders and groups [...] analytically distinct from communication that helps coordinate the activities of members” (McPhee & Zaug 2000, Organisational Self-Structuring section, par.1).

As a subjective process, Organisational Self-Structuring can be affected by several factors such as the systems in which it takes place, the individuals, interests, and traditions (McPhee & Zaug 2000, 2009). There is growing recognition that high-performing institutions (McCarthy & Blumenthal 2006; Bloom & Van Reenen 2007) are characterised by positive connections between work processes and members’ productivity (Chan 2012).

In the context of bushfire investigation, what is important to understand is whether the purposes, norms and processes of each organisation are passed on to their members and what resonance it has amongst them. It is important to identify whether bushfire investigators are aware of the real meaning and importance of their investigation activity as well as
whether they understand what are the main aspects in having an effective post bushfire investigation. This process is based on a well-organized chain of reports and communications and that, as such, should be understood and followed by all staff members. For the same reason, it is important to understand how an organisation learns from its employees, commonly through reports and feedback (Høyrup et al. 2012; Walden 2009). Thus, organisational learning occurs within a dialectical process. The whole process of interaction, therefore, is strongly based on the concepts of interpersonal communication and information flow. This process ideally is bi-directional, whereby bushfire investigators send feedback and receive feedback on their job and/or on the quality of their reports (Pedler et al. 2011). This process represents what Luthans (1998) defined as the ‘knowledge of results’; the way through which members of an organisation can know how they are performing in their job.

The extent and nature of these processes, the chain of reports, and the presence of any chain of feedback between the top and the bottom, is investigated, analysed and presented in the current chapter. Specific themes are explored, including: daily work procedures and directives; ways of communicating; preferred communication; and members’ engagement in the bushfire decision-making processes.

**7.2 Section 1: daily work procedures and directives**

The investigation of the manuals shows how an organisation should function and how its internal relations and norms may support particular work processes. There are at least three aspects to consider in relation to the manuals and other forms of guidance to investigator behaviour. The first aspect concerns whether bushfire investigators within the same organisation utilize the same manuals and codes. A second aspect refers to how some of the manuals or codes are shared. In some cases, the same manuals were developed and prepared for more than one agency. Finally, there are differences in the way the manuals are taken up by investigators in the two countries.
7.2.1 Daily use of manuals/codes

When asked to identify manuals and codes daily adopted (Appendix A – question n.8), investigators generally did not mention those provided by their investigative departments and specific to their role as bushfire investigators (see chapter 5).

This discrepancy could be for three reasons:

1) The selective release of manuals by some organisations. For some of the agencies it was not possible to collect all relevant documentation. This was the case for instance of police agencies (i.e. Victoria Police and NIAB) where not all investigation technique manuals were made available. However, while it is true that some agencies did not provide all manuals, this would not explain the case of those agencies where the collection was comprehensive.

2) Members have not absorbed and embraced the agency’s policy. However, this assumption appears to be unrealistic given the results provided in the previous analysis (see chapter 6). Indeed, a typical bushfire investigator is someone that has spent a large number of years working for his/her organisation, with an average of 20 years. Besides, members interviewed generally play central roles within their organisation (i.e. bushfire instructor, operation officer or district manager). Both these aspects suggest a strong sense of loyalty and commitment toward the organisation, which would make it hard to believe that investigators ‘simply’ do not follow what their agencies consider to be the main guidelines in terms of bushfire investigation.

3) The members’ job position within the organisation. The question is whether members of the organisations are employed solely as investigators or rather act as investigators while also covering other roles.

As a result of the analysis of these three possible reasons, the third one is the most likely as the majority of those interviewed are not specifically employed as bushfire investigators. Day-to-day, members cover other roles in which bushfire investigation represents a small percentage amongst their duties. Asked to indicate their daily manuals and codes, these
investigators referred to those attached to their main job position. Consequently, it is not surprising that a bushfire instructor from the CFA mentioned other training packages. Likewise, a Road Manager (DSE) cited “A hierarchy of rules and policies under that Road Management Act”.

Yet, Victoria Police members are employed as detectives of any crimes and thus it is expected that their daily operational activities as well as their professional ethic follow the Victoria Crimes Act (1958). As stated:

“We use the Victoria Crimes Act along with other legislation such as the CFA Act for another statutory framework to investigate depending upon what the offence is. Then we work also within our own operational - our own Force policies which are in our own Police Manual. So we have to work within both guidelines. So we've got to balance both up, sometimes they can conflict with each other but you've got to pretty much make a decision at the time” (auftvicpol2).

Victoria Crimes Act includes all categories of criminal offences punishable by law, spanning from homicide to sexual abuse and theft. Bushfire-related procedures are listed in Division 3 of the act, under “Criminal Damage to Property”. The fact that Vic. Pol. members refer mostly to the Victoria Crime Act for their daily working activities supports the statement that they are not bushfire investigators but rather crime detective.

In Italy, the situation is similar. Members of NIPAF are detectives of environmental crimes including, but not limited to, bushfires. For this group, there was a top down culture. Consequently, to the question about which manual or code is used, a member representatively answered: “We must always relate to those who are above us” (itftfnipaf). However, unlike the Victoria Police members, NIPAF members are also involved in fire suppression activities and thus they often mentioned a specific fire suppression standard protocol.

An additional example is that from Italian Fire Brigade members. One of the manuals/codes listed by NIA’s sample was the procedure for the photo-evidence collection; the member who provided this answer was employed as a photo-evidence officer.
“The procedures that they’ve taught us for the photo-evidence collection. There are several procedures that we need to follow... the standard procedures” (itftfnia4).

As highlighted by this answer, investigators very often adapt the policies and procedures that they use in their main role to bushfire investigation. Therefore these procedures might vary not only between agencies, but also within a same agency, according to the investigator’s main role within that agency.

It can be concluded that the manuals used by staff on a daily basis are linked to the specific and main roles of investigators. There were no full time bushfire investigators in any of the six agencies. This situation could influence the way staff members undertake investigative procedures and directives. Are such procedures and directives perceived as something codified and therefore to be found in the manuals and guidelines? Are they transferred from one investigator to another; perhaps, from the top to the bottom? Are these procedures and directives seen as the result of personal belief where the individuals’ principles become the organisational code of conduct? These are some of the questions the section aims to answer.

### 7.2.2 Members’ perception of procedures and directives

During investigation activities, bushfire investigators need to follow a number of documents such as manuals, internal policies, procedures, or signed collaborations with other agencies. Therefore, it is important to understand where a bushfire investigator accesses these documents, and how such documents are used. More importantly, this information can be enclosed in written documents such as manuals, it can be transmitted orally between investigators, maybe even through a hierarchical structure, or it could be a reflection of the agency’s code of conduct expressed via the investigator’s behaviour.

Data from the analysis are grouped into three main categories.

1) Manuals and codes. As stated:

“Oh, well I follow the policies and the procedures to the letter, as best I can. I follow all the principles of determining fire investigation or determining the cause of fire here” (auftcfaf6).
This comment suggests that the policies and procedures to be followed are codified and structured in a very formal way.

2) Oral traditions, including meetings and courses:

“we need to follow the hierarchical administrative point of view. So we always have to relate to our manager... often it’s the manager himself who tells us what to do and therefore we add those activities to the ones that we’re already involved in” (itftfnipaf2).

In this case the investigator has to follow the rules dictated by the manager. Therefore, in this instance, the information is less codified and transmitted in a top-to-bottom, hierarchical way.

3) Personal beliefs.

“Don't make anyone else’s work environment that you’re actually exposed to, any more difficult than it has to be. Try to get along with everyone. I don't always succeed in that, but that’s what the objective is. You know, to comply with all the standards that you’re supposed to within this - that's a sort of textbook answer, but yeah, just get along with the people you work with” (auftfdse2).

Here the investigator is referring to common sense and more general rules of good practice rather than to rules learnt either through manuals or dictated by a manager.

Looking at the overall data, the strongest association between procedures/directives and the three mentioned categories is with manuals and codes (Table 7.1).

Table 7.1 Members’ perception of procedures and directives

<table>
<thead>
<tr>
<th>MANUALS/CODES</th>
<th>ORAL TRADITION/MEETINGS/COURSES</th>
<th>PERSONAL BELIEF</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE DEPARTMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>16 (51%)</td>
<td>13 (42%)</td>
<td>2 (7%)</td>
<td>31</td>
</tr>
<tr>
<td>VICTORIA</td>
<td>10 (56%)</td>
<td>6 (33%)</td>
<td>2 (11%)</td>
<td>18</td>
</tr>
<tr>
<td>ITALY</td>
<td>6 (46%)</td>
<td>7 (54%)</td>
<td>0</td>
<td>13</td>
</tr>
</tbody>
</table>
Sixteen out of thirty-one participants who were interviewed link the words procedures and directives to manuals and codes. Of the remaining members, thirteen indicated ‘oral tradition/meetings/courses’ while two members referred to ‘personal belief’. In other words, only two investigators rely on personal beliefs while the rest of the sample is almost equally divided between those who refer to written documents (a slight majority) and those who rely on their colleagues and supervisors to know what the procedures to be followed are.

As shown in table 7.1, it seems that, overall, investigators tend to match and follow the organisational beliefs and values while individual expertise and principles are less relevant. However, if we consider ‘personal belief’ as a category to be added to the individuals’ expertise and principles, the sample results exactly split in two categories. There is, therefore, a group (sixteen members) who links directives and procedures with manuals, and a second one that sees them linked with individuals’ expertise and principles (fifteen members). It would be difficult to interpret and explain such a phenomenon unless we consider each agency.

Overall, there were no marked discrepancies between agencies, with one exception. The DSE, in fact, is the only agency to link personal belief with the concepts of procedures and directives. From the statements of some of its investigators, the importance given to the individual dimension emerged. Indeed, statements such as: “try to get along with everyone” (auftfdse2), or “my own ethics and morals” (auftfdse4), clearly highlight those personal values and principles that, from a DSE perspective, every investigator should follow and respect.

Nonetheless, it is worthwhile noticing that the DSE is also the most rules-and protocols-oriented agency (see chapter 6). In contrast with the other police and fire agencies, in the DSE system following specific rules and protocols results much more central than relying on personal initiative and creative input. Indeed, five out of seven members interviewed confirmed that they follow the procedures that they have learned on the organisation’s manuals and codes, validating our analysis of the previous sections. Therefore, in this context, the ‘personal beliefs’ cited by the remaining investigators might be interpreted as a personal reflection of a deeply rooted organisational code of conduct. This would be in accordance to
the analysis made in section 6.2, that revealed that all of the investigators have spent several years in their organisation before becoming bushfire investigators, integrating the organisational codes as their own.

As already mentioned, apart from the DSE, all agencies show a generally similar trend, in that no member associated procedures and directive with personal belief. However, regardless the country of origin, police agencies (such as Victoria Police, NIAB and NIPAF) show a slightly different tendency when compared to the fire agencies. Even if there is no strong indication, it is still worth noticing that members from police functioning agencies associate procedures and directives more with oral tradition, meetings and courses. In contrast, the majority of the members from fire agencies (such as NIA, DSE and CFA) tend to associate procedures and directives with manuals and codes.

7.2.3 Summary

Findings show that members did not mention as ‘daily adopted’ those manuals and codes that were provided by their investigative departments and specific to the role of bushfire investigators. Manuals collected for the investigative departments as a whole differ from those mentioned by staff. These discrepancies are explained by the strong relation found between manuals/codes adopted during daily activities and the main job position members have to cover. Members interpret differently in accordance to their job position. Most of the staff were not employed solely as bushfire/wildfire investigators. Day-to-day, bushfire investigation is not their main activity. Therefore, participants referred to the manuals they adopt most. For instance, a wildfire Instructor will be more likely to associate procedures and directives with either the oral tradition or manuals.

What kind of procedures and directives bushfire investigators follow and adopt during their daily work activities as well as how they perceive these procedures lead us to the following section. Indeed, the transfer of all of these procedures and directives and their understanding is reflected in the effectiveness of the organisation. Once organisational procedures and directives have been defined, the way in which these are communicated to workers may shape the way these procedures are not just perceived, but also adopted by staff members.
Thus, the following section will attempt to understand how procedures and directives are delivered to bushfire investigators; whether purposes, norms and processes of each organisation are passed to their employees and what resonance it has amongst them.

7.3 Section 2: communicating policies and procedures

Every organisation needs to have and act in accordance to their policies that are translated in strategic actions (Petridou 2014). Anderson summarized this concept through his ‘simple’ definition of policy:

“A policy is a statement of intent, and is implemented as a procedure or protocol” (Anderson 2005, p. 17).

In this sense, a policy represents the organisational intention of guiding the decisions made by its employees in order to shape and deal with the ‘real’ world as well as to obtain outcomes in accordance to its specific approach or modus operandi.

The analysis of the existing policies and procedures followed during a wildfire investigation, however, would not be enough if these standardized documents were considered as something officially created by the organisation to be strictly adopted by all its staff members (Paquette 2002). These organisational policies have to be accessible and clearly communicated across employees (Smith 2002). A one-size-fits-all approach simply does not work. Rather, multiple avenues of policies and procedures communication need to be utilized in order to reach the total population of the workforce with their own perceptions, subjective experiences and feelings (Martin & Moriarty 2012). The aim of the current section is to understand how the six investigative departments communicate and notify their policies and procedures to their workforce.

The concept behind this section is that inadequate communication of policies and procedures could easily lead to confusion amongst members of an organisation (Burke et al. 2008). This is why it is so important from a managerial perspective to be able to communicate policies and procedures in a variety of ways and avenues depending on the type of audience and the
specific circumstance in which they have to be adopted (Schneider et al. 1996). The goal of this section is to understand if the employees’ preferred way of communication corresponds or differs to that chosen by the organisation. This awareness is essential to evaluate the staff understanding of written organisational expectations (Martin & Moriarty 2012).

7.3.1 Ways of communicating procedures

Almost half the communications that involve communicating procedures, within a given department, are made through reports.

“There are newsletters and reports that are sent back and, based on those, there is a feedback from the organisation to verify the information that has been reported. Based on what our colleagues tell us, action is taken that is aimed at correcting or supporting or vulgarising.” (lftrfnia4).

“Yeah probably intranet and in paper form: so, manuals and that sort of stuff” (auftfcfa4).

Most of the circulating information is transmitted in a written form. This finding is in accordance to the relevant literature as well as the previous section, which showed that the majority of the investigators rely on manuals and codes to learn the relevant policies. In this context, personal beliefs and experiences cannot be coded and enclosed into manuals, except maybe in terms of ethical codes.

Based on the analysis of their content, communicating procedures have been grouped and are presented in the following table (Table 7.2).

Table 7.2 Ways of communicating procedures

<table>
<thead>
<tr>
<th></th>
<th>FACE TO FACE</th>
<th>TELEPHONE</th>
<th>EMAILS</th>
<th>REPORT</th>
<th>ALL OF THEM: it depends on circumstances</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE DEPARTMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>9 (29%)</td>
<td>2 (6%)</td>
<td>6 (20%)</td>
<td>14 (45%)</td>
<td>0</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td>VICTORIA</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>8</td>
<td>0</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>ITALY</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>

172
The fact that policies and procedures are generally disseminated as formal written documents is also supported by the literature (see Catherine et al. 2007). Approximately a third of these communications took the form of direct, or ‘face to face’ discussions, with the rest of them being made by email or, in rare cases, by phone.

Overall, there is a preference towards using written communication (reports and emails), rather than an oral conversation, to spread procedures within the analysed agencies. These two ways of passing on the information seem to be mutually exclusive, since none of the organisations examined here appear to use both.

“They are on Fire Web, which is the system we use for managing all our fire. So they are on that. And I, each year about this time of the year, send out a newsletter to our fire investigators just reminding them where they can find these documents” (auftfdse1).

In this instance both basic procedures and their updates are communicated through written media and investigators are expected to look these references up to keep up-to-date with the latest changes.

“We mainly organise meetings, group meetings because individual meetings wouldn’t be an option given the numbers involved. But we have periodic meetings of twenty-five to twenty-eight people with modules that average twelve to twenty-eight hours a year. So there’s a systematic refresher in terms of procedures”(itftfnipaf1).

In this case policies and procedures are transmitted and discussed during regularly scheduled personnel meetings.

Both approaches have advantages and disadvantages. The written approach protects the information from any distortion before it reaches the investigator because it is transmitted directly. However, it also means that it is up to the individual to keep him/herself updated with the changes in procedures. In the second case, time is specifically set-aside for the investigators to learn the latest changes in policies. In this context, it would be interesting to assess if attendance to these meetings is compulsory or up to the individual. The advantage of presenting new policies in a meeting is that it opens up the possibility to ask questions and elucidate concepts, and indeed debate them.
At an agency level, the trend appears more complex. The Victorian agencies seem to use reports, supported by email communication.

“Yes, it’s a manual and it’s on our intranet site, so it’s easy to access. So it’s in hard copy, it’s on the computer. There are changes made to it each fortnight, so it’s updated fortnightly on any changes, so that you can stay abreast of all the updates in our own Force policies. As far as our other resources like the Crimes Act and the CFA Act we usually just reference those ourselves on line” (auftvicpol4).

It is clear from this interview that Victorian agencies mostly rely on their members’ willingness to keep themselves informed and put a lot of effort in making sure that the latest information is available (fortnight updates in the example shown above).

This is in contrast to the situation in Italy, where emails and telephone are barely used but procedures are equally spread by reports and orally. As affirmed by a member of NIA:

“Procedures are transmitted through newsletters for... for the entire personnel or, more specifically, for the person who is responsible for the emergency operations. These policies and procedures are then supported and integrated within the meetings we were talking about before. Those meetings allow for further explanation on aspects that are not clear or on specific aspects of the event analysed” (itftfnia).

This is an example of how both written and oral traditions can be integrated. The use of reports and email ensures that everyone has access to the latest information while the regular meetings allow for the information to be spread and at the same time better explained. According to these findings, Victorian agencies tend to prefer a formal, written way, while in Italy both formal and informal methods to pass on the investigation-related explicit knowledge are used.

In Australia (Victoria), indeed, all agencies stressed the importance of using both emails and reports in order to spread and transfer their internal procedures, with just some cases of oral communication. In this context, CFA is the agency that most relies on reports, with no consideration of face to face engagement as a potential way of communicating procedures at all. Perhaps, this latter case is an example of size, resources and voluntarism.
In Italy this dichotomy is more accentuated. The Italian Fire Brigade gives the same importance to reports and oral discussions but never uses them together. Of note, is the fact that NIPAF clearly prefers direct communication while NIAB exclusively communicates through written notices. As stated for NIPAF.

“Often it is the manager who tells us what are the activities to be carried out and therefore we employ ourselves on those specific tasks” (itftfnipaf5).

From a NIPAF perspective, procedures are communicated within the investigative unit through a hierarchical and oral tradition system. The trend on how procedures are circulated within the NIAB is, instead, expressed in this way:

“Essentially with two procedures: the first procedure is the paper one because indeed, the directives are given first of all with circulars and official letters and then [...] they are also transmitted via web, with intranet and e-mail and then later on all connections that we keep that we hold as a central unit with the unit for .. the operating and peripheral units, and everything by internet and by email” (itftfniab2).

In this case, what is highlighted is still the hierarchical aspect in communicating procedures. However, in contrast to the NIPAF, the NIAB uses a written communication system to indicate its procedures and on an institutional rather than on an individual level. For the NIAB, in fact, procedures and directives are communicated from the central unit to the peripheral ones rather than from managers to investigators. Such differences between the two agencies could be due to geographical reasons. Indeed, while NIPAF only operates in Sardinia, an island off the Italian coast, NIAB has to cover the entirety of mainland Italy, which makes face to face communication more improbable and a slower process.

Ideally, policies and procedures as well as other formal and public information should be communicated in a variety of ways to reach the diverse types of audience and circumstances (Bowen 2009; Prior 2008). The next section will focus on the employees’ preferred way of receiving policies/procedures-related communications.
7.3.2 Preferred communication

Compared to the previous section (ways of communicating procedures), the palette of options chosen by participants shrinks to only three: Face to face, emails and all of the modalities mentioned during the interview (Table 7.3).

Table 7.3 Preferred communication

<table>
<thead>
<tr>
<th></th>
<th>FACE TO FACE</th>
<th>TELEPHONE</th>
<th>EMAILS</th>
<th>REPORT</th>
<th>ALL OF THEM: it depends on circumstances</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE DEPARTMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>24 (77%)</td>
<td>0</td>
<td>1 (3%)</td>
<td>0</td>
<td>6 (20%)</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td>VICTORIA</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>ITALY</td>
<td>10</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>

Surprisingly, the written way was only mentioned by one participant and involves emails rather than reports, making the ‘face to face’ category the preferred option. Oral communication is preferred because “it all depends on what you want to express” (auftvicpol). This result is in contrast to what we saw in the previous section. Written and formal communication is the most common way adopted by the investigative departments to communicate policies and procedures to their staff members, while these employees consider the oral and direct way of communication the most appropriate. The overall trend is indicative of both the Australian and the Italian situation, with face to face encounters being placed as the number one option by most interviewees and a mixture of all written and oral techniques as the second choice.

Direct dialogue is preferred for several reasons. Firstly, it is perceived as more informative and exhaustive than the other ways. What the majority of the interviews highlighted is the importance of the non-verbal communication during face to face meetings. They convey:

“when you’re looking face to face you can gauge body language, posture, facial expressions” (auftfcfa3);

“I’d rather face to face so you can look at people’s behaviours and that sort of stuff. So if you’re interviewing someone I’d rather interview them in
person instead of talking over the phone, so you don't know whether they're telling the truth or not” (auftdse3).

Such statements represent the desire of the investigators to understand if their interlocutor is genuine and his/her real intentions. This seems to be the foundation of interpersonal relationships; the first step of their trust in another person.

Secondly, face to face encounters are more personal and contribute towards building better relationships:

“Interpersonal relationship is fundamental especially in an organisation like ours that does not have great numbers” (itftfniab1).

Collaboration and co-operation, here, are seen as central aspects in order to have an efficient emergency response. This teamwork approach should be applicable not just in terms of sharing knowledge between investigative departments but also sharing their physical resources, such as personnel, when needed.

Finally, “because ideas quite often come from a dialogue” (auftdse2), the investigators also recognized that face to face discussions leave more space for both clarification and feedback. Two key elements to the evolution and improvement of investigative techniques are:

“in some situations it is necessary to catch up together especially for the investigative activities it is essential to just get around a table and recognize the feelings of others” (itftnipaf3).

“A lot of issues can be sorted over a cup of coffee, so yeah, face to face” (auftcfa5).

“Definitely face to face. Definitely the interview. Because it is, it is warmer than the simple piece of written paper in which inputs are given but then I think dialogue is important, the sharing of ideas between the various actors who have to go out on the field” (itftvvf2).

What emerges from the above interviews is that one of the most appreciated aspects of face to face communication is the chance for the investigators to reflect on and analyse things in more depth. Such opportunity is rarely obtained through an email or over a phone.
Even when the analysis is broken down at agency level, the situation does not differ, with no one investigator preferring the written communication to that of face to face. Amongst them, the Vic. Pol. and the NIAB are the agencies with the highest level of preference for direct discussion, with all their members only referencing oral communication. With the remaining agencies a minority of their members also appreciated a combination of all the different types of communication, depending on the circumstances. This unexpected difference between fire and police agencies is in line with the results presented in section 6.5.2, which showed that police agencies stand out in terms of the time they dedicate to oral sharing of information. Indeed, we saw in section 6.5.2 that most investigators from police agencies, spend 50% or more of their time sharing their investigative knowledge with their colleagues.

To gain a better understanding of investigators preferences on how procedures are and/or should be communicated, the participants were asked how their preferences suited them. In this respect, emails are the least appreciated means of communication by investigators. These are three main reasons for this negative feeling toward written communication, and especially emails.

First they are not read. They cannot be read due to the fact that:

“the people I’m dealing with are either extremely busy like ourselves or, if you’re talking to a lot of the volunteers and certain things, they say we just haven’t got time for the emails” (auftfcfa5);

or more simply,

“because we get inundated with emails” (auftvicpol).

In both cases, the investigators are too busy to have the time and the level of concentration to read them. Furthermore, the number of emails and other written communications received by the investigator is, quite often, so high to be unmanageable.

Second, emails can be misinterpreted:

“You can write an email, some reason they take what you’re saying completely differently to what you meant” (auftvicpol3);
or not to completely understand the message sent to you,

“you never can pick up tone or intent behind someone’s statements” (auftfdse?).

Third, emails are regarded as too slow, surprisingly. This third point is linked to an institutional and operational issue rather than to a personal matter. As a member of DSE summarized:

“You know, sometimes I find email can tend to rule our lives a little bit and everybody sends you emails, they cc you emails and you get this whole long bloody thing and sometimes, if you just pick up the phone and make one phone call, you can sort it out rather than spending three days sending each other bloody emails, and you can sort it out in 10 minutes in phone call” (auftfdse).

The message aims to make some formal and slow institutional activities such as emails into something more immediate and a bit more informal. The goal seems to be that of keeping emails exclusively to those requests that need to be traceable or made official. This feeling is summarized in the table below (Table 7.4).

Table 7.4 The least preferred communication

<table>
<thead>
<tr>
<th></th>
<th>FACE TO FACE</th>
<th>TELEPHONE</th>
<th>EMAILS</th>
<th>REPORT</th>
<th>NONE OF THEM</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE DEPARTMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>0</td>
<td>4 (13%)</td>
<td>12 (39%)</td>
<td>5 (17%)</td>
<td>10 (32%)</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td>VICTORIA</td>
<td>0</td>
<td>3</td>
<td>10</td>
<td>1</td>
<td>4</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>ITALY</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>

A third of staff affirmed that none of the options given bothered them, while reports and phone calls received the same degree of adversity. None of the participants mentioned face to face communication as an unappreciated option.

The resistance to emails is particularly evident among the Australian participants. Such hostility towards emails is consistent throughout the three Victorian agencies, with approximately two thirds of the participants referring to them as the least preferred way of
communication. Half of the remaining Australian members do not have a least preferred way of communication while respectively four disregard phone calls and reports.

In the case of Italian staff, the type of communication that generates the most resistance is still the written one, but with a broader focus rather than specifically on emails.

“Written communication is the one I prefer the least. I don’t clearly understand what my colleague’s intentions are, if he wants to examine an aspect more in depth. But it’s necessary, you can’t do anything without it. If you want to communicate something to the entire Italian territory you have to use it” (ltftfniab2).

“Reports...Yeah I’d probably put that lower on the list. If you format it rightly a report but once again it's only a one way - it's really only a one-way conversation” (ltftfnia3).

Overall, it appears that these investigators clearly dislike written communication as it lacks context and it is once again a top-to-bottom way of sharing. However, it still appears to be the most logical and practical method of communicating used by the agency. It is the fastest way to spread information to several localities and at the same time. In Australia the three agencies shared hostility towards emails, while in Italy the investigative agencies are more tolerant and willing to adapt themselves to the different ways of communication. This result may be due to a lack of engagement in the decision-making process. Therefore, despite the individual’s preference, the investigators have learnt how to adapt to the department’s rules and procedures. This could also explain why an investigator has to work many years within the broader organisation (see chapter 6). Further analysis is required to support such a proposition. However, what undoubtedly remains is that oral communication is preferred to the written one.

7.3.3 Summary

This section looked at the employees’ preferred way of receiving communication about policies and procedures. The aim was to seek any correspondence or difference with the ways chosen by the organisations. Findings show that the oral and direct way is the favourite one, with few members welcoming a mix of all of the ways analysed. The written way, instead, was only mentioned by one participant. In this context, emails are the least appreciated means of
communication by investigators, particularly in Australia: not read, misinterpreted and a slow process. In all of the six departments, in both countries, written communication is still felt as one-way conversation; either from the top to the bottom or vice versa. Organisational learning, however, occurs within a dialectical, bi-directional, process (Rahim 2011; Pedler et al. 2011).

As emergency/disaster organisation with a military structure, written communications such as reports, guidelines and emails are recognized by the investigators as an unavoidable formal and official way of communication between the organisation and its employees. Nonetheless, in order to improve organisational learning and efficiency, such a process needs to be understood and followed through a well-organized system of feedback. Therefore, whether and how bushfire investigators send and receive feedback is a key factor, which is examined in the next and last section of the current chapter.

7.4 Section 3: engagement in decision-making processes

Employee engagement has become a central business issue. The assumption is that when staff members feel valued by the organisation they are more likely to commit themselves to the department’s success (Robinson et al. 2004). A high correlation has been demonstrated between the engagement in decision-making process and motivation, as well as satisfaction for the job (Vance 2006).

7.4.1 Engagement in decision-making process

As shown in table 7.5, over half the staff, regardless the country of origin, stated their engagement in the decision-making process as ‘inadequate’: 
Table 7.5 Engagement in decision-making process

<table>
<thead>
<tr>
<th></th>
<th>INADEQUATE</th>
<th>ADEQUATE</th>
<th>TOTAL (100%)</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE DEPARTMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>19 (60%)</td>
<td>6 (20%)</td>
<td>6 (20%)</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td>VICTORIA</td>
<td>11</td>
<td>3</td>
<td>4</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>ITALY</td>
<td>8</td>
<td>3</td>
<td>2</td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>

The category ‘inadequate’ includes a feeling that engagement is limited:

“Oh, you are approaching a very delicate subject here. On a personal level I feel very involved because I really believe in it. On an institutional level, right now, I don’t know how much my point of view is being considered and becomes part of the institution’s processes” (itftfnipaf1).

or, worst, not at all:

“I suppose you can voice your opinion there and that sort of stuff but I've never been involved in making my opinions like that, so it's all pushed down from the top and back to us” (auftfdse3).

These remarks reflect a feeling of being insufficiently heard by the higher ranks of the organisation while being forced to obey to orders imposed by those same ranks. This is an important point since it can potentially affect the degree of commitment of the investigators with their organisation.

As with previous analyses, a more comprehensive understanding occurs in relation to each agency. The majority of the members interviewed (nineteen out of thirty-one) thought they were not adequately engaged, with eleven of them affirming not to be engaged at all. Victoria Police and NIAB represent the two exceptions to this trend. Indeed, the majority of their members feel totally engaged in the decision-making process.

“Oh very involved. Definitely. Especially if we've got a job we want to take on its - we're 100 per cent involved”(auftvicpol3);

“Well, enough. What I mean is that we always try to stimulate our colleagues because we think that personal motivation... is fundamental, the most important one”(itftfiab).
These observations reflect a desire for engagement, for two reasons. The first is that they improve as organisations by fine-tuning their policies and procedures according to their staff’s feedbacks. The second is that they create an environment in which the investigators feel valued and therefore are more prone to personal initiative and motivation, as exemplified by the two interviews cited above.

Once again, it seems that there are variations between police functioning agencies and fire suppression ones. Generally, investigators from fire suppression agencies (CFA, DSE and NIA) were less involved in the decision-making process. As one CFA member stated referring to his level of engagement:

“No, restricted in the decision-making process, that’s probably policy and procedure and that sort of stuff. Maybe they’ll trust me a little bit more to... getting more involved, yep” (auftfcfa4).

This type of statement was also expressed by the NIA interviewees. As one of the NIA’s member said:

“They do not influence specific policies in bushfire investigation simply because they do not have these skills” (itftfvf10).

In both these cases investigation is seen as a completely separate discipline to decision-making processes. Therefore, investigators do not feel engaged in the development of policy and codes since it is not their competency or part of their job description.

In contrast to the agencies directly involved in fire suppression activities, police agencies (such as Vic. Pol. and NIAB) appear to feel more engaged in the decision-making process. Comments such as “we are heavily involved [...]” or “oh very involved. Definitely. [...] We are 100 per cent involved” were common within both agencies. The trend of the NIPAF, as a police agency as well, is also towards a feeling of engagement even if the majority of staff members from this agency generally feel ‘a little’ engaged in decision-making processes.

“In my opinion the outer suburbs are not involved much. At our level we do organise meetings with other suburbs, so on this level we do discuss with others. But policies and procedures generally come from above and we can only add to them. In my opinion we don’t have many... many ways to give
a feedback to the Headquarters. We do provide a report each year but we don’t sit around a table and we don’t talk about the... the problems and the investigative issues that we’ve had to face” (itftfnipaf4).

The lack of a system that allows feedback to be submitted to the higher levels, in addition to the yearly reports, indicates that the organisation seemingly does not rely on its employees’ suggestions to improve its policies. As a result, investigators feel only marginally involved since, even when they do give their personal opinion, they do not receive a response acknowledging that they have been heard.

A deeper analysis of the interviews, however, allowed a more precise understanding. When investigating the nature of the engagement of police agencies in the decision-making process, it emerged that this usually was in relation to operational issues rather than policy and procedural matters. As a member of Victoria Police stated:

“We get input in ... what resources do we want, what services do we want and who we need to speak to” (auftfvicpol3).

This was also evident for members of the NIAB:

“Well, pretty much. In the sense that we always try to give stimuli to colleagues because we believe that the incentive of personal motivation is ... fundamental, the most important of all” (itftfniab).

The extent of their engagement is high but it actually seems to be linked to the concept of job efficiency from a practical and operational point of view. The nature of their engagement commonly concerns practical/operational activities rather than changing procedures. It could be assumed that members from police agencies generally feel more engaged at an operational level due the structure of their organisation. Indeed, as a structure of a military kind, it may be hard for their members to think of intervening on policies and procedures, especially when someone, perhaps at higher levels, is specifically in charge to do so.

Similarly to the NIPAF, the position of DSE members is different. As a fire suppression body, they share a similar level of engagement to the fire agencies. However, as a government
agency with the power of changing policies and procedures, they have a sense of involvement. This is well summarized by a DSE participant:

“Well, there’s chain of command within all sort of structured working environments as there is in fire and fire investigations. So if you come across something that you think could be modified or changed to improve the process, it’s quite easy, and I don’t feel uncomfortable at all with talking to a person that’s above my level, and pointing out what it is, and they take that on board” (auftfdse2).

Precisely due to its dichotomous nature (both fire and police functioning agency), some of the DSE members do not feel as involved as others. As one DSE staff member stated:

“[…] I suppose you can voice your opinion there and that sort of stuff but I’ve never been involved in making my opinions like that, so it’s all pushed down from the top and back to us” (auftfdse3).

Most of them feel able to give their contribution and that this “would be taken on board”. Perhaps, the consciousness of being heard if and when something comes up is the reason why all DSE’ members were “pretty happy with the way it is”.

7.4.2 Summary of the section

Findings from the analysis show a low level of engagement perceived in members from both countries Italy and Australia (Victoria). When comparing the results obtained from each country, members from Italian agencies appeared to feel more engaged than those working in Victoria. In previous sections, results have been explained from a cultural point of view. The analysis of members’ engagement in the decision-making process led to another conclusion; fire suppression agencies (CFA, DSE and NIA), regardless the country of origin, resulted in less involvement in the decision-making process than police agencies (Vic. Pol., NIAB and NIPAF). Although more engaged, police agencies are generally highly involved at an operational level, on operational issues, rather than on policy and procedural matters. Due to the dichotomous nature of DSE (of both fire and police agency), it embraces characteristics of both agencies. As a fire suppression body, some members feel a similar level of engagement to the fire agencies; as a police agency with the power of changing policies and procedures, a high level of engagement was apparent.
7.5 Conclusion

The chapter stressed the importance of acknowledging that the way the dialectical process occurs can strongly affect members’ perceptions of and compliance to purposes, norms and processes. Organisations may fail to take into account their members’ opinions and preferences. A dialectical process would ideally be bidirectional. In the context of bushfire investigation, formal information such as that concerning policies and procedures should be communicated in a variety of ways so as to meet employees’ preferences on the way of receiving communication in relation to policies and procedures. If the organisation gives feedback on a member’s feedback, or calls the member to ask their opinion, then the importance of employees’ feedback is given recognition. On the contrary, if a member never receives feedback from their organisation, this implies that the organisation does not develop, encourage or enhance the ‘system of feedback’.

Currently, the only way bushfire investigators and police agency members have to send their feedback is through reports. However, due to the lack of a feedback-oriented environment, these reports do not really constitute instruments for sharing opinions. Instead, reports are mainly focused in obtaining information about the origin and cause of an event. Consequently, it is likely that reports are seen as “just formal reporting lines” and that members “get some feedback [only] when something needs to be clarified. That’s about it. Generally that’s how it works”. In this way, feedback is primarily seen by executives as a matter of process and policy. “It is a tick the box thing”. However, it is only when staff members feel appreciated that the level of commitment increases and the department can accomplish its goals. It is only with when members feel engaged in decision-making process that motivation and satisfaction with the job can occur.
CHAPTER 8

ACTIVITY COORDINATION

8.1 Introduction

As described in chapter 4, the third communication flow - activity coordination - refers to the ability of an organisation to adapt interdependent activity to specific work situations and problems (McPhee & Zaug 2000). In the current study, all the six fire investigative departments in both countries Italy and Australia (Victoria) differ from other non-military type private business companies (Soeter et al. 2010). They are not defined by market relations or supply-demand; their supply is the ‘collective good’ and their existence is politically determined and so guaranteed (Clement & Smith 2009). As a result of this phenomenon, police and fire agencies share certain characteristics of structure, procedures and discipline. They are focused on operational activities (Mol & Beeres 2005). The key driver is that these types of organisations operate in life threatening circumstances, in which there is a very short time to interpret correctly the situation and to manage the unpredictable (Kolditz & Brazil 2005).

Knowledge management, therefore, becomes critical in order to operate in such a dynamic and high risk environments (Mintzberg 2001). All those activities, such as expert meetings or management development programs, that lead to the creation, sharing and transfer of knowledge should be encouraged and developed within each agency or department. For this reason communication should be recognized as the basis of any organisational structure and seen as the ‘blood flow’ that keeps it alive – circulating throughout the enterprise (Lauring & Selmer 2012). The approach behind this chapter focuses on communication, flowing through the organisation in an interactive fashion. It is conceptualized as a dynamic process that creates, sustains, and transforms organisations.
The six agencies involved in the study are seen as “an ordered totality of specialized and coordinated social roles performed within the framework of the institution of military and emergency service” (Klepikov 2004, p.191). According to this statement, activity coordination represents all those specific processes by which work activities are adjusted and work problems solved. How and whether staff members are engaged in interdependent work or deviate from collaborative engagement becomes the central question of the chapter: how and to what extent is knowledge shared and managed amongst members of the same organisations? This analysis highlights not just the level to which the organisation develops and encourages a knowledge-based environment but also, and above all, whether such knowledge is communicated, shared and consequently used amongst the investigators. The outcomes of this review will lead to an analysis of strengths and weaknesses of the investigative departments.

8.1.1 An Australian variation: State (Victoria) Fire Investigation Coordinator

Before proceeding, it is necessary to note an organisational distinction with the agencies in Victoria, Australia. The ‘Black Saturday’ events, in Victoria in February 2009, undoubtedly were one of the most devastating firestorms ever seen. On that occasion, one million native animals were destroyed, 173 Victorians died, and many more were left without a home (Franklin 2009). Following these terrible events, both the CFA and the DSE have improved not only the fire suppression system but also, and above all, their investigative mechanism. The assumption now is that fire investigation has strong links with fire prevention. Agencies cannot provide effective bushfire investigation and prevention in isolation from each other. An all agency approach is needed if the numbers and risks of bushfires are to be reduced. To facilitate the inter-agency co-operation and supervise the investigation system, CFA and DSE have established the role of State Fire Investigation Coordinator (SFIC).

State Coordinators provide general management and support by simultaneously playing several roles. They cover an educational role for fire investigators, fire investigation team leaders and district fire investigation coordinators from across the state. At this level, their priority is to make sure that the investigative units have the best training and have access to professional development.
At the managerial level, their role is to monitor the areas that are most at risk or that are a source of concern. During a bushfire, they are also responsible for monitoring the organisational capacity and for distributing resources, both human and technical. Therefore, they need to assess where the deficiencies or where the gaps are and which areas lack investigators. The SFIC role is summarised in the CFA Standard Operating Procedure (14.03):

“The person employed by the CFA to be responsible for the coordination and management of the Fire Investigation program at a state level by developing standards for the CFA's involvement in fire investigation. Also responsible for providing expert advice on the training of CFA personnel in fire investigation and assisting with fire investigations at regional and state levels. The SFIC shall also be a trained Fire Investigator” (CFA Standard Operating Procedure - 14.03, p.2).

State Coordinators from the various agencies have a collaborative role that combines both education and the managerial goals, on a State-wide plan. Finally, by liaising with other agencies, they act as a team to make sure that common systems for training are implemented, so that different agencies share a similar type of training and that resources are assigned to cover specific areas. To achieve this, the State Fire Investigation Coordinator (SFIC) of each agencies shares his/her knowledge beyond the CFA and the DSE borders, to include also other agencies such as the MFB and the Victoria Police. As stated by the SFIC of the DSE:

“I send a report each week to the arson squad on activities within DSE, which I also send to my manager, who is Assistant chief of operations; so trying to keep him informed on stuff that is going on as well” (auftfdse).

In doing so, the State Fire Investigation Coordinator also requires a certain level of experience and knowledge across different aspects of fire investigation. As observed:

“As the State co-ordinator - the current requirements - one, I suppose to be seen as an experienced investigator that can assist all other investigators across the state. If they're - particularly some of the new investigators that aren't overly experienced, I can provide them some guidance. So, I need to have good technical skills myself, to do that. But I suppose a chief role is too, that liaison between our fire investigators and the other agencies. I suppose, manages our department as well [unclear] the CFA and police in particular” (auftfdse).

A similar approach is shared within the CFA who recognises that the role of the State Investigator comprises several aspects. Among these, fostering an inter-agency collaboration
is not only considered important but a critical aspect to the State Fire Investigation Coordinator role. As stated by the SFIC of the CFA:

“Current position - its role statement is varied. It relates to not only making sure that our program is operational across the State - determining the number of investigators that we've got, keeping them up-skilled or skilled in the areas of not only bushfire. But also structural fire investigation - monitoring causation of fires so where fires are occurring and what the causes are and how we can prevent those causes of fires occurring. Liaising with other agencies such as Vic Pol or DSE or MFB and working on a number of different projects relating to fire investigation. It could be training courses, it could be reporting systems, it could be policy and procedures. So it's very much a varied job” (auftfcfa).

These positions will be referred to in the analysis where appropriate. In addition, the involvement of these post-holders in knowledge sharing is explained.

8.2 Section 1: Intra-agency knowledge-sharing

This section presents findings of the analysis conducted in the six departments with regard to intra-agency knowledge sharing; the knowledge that members within the same organisation share between each other. The reason for focusing on the sharing of knowledge within an organisation resides in the common belief that the action of sharing practices and information would optimize the organisation’s goals and success (Ipe 2003). Knowledge is a most important resource for a company (Zack et al. 2009) and, as such, how this knowledge is created, shared, and used within that specific organisation should be understood.

There exist different levels of knowledge (Schwartz 2006; De Long & Fahey 2000), at individual, group, and organisational levels. Sharing knowledge can be difficult to manage due to a series of different impediments and barriers that normally concern the organisation as a whole, such as a fragmented organisational culture (Brown et al. 2005; Davenport 1998). How and to what extent members are motivated in sharing their knowledge with the other employees of the same organisation becomes a critical matter (Lauring & Selmer 2012). As reported by the literature (Lauring & Selmer 2012; Zack et al. 2009), it is through the sharing of their individuals’ knowledge that organisations evolve. The interviewees confirmed
that within the departments importance is given to the investigative knowledge sharing. The answers collected were classified in four categories: ‘everything’, ‘specific common aspects’, ‘unusual aspects’ and ‘nothing’ (Table 8.1).

*Table 8.1 Intra-Agency Knowledge Sharing*

<table>
<thead>
<tr>
<th></th>
<th>EVERYTHING</th>
<th>SPECIFIC COMMON ASPECTS</th>
<th>UNUSUAL EVENTS</th>
<th>NOTHING</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>15</td>
<td>12</td>
<td>3</td>
<td>1</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>9</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>ITALY</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>

Note: Answers are grouped according to and based on question n.15, Communication Question List, Appendix A.

As argued, the only approach to increasing an organisation’s knowledge and value is the one in which the totality of the individuals’ knowledge is shared (Ipe 2003; Lauring & Selmer 2012). Indeed, if an event is discussed in its entirety, this offers the opportunity for staff to learn and to refine the way they approach their job. It appears that, overall, information regarding bushfire investigation is largely shared within each agency, with half of the interviewees tending to share every aspect of a given case with their colleagues. As stated:

“because we brainstorm and bounce ideas off each other” (auftfvicpol2);

“we would sit down for a discussion every morning for at least an hour and talk about what we’ve got going on at the moment’ (auftfvicpol4).

The rationale behind these statements is that sharing information and experiences is considered by the majority of investigators as something that can benefit the organisation or unit within as a whole.

By sharing their knowledge, in fact, investigators can brainstorm and come up with ideas and strategies that are more complete than if they had been dictated by an individual alone.
Another advantage is that open discussions contribute to building and consolidating the team spirit, as also highlighted by one of the participants:

“I share with my colleagues everything [...]I treat them all in the same way because I believe that a work like this must be a team work... each with his peculiarities, weaknesses, strengths etc. etc. However I think it is important to work as a team” (itftfniab).

For this investigator, sharing the entirety of the investigation with his colleagues reflects his way of valuing and acknowledging them, as well as building a stronger investigative unit based on the strengths and weaknesses of everyone.

Despite the fact that ‘sharing everything’ is a key aspiration for many, a large proportion of the remaining investigators (40%), however, limit their sharing to some aspects of their work. The following statements illustrate this point:

“most of the time the thing that’s discussed is how the fire started” (auftfcfa2); or

“definitely the subject of the identification of responsibilities”(itftfnipaf3).

In these cases, sharing knowledge is targeted. Moreover, the topics discussed do not always concern personal experience and/or feeling acquired during the investigation of a bushfire event. It rather relates to the more technical type of information that the management is interested in and requires for the investigative work. Thus, the cause of the fire, its point of origin and the potential authorship are amongst the most popular topics.

Other participants instead talk about the uncommon events they have had to face:

“I will discuss maybe something I’m not sure about. Not sure how to interpret” (auftfdse6)

In this case, the discussions are centred on the investigator’s doubts and insecurities, while the aspects of his/her work that s/he is sure about, and that might benefit other colleagues, are not covered. This is also the case for that minority of the investigators who choose to share little to nothing of their investigative job with their colleagues. Such egocentric
approaches preclude any form of sharing, in the sense that there is no possibility of learning from each other and, therefore, no contribution to the organisation’s knowledge.

The ‘unusual events’ category refers to those events that are either unexpected or of difficult interpretation.

“If I go to a fire, I’ll ring someone up and have a chat to him about it, especially if there’s something unusual in it. Different to what we’ve actually written down and documented” (auftfdse2).

The motivation behind this form of “sharing” is mostly to troubleshoot (Peroune 2007). Hence, in this case sharing contributes to increasing the organisational knowledge, insofar as the individual member learns from such an exchange.

Although many interviewees mentioned the fact that their ability to share information is limited by privacy laws, only one Victorian investigator kept all of the information to himself. For this person, the reason was the fear of having any of the information “leak” outside the agency:

“I sort of like to keep a lot of that sort of stuff secret, or secretive, so words don’t get out, because you don’t know who you’re talking to [...] and how they pass information on to other people, so I’d rather keep it to myself” (auftfdse).

Even though this comment represents an exception, it is a good example of the barriers that could exist amongst bushfire investigators in relation to effective knowledge sharing. Confidentiality, lack of trust, lack of time to meet and discuss the various cases could become then the main obstacles to a shared investigative knowledge.

By breaking down the answers given by each agency we can discern some further features of knowledge sharing.

Agencies that cover only police activities, such as the Victoria Police and the NIAB, tend to share the entirety of their knowledge with their colleagues.

“Our structure is, well... hierarchically organised. Obviously it depends on both the age and the level of experience. Generally...I try to share everything” (liftniab2).
“All aspects. Yeah. We would sit down for a discussion every morning for at least an hour and talk about what we've got going on at the moment. So yeah, we would do that every day” (auftficpol4).

These comments reveal that knowledge sharing is actually integrated into daily activities and, most importantly, that it can very well take place in a hierarchical environment. In this sense, knowledge sharing goes beyond the concept of hierarchy; it can be done despite ranking barriers.

The only exception is NIPAF, whose members are evenly split between those who share everything:

“All of them. Absolutely all of them, yes, yes. From strategy planning to the slightest little detail… yes” (itftfnipaf2);

and those that only share some common aspects:

“It’s definitely the identification of responsibilities… often we face man-lit fires and… it is clear that we must then understand the motivation of those who caused it” (itftfnipaf3).

‘Common aspects’ is to be understood in terms of causes of the fire and the legal responsibilities of the person (or agency) that carries out the investigation.

This concept is highlighted and reinforced also by the other two fire agencies, CFA and NIA, which prefer to share some common aspects of their work. As stated by a CFA investigator:

“Most of the time the thing that’s discussed is how the fire started. Most people are particularly interested in how fires start, what it was. Especially if it was an interesting course - something a little bit different. So most of the time that's what people go to - how the fire started” (auftfcfa2).

The proportion of information shared is here further reduced to those common aspects that are somehow unusual or difficult to understand. A fire that follows a “normal” course of action would therefore not be discussed.

Hence, it is reasonable to conclude that knowledge sharing is partly determined by the type of investigative work that is undertaken, as police work or as fire preparedness and assessment.
8.2.1 Summary

The aim was to understand how and to what extent knowledge is shared and managed amongst members of the same organisation. The rationale behind this investigation resides in the common belief that sharing practices and information should optimize organisation's goals and success (Ipe 2003). The sharing of knowledge is an opportunity to refine and develop ideas and strategies, however at the same time it can be difficult to reach, particularly due to different impediments and barriers within the organisations. The overall trend is that agencies with police functions (i.e. Victoria Police & NIAB) attempt to share their knowledge, while fire agencies (i.e. CFA & NIA) tend to focus on particular aspects of their work. It may, however, be the case that there is a relation between knowledge sharing and the promotion within the organisation of communication strategies; the topic of the next section.

8.3 Section 2: Knowledge vs. Communication

Recognizing the importance and benefits of the sharing of knowledge should raise the question on whether and how organisations develop a knowledge-based environment and place emphasis on creating knowledge-sharing cultures. Although the literature focuses on the importance to organisations of managing knowledge, less attention is paid to how such knowledge is identified, shared and, consequently, used (Ipe 2003). Further, there is a lack of focus on what is or should be: the weight given to the knowledge itself or the importance attributed to the ability to communicate knowledge. In this respect it has been argued that “it takes knowledge to acquire knowledge and, therefore, to share knowledge” (Hendriks 1999, p.22). Consequently, knowledge sharing should not be seen as the act of distributing information but rather as a cultural approach that has to be sponsored and supported by both the employees and the organisational system (Dalkir 2013). The question becomes: what and how is knowledge communicated? For many, it implies the communication of personal insights and experiences rather than a transmission of rational and objective information (Eppler 2006). Thus, one feature addressed in literature is the relationship between knowledge and communication (Garicano & Wu 2013). Reciprocal interactions between the
‘expert’ and the knowledge receiver are crucial in order to gain a complete comprehension of a matter (Bennett et al. 2010). This complexity is the focus of the current section.

8.3.1 Communicating effectively

As we have seen in the previous section, the sharing of knowledge is central to increasing the organisation’s knowledge and value. Two elements are essential to knowledge sharing: the knowledge itself and the ability to communicate it effectively. According to the literature (Eppler 2006) these elements are both important and the question here is how is this relationship seen by the investigators?

The majority of the investigators interviewed consider knowledge as a means to better communication. As expressed by a CFA investigator:

“As my knowledge increases [...], then I’m able to communicate with people in and around their field a lot easier” (auftfcfa).

The reason for this valuation may be that communication is perceived as more easy to achieve if it is based on a solid and robust corpus of knowledge.

In Italy, less emphasis was given to knowledge. Here, for some, communication is seen as a tool for teaching purposes:

“Communication is very important; by communicating well you manage to let people know” (itftfniab2);

In other words, the focus is shifted on the efficacy of the communication rather than on the knowledge itself. If communication is not effective then knowledge is not spread. For others, it is a way of learning:

“If communication is aimed at coordinating, at being helpful and listening, it is certainly a prerequisite to obtaining additional information” (itftfwigilanzambientale).

In this sense, communication is the key in order to gain new knowledge from others, rather than to extend it to others. It is therefore an essential skill to have in terms of investigation.
What emerges from these statements is how personal experience of a given situation helps improve the investigator’s communication skills. The concept of sharing knowledge does not only refer to the information that the investigator officially relates after a bushfire. Sometimes, valuable pieces of information are hidden within the personal comments and hints that the investigator might give when recalling the event. As reinforced by an Italian investigator:

“We have all learned from communicating things that previously would never have been reported because they were not considered important” (itftfnipaf).

The rationale behind this choice is that effective communication contributes to obtaining a broader picture of a given event.

Although knowledge was seen as a basis for communication, there was also a recognition of the importance of good communication skills. Less than half the sample gave importance to both aspects. As stated:

“Essentially they are reciprocal [...] if I say something the other person has to understand it in turn. This means that I shared my thought with the other person and we share it” (itftfnia3)

According to this view, the speaker and the listener are both active, the first by trying to transmit his/her message and by adapting him/herself to the audience, the latter by trying to understand what s/he is being taught. In other words, knowledge sharing is an interactive process, in which an on-going learning process is possible through an effective communication system.

8.3.2 Summary

Knowledge sharing does not refer to the mere act of distributing and communicating information (De Rue 2012). It involves a careful attention to what, and above all, to how something is communicated (Lambe 2007; Hendriks 1999). This section looked at how such knowledge is identified, shared and, consequently, used within each investigative department.
The aim was to understand the relationship between knowledge and communication. Thus, the key question was: to know or to know how to communicate what we know?

Findings show that overall the knowledge itself is considered more important than the way to which something is communicated. The general perception is that communication is easier to achieve when based on a solid and robust corpus of knowledge. A minority, and more evident in Italy, believe that an effective communication increases knowledge. Thus, to them, professional communication becomes of more value than the knowledge itself. Nonetheless, some investigators (approximately a third of the sample) regard both aspects as equally important. What emerges from the analysis, and according to the literature, is that such a relationship between knowledge and communication plays out in complicated ways. Emphasising one at cost of the other would mean limiting knowledge sharing, which, in turn, restricts the way organisations evolve and optimize goals and success (Lauring & Selmer 2012). Nonetheless, other factors are strictly linked to an organisation’s performance (Sirmon et al. 2010). Through the analysis of an organisation’ strengths and weaknesses, it is possible to obtain an understanding of the degree of internal order and social coordination (Gelfand et al. 2011). The following section will attempt to analyses strengths and weaknesses of the six departments involved in the study.

8.4 Section 3: Strengths and weaknesses of the department

As noted by many, it is important to understand the weaknesses and the strengths of knowledge sharing in terms of an organisation’s capacity and competitiveness (Nolin & Åström 2010; Gelfand et al. 2011; Bryson 2011). This reflection is linked to an organisation’s performance (Sirmon et al. 2010). Indeed, without an identification of its own strengths and weaknesses no organisation is able to build and follow strategic interventions. In chapter 7, it was shown that a feedback and report line system is essential for the organisational learning process, which constitutes the foundation to what has been defined ‘self-structuring organisation’. In this context, the analysis of the strengths and weaknesses of a given organisation represents the starting point for assessing efficient ‘activity coordination’ (Bryson
All organisational decisions and actions, in fact, are based, or should be, on the attempt of taking advantage of the strengths and of minimizing, if not overcoming, weaknesses.

Through the analysis of the strengths and weaknesses of every day recurring situations within the six agencies involved in the study is also possible to obtain a better understanding of the degree of their internal order and social coordination (Gelfand et al. 2011).

8.4.1 Strengths

Department strengths are defined in a range of ways. Overall, nearly half the investigators highlight investigative knowledge as the most relevant strength of their departments. A member of the DSE summarized this view:

“On the positive side of it there’s – I suppose they do record information [...] that’s collected on site, and they have the people in the field that have got the knowledge to probably pick – be better informed and more experienced in locating those” (auftfdse2).

Here, investigative knowledge is identified and described in terms of information acquired and years of experience in the field (compare chapter 6 and chapter 7). This background is a prerequisite to conduct an effective investigation as it allows a quicker and more exhaustive selection of the evidence related to the investigative event. The establishment of a network with other agencies is also highly appreciated, followed by the development of good report systems.

“We undertake After Action Reviews, AARs. It’s a critical look at what was planned, what happened, why did it happen and what we could do better next time. It’s not about issuing blame, it’s about looking for improvements where possible and identifying why things didn’t go quite to plan” (auftfcfa2).

This is a positive look at one of the systems that was most frowned upon by the investigators in terms of means of sharing knowledge with the rest of the organisation (section 7.3). It therefore shows that, if integrated correctly, a report system can be an asset appreciated by the investigators.
Some investigators are also proud of being able to attend fires all over their region, especially if they can get on site quickly after the fire has been signalled.

“It would be to get out in the field and deal with the situation as it’s happening and then being able to put things in process to allow the investigation to be controlled methodically” (auftfvicpol4).

Here the investigator is not only proud to be able to cover the entire territory he has been appointed to, but also to be able to get to the fire in time, before precious investigative evidences are lost.

Of note, two interviewees from the DSE, were unable to point out a major strength of their own agency. As stated:

“I'm trying to think. Why am I struggling to think of something. Yeah, there's an answer in itself, isn't it? Yeah, no they really don't take - they don't put the value - you wanted a positive - this is a negative” (auftfdse2);

“No, I don't think our department has many strengths in the investigation area. Other organisations are much better organised and take it more seriously” (auftfdse7).

It seems that these investigators are not able to identify organisational strength, since the organisation does not provide yet the ‘right’ importance to the investigation process.

Nonetheless, the interactions established with other investigative organisations as well as having a State Coordinator position within the department are still perceived as strengths by the majority of the DSE, and more generally Australian, investigators. As stated:

“It's probably having that state wide coordinator now, like Les. So he's working with the arson squad and that sort of stuff and he's bringing his knowledge back to us and he's a voice for us now” (auftfdse3)

This could be explained by the fact that in Australia the bushfire investigation activity seems to be a more all-agency shared practice, in which each fire and police agency has a specific role to play. In contrast, in Italy, such network and social dynamics are not mentioned. What emerged is that every investigative agency works alone within the borders of their own jurisdictions.
“There is also a problem related to personal skills; in the sense that, in the end, everyone is still jealous, in a good way, of his knowledge and wouldn’t like to see that what he does has been minimised by others; there is a sense of secrecy around this. But it is also true that the national organisations should work towards a greater good that goes beyond jealousy” (itftfniab).

In Italy, having a corner on an investigative aspect is not seen as an obstacle to the overall investigation but rather is perceived as an added value to the organisation. The confidentiality is therefore confounded with secrecy and investigators work towards keeping their knowledge to themselves in order to gain power over other organisations. This does not necessarily mean the Italian agencies do not recognize the importance of working together in the field of bushfire investigation but, may be, more effort is required if this status is to be achieved.

In Italy, following recognition that their department has a sound investigative knowledge, many spoke positively of the experience in dealing with fires and the related fire behaviour. As per the Australian investigators, the ability to reach all areas is a point of pride to many, while a few recognise the importance of having staff that make an individual effort to improve and to develop professionally:

“People’s willingness to improve. Their knowledge and to make available their operational capacity, even in a physical sense, in becoming professionals at a higher level [...] I can see that there is a great desire to improve and so this is quite useful” (itftfnipaf).

In this sense, the organisation grows as its members develop.

Interestingly, even though the usefulness of having a good reporting system was one of the most popular answer in the overall picture, only one Italian investigator explicitly mentioned it, compared to three (16%) in the Australian sample.

To obtain a more comprehensive and detailed picture of any cultural difference and/or similarity, a further examination into an agency level is necessary.
Victoria Police – Arson Squad

What emerges is that in Victoria the ability to network, seen as the most valuable quality of the department, was expressed only by the Victoria Police’s investigators. This can be understood by considering that their work begins with and relies on collecting information from witnesses and fire departments.

“I think that our interaction with the regions, interactions with the CFA, MFB and DSE; our commitment and enthusiasm to make sure that the matter is properly investigated and attend scenes if possible. Attend them and assist or take on the investigations” (auftvicpol).

The capacity to interact with others is, therefore, the key to the Victoria Police for obtaining as much information as possible. None of the other agencies claimed this aspect as a point of strength. This outcome makes the remaining five agencies, and consequently the two countries, much more similar than was first indicated in the overall level of examination.

Country Fire Authority

The CFA gives weight to investigative knowledge. The Victorian fire fighters not only recognise the quality of their investigators’ experience, but also mention the fact that this has led to the improvement of the whole intervention process, with the CFA staff members being careful so as to not contaminate the scene when first approaching a fire. As stated:

“I think now with the training we’re really emphasising the crews first on scene is to preserve the area of origin. [...] It is really home honed how you’ve got to preserve that area of origin” (auftcfa3).

CFA investigators also regard a detailed report system as being central for the efficacy and the improvement of their work:

“I think that one of our strengths of our program is to make sure that we have closed the loop. So that the information we’ve got is used in a variety of fields so that we can – something good comes out of the investigations... A good report system” (auftcfa).
Interestingly, the idea that improvement starts by identifying the organisation’s strengths and weaknesses, and that, in this sense, a good report system is the starting point, is underlined also by the following statement:

“We undertake After Action Reviews, ARs. It’s a critical look at what was planned, what happened, why did it happen and what we could do better next time. [...] It’s about looking for improvements where possible and identifying why things didn’t go quite to plan” (auftfcfa2).

The after Action Review process is the evidence of how much the CFA is focused on becoming a learning organisation (see chapter 3). In this context, the analysis of their own weaknesses and strengths, how these are communicated within the organisation, and the efficacy of adopting a good report system, become critical to improvement both as investigator and as organisation.

**Department of Sustainability and Environment**

Lastly, the DSE is not biased towards one specific feature, but rather it considers several logistical aspects as central to its investigative activity. Of note, the DSE is the only agency that mentioned the importance of reaching a fire scene quickly, and, together with CFA, appreciates the position of their own State Coordinator.

“It’s probably having that state coordinator now [...] so he’s working with the arson squad and that sort of stuff and he’s bringing his knowledge back to us and he’s a voice for us now” (auftfdse2).

The role of State bushfire investigators’ coordinator is seen as the real facilitator and the main actor in building and maintaining professional relationships with other investigative agencies.

**Italian Forest Corp - NIAB**

In Italy, NIAB and NIPAF refer to their investigative knowledge as one of their major strengths. However, in this case, investigative knowledge is linked to the concept of knowing and managing different social realities. As previously mentioned (see chapter 5), NIAB’s role is now more focused on educating the Forest Corp personnel all over the Italian territory; therefore such an answer could have been foreseen.
“A knowledge that is very wide because we experienced different realities which are spread on the territory. I know... roughly what is a reality in northern Italy and, at the same time, in southern Italy. This is an important thing: to have an overview of a phenomenon that is so, so different. [...] Knowing fully the phenomenon and know how or evaluate it in its entirety” (itftfniab2).

NIAB’s staff consider themselves as being privileged because of their national perspective. Their investigative knowledge is not only the result of many years spent working in the field as bushfire investigators, but also the direct consequence of researches, updating and hours of training class. What emerged from the interviews is the focus that the NIAB maintains on different social environments.

**Italian Fire Brigade - NIA**

NIA is the Italian agency entirely dedicated to fire and, more specifically, to fire suppression (see also chapter 5). With this premise, the Italian Fire Brigade staff consider the knowledge of ‘fire fighting’ their major point of strength. As reported:

“The strength lies in the fact that we are the body responsible for the fire so to fight fires so basically we have the technical skills to carry out this type of activity” (itftfnia3).

Technical skills are here emphasized, with the NIA investigators being expert in the field of fire fighting, including fire behaviour. NIA members were also proud of their ability to achieve a good presence in the territory:

“It’s just good prevention and a good monitoring of the territory, a good presence in the area to show ourselves on the territory” (itftfnia4).

Being present on the territory and, therefore, on the scene is perceived as a powerful means for the prevention of bushfires. According to many, it discourages potential arsonists, creates a trusty relationship with local communities and saves lives and properties by preventing the spreading of flames in case of bushfire.
Sardinian Forest Corp - NIPAF

The importance of attending the fire scene and, more broadly, of being present on the territory is also acknowledged by one of NIPAF’s investigators. Despite this, the NIPAF is the only agency to highlight the advantage of having investigators who are personally engaged in improving themselves, since this contributes to the organisation as a whole.

“The availability of … people to improve their knowledge and make available their operational capacity in a physical sense in becoming professionals at a higher level” (itftfnipaf1).

Of note, another investigator of the same agency emphasises the importance of having formal and established protocols.

“The experience and have established protocols. The experience is the desire to know and fight the phenomenon … we are now to a point where the Sardinia Forest Corp instead of saying we continue to implement these forces that are destined to the fire suppression and then continue to spend more money buying more planes or helicopters … you are places the question: Why is that? Why all these fires? Where they come from? Therefore, the strength is having start, a long time ago, to face this problem and analyse it, each and every year” (itftfnipaf4).

Together, these two statements might represent the NIPAF’s principle behind a good investigation: the focus has to be on both individual and organisational level. The desire to improve as investigator and as emergency agency is the key to obtain an effective bushfire investigation. One dimension cannot exist without the other.

8.4.2 Weaknesses

Attention needs to be paid to the weaknesses of any company since it is by minimizing such flows, through the organisational learning, that public value can be most effectively enhanced (Humphreys 2007). The identification of the organisations’ weaknesses is performed from an ‘inside’ perspective, by interviewing the agencies’ members, rather than by analysing them through an organisational examination conducted by an external reviewer. In terms of weaknesses of the investigative departments, as also happened with the strengths, a large range of answers were provided. However, the weaknesses identified can be divided in two
groups: those widely shared and those based on a more personal evaluation (individual investigators).

In the previous section, the major strength of each agency has been analysed and then compared in relation to the others with the aim of pointing out similarities and/or differences between the two countries and the six investigative departments. Weaknesses are not discussed in the same way. Data emerged from the interviews, in fact, indicate that the undervaluing of bushfire investigation and the consequent lack of resources are felt in all departments. Therefore, regardless the country of origin and the specific agency, a more comprehensive and broader analysis of this trend is required.

The idea that fire investigation, and more specifically bushfire investigation, is still undervalued is a very generalized feeling amongst all departments. A practical example of this concern relates to the role of bushfire investigator. As outlined:

“Probably my role at the moment. [...] I don’t investigate as many fires as what I’d like. That obviously goes down to the role that I’m in at the moment. Fire investigation is something you have to do a lot and continue – it’s not a matter of just detaining those skills, you’ve got to continue to go to fires and practice those skills” (auftcfa2).

Bushfire investigation is perceived as something that cannot be learned once for all: it is a competency that needs to be constantly reinforced and developed through the years of experience made directly on the field. Investigating as many bushfires as possible and sharing such investigative knowledge represent, or should be, the foundation for any bushfire investigator.

Nonetheless, investigators have different job positions to fulfil. They are required to split their time between the investigative work and other responsibilities. As highlighted by an investigator:

“It is not so much. This is because my main job in accordance to my current position is focus on fire prevention rather than investigation. So, I review fire prevention projects, I check the level of risk of companies shops and residential buildings as well” (itftfitalianfirebrigade).
The fact that a full time position as a bushfire investigator does not exist is what makes the investigators feel and say that this role is still underestimated by the agencies.

Equally, the undervalued bushfire investigation activity is perceived by the interviewees as the result of the ‘old’ organisational fire suppression approach, seen as an obstacle to the ‘new’ investigative system. As stated:

“The National Body has not been used over the past seventy years of life to think in order to understand why there was a fire. The main objective was, and still is, to extinguish the fire and save people, of course, leaving out everything else” (ltftfnia2).

According to the ‘old vision’, bushfires has to be stopped by reinforcing the fire suppression system. In contrast, the ‘new vision’ is trying to shift the focus from the act of putting out a fire to the understanding and, therefore, investigating process. One investigator summarized this issue:

“The certainties that you have. It has been always done in this way, and so we continue like this. And this builds walls and prevents any improvement. And there are people who still have this attitude” (ltftfnipaf1).

In order to reduce the number and impact of bushfires, the investigative process needs to be considered as the first and most important step, the principal prevention tool. However, every organisation allocates its resources according to its priorities. In this light, the fact that the majority of these resources are still invested in suppressing the fires and not enough is left for the investigation is another example of the old fire-fighting culture.

The resourcing problem has been outlined several times during the interviews and, as reported below, it can comprises financial resources:

“I think that’s what needs to improve in regards to resourcing, having our people properly equipped” (auftcfa5);

as well as human resources:

“Less effectives are resourcing. [...] As you know, one person doing state job – it’s a lot of workload, a lot of pressure, a lot of stress. Just one person
— to be brutally honest — cannot do it justice. Ideally I would like to see a number of people in a unit so that there’s the flexibility — there are additional people to do the work” (auftcfa).

As mentioned, the lack of resources is seen as the direct result of the scarce importance given to the investigation of bushfires. More recently, however, the idea that fire suppression without an adequate fire prevention is not enough has emerged:

“The money that’s spent on fire, you know, you only have to say that we’ve put — we’ve prevented one fire being deliberately lit within a 12-month time frame, and you’ve probably paid for the wage for a year of a fire investigator, if not two, when you consider the resources [...] that you’ve put at a fire” (auftdse2).

As a consequence, there is a tension between bushfire management and resources allocated. The belief is that by allotting more resources to the investigative practice, the organisations could save time and money by being able to anticipate or prevent some bushfires.

According to this view, by redefining their priorities and investing more in bushfire investigation rather than suppression activities, the agencies could significantly improve their public value. Indeed, by doing so, the investigators would feel more appreciated. Additionally, in terms of costs, fire extinguishment is a much more expensive process than fire investigation. Therefore, the potential economical cuts necessary on the fire suppression side to promote the investigative activity would be relatively minor.

The lack of both human and economic resources available for the investigation system also affect the organisation’s capacity of being able to reach and attend all fire events. This correlation is presented by the following statement:

“We don’t spend enough time on the field [...] because... there is no time to be in the area. [...] That’s because we don’t have neither the human resources nor the economic resources available” (itftniab2).

As mentioned, the scarce importance given to the investigation of bushfires is the main cause of the lack of resources, which in turn unavoidably affect the organisation’s ability to patrol the territory and all fire events. The only agency that does not follow this pattern is the
Victoria Police where the issue of getting out on the scene of every fire seems not to be related to the limited resources. As stated:

“We don’t get out to every scene. [...] You know we can’t – they’re having a problem up in the north-west of the state at the moment, and because of the distance, it’s 600km, we can’t get there” (auftfVicPol).

This weakness is the result of the geographical distribution of Arson Squad detectives: they are all located in Melbourne. This centralised position makes the investigation of bushfire in certain areas (for example all those at the boarder) a slower and more expensive process.

Finally, there also are concerns that cannot be generalized to the whole agency. However, it is still noteworthy to mention them to have an understanding of all dynamics and possible weaknesses within each department. Amongst these, we find:

a) The lack of the report mechanism,

“... Therefore, the strength is having started a long time ago and face the problem and analyse it every year since every year, through surveys, we analyse it. However, this activity is not maximized, it’s not completed: we don’t sit together along with the other investigative departments in a proper meeting to see and share what we have done during the year [...] what we have investigated and what are the critical issues found by the investigators. There is no a final report, a formal feedback from everyone involved in the investigation. Protocols have been provided at the very beginning, but then there is no feedback, there is not any type of ‘return on this’” (itftfnipaf4).

b) Inadequate knowledge of law,

“Our relationship with the law. [...] Not everyone has the same preparation so this also leads to difficulties in communicating with the staff” (itftfnia3).

c) The scarce effectiveness of communication,

“The weak links are probably certain types of information, links that we cannot access at the moment. [...] We don’t have the possibility to access the databases that are held at the national level” (itftfniab2).

The above examples point out some weaknesses addressing different matters. While the first two interviewers are focused on intra-agency communication difficulties, the third one is
mentioning an inter-agency barrier that is based on the concepts of jurisdiction or responsibility, and that, therefore, prevents the investigative organisations from working together. However, despite this initial difference, a common point can be identified. These interviewers mainly reflect communication issues; all of them clearly complain about the lack of exchanging investigative information and sharing their knowledge.

8.4.3 Summary

The aim of this section is to understand organisation members’ perception of strengths and weaknesses of their department, since they are two aspects closely interlinked to an organisation’s performance (Sirmon et al. 2010). The awareness of its own strengths and weaknesses, in fact, allow an organisation to build and follow strategic interventions, and ultimately to reach and implement an efficient ‘activity coordination’.

From a general point of view, the time and the ability required to reach a fire, wherever it arises, are perceived as a concern for most agencies. The key elements for an effective bushfire investigation are to arrive at the scene as soon as possible, identify the area of origin of the fire and preserve it. As a consequence, all departments put a lot of effort into making this possible, to the point that many of the agencies interviewed have mentioned this aspect as one of their strengths. The NIAB and the CFA represents the exception of this trend. While the NIAB is still referring to this phenomenon as something that they have to develop and improved (see the following section, weaknesses), the CFA does not mention it at all. One explanation to this difference may be that the CFA is a largely voluntary based organisation with, therefore, a much higher number of employees (and volunteers) spread across the territory compared to other emergency agencies. This voluntary contribution provided by local communities both increases the presence on the territory and decreases the average time needed to reach a given site; two conditions that are costly and hard to achieve in an organisation employing all its members, such as the NIAB.

Breaking down the analysis of the strengths to an agency level, some country differences emerge. The Australian agencies value the presence of an internal State fire investigation coordinator. This coordinator is critical in developing and facilitating professional relationship with other investigative agencies. Such a formalized role does not exist in Italy. Even if the
Victoria Police did not directly refer to the importance of having a State coordinator, it is the only one that explicitly mentions the ability of its investigators to network and interact with other people and organisations as their principal strength. The rest of the agencies interviewed, remain more centred on technical aspects and tend to value the logistical features of the system within which they operate, such as the investigative knowledge and the development of a good report system.

In terms of weaknesses, the most cited were undervaluing of bushfire investigation, the lack of resources and the limited capacity to patrol the relevant territory and the fire events. It is interesting to note how all of these widely shared weaknesses are related to each other. One is the logical consequence of the other. In this context, the underestimation of bushfire investigation is the result of the ‘old’ organisational fire suppression approach, seen as an obstacle to the ‘new’ approach that is trying to shift the focus onto the investigative system. The lack of resource for the investigation of bushfires is the main cause of the lack of resources, which in turn affect the organisation’s ability to be present on the territory and attend all fire events.

8.5 Conclusion

The organisations involved in the study were analysed with regard to their ability to adapt interdependent activity to specific work situations and problems. This aspect, also called activity coordination (McPhee & Zaug 2000), is crucial for those types of organisations that usually operate in life threatening circumstances and that need to quickly interpret and manage all situations (Kolditz & Brazil 2005). Because activity coordination refers to specific processes by which work activities are adjusted and work problems solved, the concept of knowledge management becomes a key factor in order to be able to operate in very dynamic and high-risk environments (Mintzberg 2001).

Overall, the majority of investigators from both countries tend to share with their colleagues every aspect of a given case. Nonetheless, an important proportion of members limit their information sharing to specific common aspects of their work; especially focused on technical
information related to the investigative work (i.e. point of origin of the fire or identification of responsibilities). While only a minority, some participants would talk about uncommon issues (i.e. investigator’s doubts and insecurities about cases, unexpected events or of difficult interpretation) while personal experiences are usually not discussed. As already described, this phenomenon could represent an impediment in obtaining an effective sharing of knowledge.

Different patterns are related to agency type. On one hand, agencies with police roles (i.e. Victoria Police and NIAB), share the entirety of their knowledge; with the only exception represented by NIPAF members. On the other hand, fire agencies (i.e. CFA and NIA) were found to share some common aspects of their work. Exceptionally, the DSE in Victoria, fulfilling both police and fire-related activities, had its members evenly sharing ‘everything’, ‘specific common aspects’, ‘unusual aspects’ and ‘nothing’.

The key question of this analysis was: to know or to know how to communicate what we know? Findings showed that overall the knowledge itself is more highly regarded than the way this is communicated. Only a small proportion of participants considered communication as more important than knowledge in post-bushfire investigation. The rationale is that communication is easier to achieve when that is based on a solid and robust corpus of knowledge.

Differences could be identified with regard to some of the agencies in each country. At opposite directions, the reverse trend was represented respectively by the DSE in Victoria and the NIPAF in Italy. Indeed, the DSE was different from other Victorian agencies in the sense that it considered both communication and knowledge as equally important for the sharing of knowledge. In contrast, the NIPAF staff members gave more importance to professional communication, considered as a mean to obtain a more comprehensive picture of a given bushfire event.

Another important aspect for any learning organisation is the analysis of their own strengths and weaknesses. Such awareness, in fact, is critical to improve the organisation’s efficacy and, therefore, develop better ‘activity coordination’ (Sirmon et al. 2010). The analysis of strengths
and weaknesses of the six agencies involved in the study was conducted through an investigation of the everyday recurring situations.

What emerged from the examination of the organisational strengths is that the experience acquired in terms of bushfires investigation is felt by the majority of the sample as the most efficient point of the department. In order to utilize such investigative knowledge and improve the investigation system itself, it is critical to be able to attend all fire events and do it in the shortest possible time. As a consequence, investigative departments put a lot of effort in making these aspects achievable.

Breaking down the analysis of the strengths to an agency level, some country differences can be found. The Australian sample values the presence of an internal State fire investigation coordinator. This coordinator is critical in developing and facilitating professional relationship within and between investigative agencies. Such a formalized role does not exist amongst the Italian sample. This could explain or be the result of the lack of inter-organisational investigative co-operation shown by the Italian agencies. Even if the Victoria Police did not directly refer to the importance of having a State coordinator, it is the only one that explicitly mentions the ability of its investigators to network and interact with other people and organisations as their principal strength. The rest of the agencies interviewed, remain more centred on technical aspects and tend to value the logistical features of the system within which they operate, such as the investigative knowledge and the development of a good report system.

The six agencies shared the view that their major organisational weakness is the underestimation of the bushfire investigation itself. Fire suppression still overtakes the investigation in relation to significance and focus given by each agency. The majority of both human and economical resources of the emergency organisation are employed for fire suppression. This approach has been defined by the interviewees as an ‘old organisational vision’. According to them, the ‘new trend’ should be focused on the investigation activity seen as the first and principal step to have efficient bushfire prevention. A switch from the suppression to the prevention of bushfires is critical to reduce not just the number and impact of bushfires but also the money spent by the organisation in fighting this global dilemma,
which is bushfire. The lack of resources to the investigative process also affects the capacity to patrol territories and attend fire events. The time and the number of people available to carry out the investigation are not yet adequate in all six agencies. Undoubtedly, resources are allocated accordingly to each organisation’s priorities. There is a generalized disappointment as the ‘old organisational culture’ is looking at bushfires as something to be stopped through the reinforcement of the extinguishment process, rather than a phenomenon that can be reduced through the major prevention tool, which is the investigation.
CHAPTER 9

INSTITUTIONAL POSITIONING

9.1 Introduction

The fourth and last communication process identified by McPhee and Zaug (2000, 2009) is Institutional Positioning (see also chapter 4). It refers to that kind of communication “which establishes organisational identity and develops legitimacy” (Carroll 2013, p.185). Institutional Positioning describes the organisation as a legitimate partner within the social setting; its aim is that of negotiating an organisation’s identity among a larger societal system. Therefore, it represents the environment of an organisation and it also concerns inter-organisational co-operation (Putnam & Nicotera 2008). As such, institutional positioning involves that communication that is happening with other entities (McPhee & Zaug 2009, p.39).

Two main aspects characterise institutional positioning. The first aspect, labelled face-presentation (Putnam & Nicotera 2008), concerns the nature of the organisation, what the organisation is trying to achieve, and its character as a partner in any possible co-operation. Although an organisation’s representation is carried out by its staff, this representation is coordinated and controlled by the organisational leaders (Putnam & Nicotera 2008). The second aspect of the institutional positioning refers to the environmental exploration. It involves the process of gathering information about potential connections, opportunities and limitations. Information gathering and the consequent organisational policies and approaches become activities aiming to reduce or manage uncertainty about the environment (Kramer 2004).

For the organisation as a whole, institutional positioning rests to a great degree on individuals within the organisation. Besides, organisations exist within a broader environment, a societal context with its own regulations. In order to relate with this environment, there are a number of external communication activities in which an organisation is constantly involved and that
allow links between the organisation and the political, cultural, economic, and social environment.

This chapter reports several aspects that are related to an organisation’s institutional positioning. The present analysis investigates the inter-agency knowledge-sharing; professional updating meetings (within the department; within the organisation; with other organisations); learning bushfire investigative techniques (from colleagues; media/blog; other); and organisations’ national as well as international relationships. These aspects are associated with and indicate the extent and importance each of the organisations confer to the sharing of knowledge.

9.2 Section 1: Inter-agency co-operation

Inter-agency co-operation is one form of ‘partnership’; it involves departments, bodies or entire companies (Lindsay et al. 2008). Partnership working has become an area of interest, mostly as a result of the increasing realization that sharing information improves the service individual partners can provide (Cairns et al. 2012). This can be particularly true in the context of fire investigative agencies, where the sharing of knowledge and information at an inter-agency level offers significant benefits to the participating organisations (Andersen et al. 1994; Dawes et al. 1997; Landsbergen & Wolken 1998; McCaffrey et al. 1995). The delivering of integrated services and enhancing relationships among participating organisations are just some examples.

Despite the many benefits that can accrue through knowledge sharing, participating agencies may also encounter barriers embedded in social, economic, and political principles and values of their organisations (McCaffrey et al. 1995). In Chapter 8, it was shown that investigators can contribute to increasing their organisation’s value by sharing their knowledge with colleagues. This value can also accrue by participating in discussions with members of other organisations. This section, therefore, assessed to what degree, if any, agencies share their knowledge and information in bushfire investigation.
Inter-agency sharing of knowledge is complex. The answers collected from the investigators have been grouped in four categories. Those who share:

1) ‘everything’,

“Well arson trend definitely needs to be shared. Quite often it could be a case where if they were in a silo and even the police that if the information is not shared across you can’t trend that pattern that you’ve got a possible arson within the area” (auftcfa3).

The importance of sharing investigative knowledge between agencies is crucial not just for building an inter-agency co-operation but also, and above all, to success in the bushfire investigation itself. Without sharing, in fact, it is extremely difficult for the agencies involved to solve the case, especially in terms of suspicious and/or deliberate fire events.

2) ‘specific aspects’ common to their work,

“The issue is that outside of fire all our agencies do very different things” (auftfdse6).

By “outside of fire” the interviewee means all other activities but fire fighting. Therefore the common aspects seem to be exclusively related to the extinguishment of fire and fire protection.

3) ‘unusual events’,

“If I was to ring the DSE guys and get them to come and help me with a fire; we learn off each other. As we’re actually doing it, we always discuss what do you think is this and where’s the fire travel, where’s the run, where’s the backing. All that sort of stuff, you know. We work it out together […] Which is, yeah, just on those cases. See I wouldn’t hear anything about another case that happened down the road, you know, yeah” (auftcfa6).

Here, things are shared only when the investigator needs help or advice. The investigative sharing knowledge, therefore, occurs exclusively in case of a direct ‘call for help’.
4) ‘nothing’ at all,

“If we’ve got an investigation going where we’ve got people in mind and certain strategies that we’re deploying to investigate that crime, we’ll basically shut down that communication quite heavily [...] because we can’t compromise an investigation - because there’s the old term, loose lips sink ships. Where I might tell you one thing we’re doing and you might very innocently tell a friend or a partner what we’re doing and then that can compromise an investigation” (auftvicpol3).

For this police investigator, there is a fear of compromising an investigation if talking with other people. This concept goes behind the confidentiality issue. It refers to the willingness of carrying out a successful investigation. In order to do that, “the communication has to be shut down”.

Compared to what happens within the organisations (chapter 8), sharing between agencies is limited. What emerges from the interviews is that the lack of sharing between organisations is a feature of the organisations themselves, since there is no explicit requirement to do so (compare also chapter 5).

9.2.1 Australia vs. Italy

In Australia (Victoria), the extent of inter-agency co-operation is closely related to the intra-agency sharing (compare Table 8.1 in Chapter 8). The majority of the Australian investigators share much with their colleagues, including those from other agencies. As stated:

“As part of our policy, we’ve specifically put a section in there about open sharing. We encourage information, for example, at a district level - if CFA investigators have found a cause of fire to be whatever, that information is then shared with the DSE or Parks Victoria Investigators through the district coordinators [...] From Victoria Police point of view, we’ve got our liaison officer there now, so that’s been fantastic. He is a go-between. He’s using information from CFA systems and advising the police” (auftfcfa1).

The sharing of investigative knowledge is not just the result of personal initiative and willingness, but also a standardized procedure that investigators should follow.

Many of the interviewees tend to discuss at least those aspects that are common to their investigative jobs. The following represents just an example:
“I suppose because of the nature of fire investigation we can’t tell everyone everything so there’s - so within an investigation there are names of witnesses, there are names of offenders potentially. A lot of that stuff can’t go too far, if you are talking police or somewhere like that they’ve got every right to obtain that information. It is - most of the information is held between the agencies. DSE, CFA and Police” (auftfcfa2).

During the investigative process, one of the most reported issues is the handling of confidential information. However, in Victoria, it is common practice for many members of the organisations to share information among themselves, contributing to the circulation of this data, even if it is confidential.

The opposite situation is observed in Italy, where most participants avoid talking about their work to others and, only when strictly necessary. There are different explanations to this phenomenon. On one hand (as already discussed in chapter 8), it could be the reflection of a feeling of distrust or competition between members of different organisations, often hidden behind the competencies’ issue:

“There is also a problem of competencies so to speak, in the sense that at the end of the day everyone is still jealous, in a good way, so to speak, of their knowledge, of information we wouldn’t like to see a trivialised and copied [...] So there is a healthy sense of secrecy in this. But it is also true that state bodies must have a greater aim that transcends this kind of jealousy” (itftfniab).

It appears that knowledge sharing between organisations is impeded by the personal desire to conduct and resolve the investigation. On the other hand it could be because the Italian system does not envisage or encourage the co-operation between different bodies. Indeed, some of the answers recorded mention the fact that, even though the investigators are allowed to exchange information, there is no system or policy put in place to facilitate or requesting such a process. Most of the time, these collaborations rely on the investigator’s personal relationships and friendships with other investigators:

“In my opinion the more you talk, [...] the more you share, the better. [...] The information needs to be passed on. Because if you keep it for yourself [...] it remains in a drawer and doesn’t have any value. [And do you think this happens or ...?] No. It doesn’t. [just at personal level? Friendships?] Yes” (itftfniab2).
As confirmed by some staff, these collaborations rely on the investigator’s individual effort to establish informal relationships with other investigators.

9.2.2 Each agency

It is important to note that the promptness of sharing might be influenced by the nature of the organisation to which the investigators belong. Police agencies, which focus on criminality, might be less prone to sharing information than fire fighting agencies that are mainly concerned with fire extinguishment. This possibility was assessed for each agency.

In Australia (Victoria), the Vic. Pol. members are the ones that tend to share mainly specific aspects of their work. As stated:

“If we've got an investigation going where we've got people in mind and certain strategies that we're deploying to investigate that crime, we'll basically shut down that communication quite heavily - with like the CFA or MFB - as far as telling them exactly what we're doing. But then again, we sort of still want them to give information to us about what's happening and where [...] It's very much - because we can't compromise an investigation [...] it can be quite limited” (auftvicpol3).

This investigator avoids involving other people in an on-going investigation, even though the necessity to obtain information from others sometimes forces him to share part of what he knows. In Italy, where the police functions are covered by both NIAB and NIPAF, the majority of their members avoid spreading information. This can be the result of a specific organisational structure:

“A lot is still kept inside our agency, but this is because there is not a full motivation in sharing yet … it is like being in a phase of boiling. The magma is seething but still did not go out to contaminate the management. This could be a preparation time for the next step” (itftfnipa001).

Or it can be due to confidentiality issues, since sensitive data needs to be managed:

“I'd keep only for us some sensitive information about forest fires. However, it would be only for those sensitive data regarding the suspected person. The rest, I believe that the more you talk, the more you make things flow, the more you share, the better is. Information needs to
In both statements the desire to share with other agencies is present. However such sharing is perceived by the investigators as something not possible due to organisational structure and responsibility.

In contrast, the fire-fighting NIA seems to be keener on sharing, at least, some features of the investigative process. As stated:

“It could be shared. If other police forces ask for a report on the investigative activities conducted by the NIA, the command in that case, there is nothing, nothing that prohibits to transmit those information which are critical to understand the cause of fire” (itftfnia).

Sharing is still limited but the nature of the agency, here, is not perceived as an obstacle in the obtainment of such inter-agency co-operation.

Similarly, in Australia, CFA and DSE have a large number of members who seem to be open to discussion with their peers and willing to extend the inter-agency sharing even more. As stated:

“In terms of suspicious we are now trying to share all the information with the police. Usually no other agencies. It would be an advantage in my opinion to share things with CFA more so that there’s a triangle and even MFB in Melbourne [...] You know everyone is inventing their own wheels” (auftfdse7).

“The information is not in a very shareable format at the moment [...] but we’ve already shared Les’ database to police so they’re dead privy to our information” (auftfdse7).

When fires are intentionally lit, these investigators can easily see the benefit that would come from sharing the information they have available. However, they still denounce the fact that there is no a proper system in place to simplify and encourage this sharing.

9.2.3 Summary

When compared, Italy and Australia showed some differences. In Victoria, the majority of the investigators share most aspects of their investigative jobs, and the circulation of information,
even confidential, is a common practice. In contrast, most participants from the Italian agencies tend to limit the sharing of information to only common aspects. Overall, police agencies are generally less prone to sharing information than fire fighting agencies. Police members mainly share specific aspects of their work and avoid having other people too involved in on-going investigations.

9.3 Section 2: professional updating meetings

Since the fifties, there has been a change in the way meetings are seen and utilized by the organisations (Ravn 2007). The main change involved the transition from the infrequent and often authoritarian meetings typical of the 1950’s to the ubiquitous and endless meeting of the 1990’s. Nowadays, meetings also assume an additional value as they are meant to be more employee- and stakeholders- orientated, rather than reflecting just owners’ perspectives and needs (Ravn 2007). During meetings, members’ expertise is sought and shared for deliberating new ideas, initiating change processes, and making decisions (Kauffeld 2006a). Nonetheless, organisational meetings are not always considered an important aspect of the organisational life nor do they appear to contribute to stakeholders’ value and personal meaning. Furthermore, professional updating meetings have not been sufficiently integrated and considered as organisational values and they are usually only experienced as marginally important by employees (Kauffeld & Lehmann 2012; Schell 2010).

One way to encourage knowledge sharing is to set aside time during which the investigators are allowed to meet and discuss with others.

Section 9.3.1 Organisational co-operation

Most investigators participate in meetings to discuss their activities, as indicated in Table 9.1.
Table 9.1 Meetings within the department

<table>
<thead>
<tr>
<th></th>
<th>AT LEAST ONCE A WEEK</th>
<th>ONCE EVERY 1-6 MONTHS</th>
<th>ONCE A YEAR</th>
<th>ONCE EVERY 2-5 YEARS</th>
<th>WHEN NEEDED</th>
<th>NEVER</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
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<td>7</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>31</td>
<td>90</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>ITALY</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>13</td>
<td>41</td>
</tr>
</tbody>
</table>

A few never meet to discuss bushfire investigation. It can be assumed that either the organisation does not consider such meetings important or individual employees see little need for meetings.

The major difference observed between the two countries is that, in Australia (Victoria), attending meetings to share their knowledge seems to be an integral part of the investigators work. In Italy, a bigger proportion does not seem to be under any obligation to attend. In both countries the amount of knowledge sharing during these meetings seems to be directly proportional to their frequency. The more often the investigators meet the more knowledge can be shared. Conversely, if these meetings are rare, they tend to serve as “refreshers” or reaccreditation gatherings rather than experience-sharing meetings. In one case, when asked how often this investigator meets his peers for discussion the answer was the following:

“Not that often […] About every five years when you do a reaccreditation” (auftfdse5).

This clearly confirms that spaced meetings are not an opportunity for the investigators to open up to their colleagues but a way for the organisation to instruct its members.

Of note, scheduled meetings are not always held either, as testified by the following participant:

“We’re supposed to have two meetings a year and we haven’t been able to achieve that. Last year we didn’t have any […] It’s getting everyone together and time as well” (auftfca6).
Having only formal meetings planned on the paper is not enough. If schedules are not respected or meetings not attended the actual frequency of these gatherings cannot be an accurate measure of the importance given by the organisation to knowledge sharing.

The importance granted to these meetings varies between agencies. The results seem to suggest that organisations with police functions, such as Vic. Pol. and NIPAF, tend to organise meetings for their members more often than fire-fighting agencies. For police agencies the frequency of meetings within the department is, at least, monthly whereas fire suppression agencies have meetings on a yearly basis. As stated by a NIPAF member:

“It has been decided that the meetings regarding investigation must be made at least monthly [...] In addition to the core also with various peripheral departments and with the forest stations. We have to meet and take stock of the situation regarding investigation” (itftfnipaf 3/4).

In this case, the sense of obligation to attend the meetings as well as to cooperate and help out the colleagues in more remote areas is clearly expressed.

Most investigators from Vic. Pol. have meetings scheduled at least once a week. As stated:

“Weekly, yeah as a crew. So that our supervisors know what's happening. That's fairly common so that they know where we are at with jobs and what needs to be done and what resources need to be used and it's fairly common, yeah” (auftfvicpol2).

Meetings are seen as a useful mean for the investigators to be updated on the cases undertaken by their department and, if necessary, to share their doubts and experiences with colleagues.

DSE and NIA are at the other end of the spectrum, where meetings are infrequent:

“There is no a specific and scheduled deadline. Once we have trained the staff and done the relevant update, it is more than enough. Then you should ... work... unless there are new things coming up. In this case, obviously, you provide...a new specific training but only if there are new things to discuss about” (itftfnia2).

Or,
“Not very often. We’re required to do a refresher every five years. We get sent a newsletter and updates from X, who is the state-wide co-ordinator. In terms of getting fire investigators together regularly, I’ve never seen it” (auftfdse4).

Fire-fighting agencies are focused on fire suppression activity rather than investigation. Meetings tend to be used to provide initial training and keep the investigators informed about the new investigative rules and techniques.

It is also interesting to note that, within a given organisation, there is a large variation in the frequency of meetings reported. This could reflect once again the fact that, since investigation is not the sole role of these employees, their other roles take over and reduce the requirement for them to attend investigation-related meetings, as suggested during the following interview:

“We used to run them once a year, a refresher and that sort of stuff. All the fire investigators get together, it’s probably dropped off last year because we had the flood events and we didn’t do much fire investigation” (auftfcfa3).

In this case, the investigator is referring to the occurrence of a natural disaster that he and his colleagues were involved in that took them away from investigation activity.

Physical distance between departments of the same agency also can influence the frequency of updating meetings. For some DSE members, for example, their geographical spread is a real obstacle:

“Since X has been on the job we get a fire investigator’s newsletter that comes out, which is, because we’re all spread out and you know, you can’t just all of a sudden turn up for a meeting in Melbourne on the same day [...] so the newsletter’s a good” (auftfdse5).

When geographical distance becomes an issue, other means of transmitting knowledge are used, such as emails and newsletters. These means are appreciated by some investigators, especially those operating in the most remote areas of the country. Of note is the fact that these meetings are voluntary:
“I think it’s about every two months [Is that compulsory?] No it’s just if you’re interested for your own personal development you can go along. [...] No, once again that’s not compulsory because it can depend on trying to get a timing for everyone together” (auftfcfa3).

Therefore, even though some organisations make an effort and set aside time for their employees to get together, this does not always happen due to time issues and other responsibilities.

Nonetheless, time is evidence that organisations can promote annual events where both knowledge sharing and learning take place. For example:

“We have an annual conference and they provide - they have fire investigator meetings or coordinators’ meetings, which is really good. They also - there are quite a few courses. You can do the initial course, base course, and then [...] once a year, they usually have a refresher” (auftcfa6).

It may be that the voluntary basis of the CFA (this case) means that such annual events can be planned for and result in productive outcomes.

In this section we have seen that meetings are organised in a number of the departments. But, where investigation is not the principle job of staff, such meetings are less likely.

### 9.3.2 Meetings with other organisations

Few meetings happen between organisations (Table 9.2).

**Table 9.2 Meetings with other organisations**

<table>
<thead>
<tr>
<th>AT LEAST ONCE A WEEK</th>
<th>ONCE EVERY 1-6 MONTHS</th>
<th>ONCE A YEAR</th>
<th>ONCE EVERY 2-5 YEARS</th>
<th>WHEN NEEDED</th>
<th>NEVER</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>19</td>
<td>31</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>6</td>
<td>18</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

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If it is difficult for the investigators to find time to meet with their own colleagues, it is even harder to organize meetings with people from different agencies. Table 9.3 confirms that this is indeed the case, with two thirds of the sample never have scheduled meetings or have them only when needed. Some don’t see the need to plan formal meetings, because, unless needed for a specific reason, they would be useless:

“As the need arises so it depends; if we need it we will get them in and have a meeting with them. We don’t try to have too many formal meetings because you don’t hold a meeting for the sake of a meeting, do you know what I mean?” (auftvicpol1).

The lack of interest in having prefixed gatherings might reflect the urgency in having other matters addressed but also betrays a lack of consciousness of how important knowledge sharing is for the company’s growth.

9.3.2a Australia vs. Italy

It is important to note that the overall picture is a reflection of the Italian situation. Indeed, none of the Italian investigators mentioned having formal meetings with other agencies. As stated:

“No. Not even that. In the past years we used to have a lot more meetings. There were much more contacts with other external agencies. Nowadays, everyone thinks only of protecting his own feud” (itftfniab2).

This, again, suggests that Italian agencies (see also chapter 8), do not see any benefit from capitalizing on their partially overlapping expertise.

Formal inter-agency co-operation is only be observed in Australia (Victoria), as highlighted in the following statement:

“Yes, regularly[...] We’ve got an arson taskforce in this area. It’s made up of three agencies, which is CFA, DSE and Victoria police. We meet in Sale probably four, five times a year. Normally, in the lead up to the summer, we talk about strategies. The police will have done some profiling on certain individuals. It could be known arsonists which have moved into this area; so they’re like persons of interest. We share all that. […] We openly share all the information; so inter-agency stuff is excellent” (auftfdse4).
Regular, extensive sharing of information between agencies seems to be seen as a strength by this participant, who does not associate “sharing” to “losing” his knowledge to others but “gaining” other peoples’ knowledge and insights.

With regard to the Victorian agencies, half of DSE members have no planned meetings with others. As stated:

“Not that I’m aware of. I think it’s got to do with DSE and Parks Victoria. Because we’ve all got other jobs, our other jobs are our main job. We’re not full time or professional fire investigators. We’re professional, but we’re not full time fire investigators. Like the CFA, because they’ll have building fires, house fires or factory fires. So they’ll investigate. We only do bushfires. We don’t do building fires. We only do bushfires and that’s only in summer. For the rest of the year we’re busy doing our main job” (auftfdse5).

The reason for limited meetings is that there are no full time bushfire investigators within the DSE. The investigation is, at the best, a seasonal activity for the DSE staff members. This could also explain why DSE participants also rarely meet with their colleagues, within both their department and the broader organisation.

Victoria Police, on the contrary, organise inter-agencies meetings. This is surprising, since it is the Victorian agency with the lowest frequency of intra-organisational meetings. In other words, it seems that Victoria Police members mainly relate to their colleagues within their department or within other organisations but do not have many interactions with other Vic. Pol. members, outside their department. The presence of a CFA and a DSE member working within the Victoria Police offices, is another indicator of the effort made by these agencies to collaborate on the investigative field:

“Over the fire season it’s daily because we have someone from CFA in the office. So that’s an on-going thing over the summer period for six months. That’s outside of those timeframes on a needs basis really, yeah as required” (auftfvicpol2).

The benefit of having a member from another fire investigative unit working closely with the Vic. Pol. is particularly appreciated during the busy summer months, when co-operation is most needed.
One member of each agency analysed has weekly meetings with other agencies’ investigators. An in-depth analysis of their interviews shows that these members have a privileged role and are specifically responsible for circulating the information. Indeed, in order to guarantee this sharing, these investigators are physically assigned to the Victoria Police Arson squad department, on behalf of their own agency. As stated:

“...I talk regularly...with N H and Graham Lay here and the police - I’m doing that weekly at the moment...” (auftfdse1)

However, the extent of this sharing seems to be limited at the management level and does not reach other members of the departments, who instead have to rely on their personal contacts to increase their knowledge.

9.3.3 Summary

Findings showed that meetings within the same department are usually held and attended several times a year from half the sample investigated. For the other half, a maximum of one meeting a year is scheduled. When comparing Italy and Australia (Victoria), attending meetings seems to be an integral part of the investigators job for the Australian members while in Italy a greater proportion do not attend such meetings. At an agency level, a difference was noticed in those organisations with police functions (i.e. Vic. Pol. & NIPAF), as these tend to arrange meetings for their members more often than fire-fighting agencies.

With regard to the frequency of scheduled meetings within the broader organisation, this drops dramatically compared to that occurring within the department of origin. A similar trend was also found in the frequency of meetings scheduled between organisations. This, however, should not be associated with lack of collaboration between different bodies; they might still rely on each other, even if through personal contacts and friendships rather than formal networks.

Although the frequency of meetings is an indicator of the importance that each organisation assigns to the sharing of knowledge, it was paramount to understanding the source from which this knowledge originates. Members can learn from their peers in an environment
based on the sharing of knowledge, compared with those members learning from the media or other sources.

9.4 Section 3: Learning bushfire investigative techniques - from who?

There is growing interest in making organisations into effective learning environments (Jonassen & Land 2012; Billett 2001; Eraut 2004). The importance of continuous learning by employees has become widely recognized as crucial to organisational effectiveness (Torraco & Elwood 2002). The reason for such attention is the need for organisations to respond to rapid and continuous change in the organisation’s external environment (Ellinger et al. 1999). This approach typically looks at employees as “generators and implementers of new ideas and processes which originate from interaction of employees rather than from assigned task” (Høyrup et al. 2012, p.8). Likewise, it becomes important to identify the source of such learning.

9.4.1 Learning

The educative process that the participants undertook to become investigators can be used to further assess how open their agencies are to sharing knowledge. In general, if the investigators learned from their peers, we can consider that their agency encourages and relies on knowledge sharing.

When asked investigators what kind of sources they used to learn more about bushfire investigation, the answers received fell into three categories: ‘colleagues’, ‘media/blog/website’, and ‘other’ (see Table 9.3).
Table 9.3 Sources of learning

<table>
<thead>
<tr>
<th></th>
<th>COLLEAGUES</th>
<th>MEDIA/BLOG/WEBSITE</th>
<th>OTHER</th>
<th>MEMBERS INTERVIEWED</th>
<th>TOTAL INVESTIGATORS WITHIN THE AGENCY</th>
</tr>
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<tbody>
<tr>
<td>OVERALL</td>
<td>16</td>
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Half learned their investigative techniques from other investigators, indicating that knowledge sharing does take place during the scheduled meetings mentioned in the previous section.

“Mainly amongst investigators. We don’t have any real links to be able to learn things outside our unit” (auftfdse4).

Approximately 30% of the investigators looked outside their department, as the following participant, who has looked into other courses available in terms of bushfire investigation, stated:

“I have looked outside. It’s actually the Charles Sturt University, they run a - it might be an investigators course. There’s a fair bit of involvement with structural fires and that sort of stuff but there’s a bit of a wildfire component to it. […] I would like to further my development of wildfire investigation as a diploma or a degree or something like that, it just hasn’t happened yet” (auftfdse3).

Learning from the media does not include any form of sharing, since every individual is doing it for himself or herself. Perhaps, this is one of the reasons why only a minority of participants has learned investigative techniques through the Internet and other media forms.

There was scepticism in learning from international sources. As stated:

“A lot of the ideas and a lot of the material we have come internally. There’s not a lot of information externally. [...] You can look overseas but a lot of time their processes are different, you can’t really steal stuff from them. [...] Probably historically, a lot of the fire investigation training in Victoria we know has been taken from other parts of the world, so the US.
[...] Now we’ve got all that information and now we probably need to be a bit more specific” (auftfcfa2).

According to this statement, looking for inspiration and examples overseas was seen useful in the past, when bushfire investigation did not exist or it was at its early stage both in Italy and Australia (Victoria). However, nowadays the perception is that the investigative sharing has to be done within each geographical area to be relevant.

At state level, in the previous section (9.2), we saw that Australian investigators have more frequent opportunity than their Italian colleagues to share their knowledge, within the department, the broader organisation, and even outside their organisation. Accordingly, the majority of the Australian members have learned from other investigators (Table 9.4). A very interesting and summarising statement was made by one Vic. Pol. person, who stated:

“When I first started at the squad, I’d really struggle with bushfire investigation. I was very reliant on the CFA fire investigators, the DSE guys and also our arson chemists to basically tell me what had happened at a bushfire [...] So I realised that I had a lot of weakness in just - no knowledge and I’ve - I did the wildfire course to give myself more knowledge. Which even still - in saying that - the wildfire course was probably one of the best external courses I’ve done since being in Victoria Police. But it’s something that you constantly need your skills - you need to still be going out to scenes and testing those skills because it’s something that you can lose very quickly” (auftvicpol3).

The fact that investigators learn so much from their colleagues indicates the importance of having frequent and scheduled meetings. During these occasions, investigative knowledge can be shared amongst all participants.

In Italy the sample is equally split between those that learn from their colleagues and those who learn from other sources. In the example given below, laboratory and telecommunication experts were called to educate the investigators on specific matters:

“In the courses we have organized some instructors have taught for example to collect a sample on which DNA could be analysed. [...] Or in regards to the cameras ... we talked with the product suppliers to use the cameras at the investigative level” (itftf1).
This example shows that, for technical matters, some agencies approach others for specialized advice.

A further question is whether organisations with police and fire fighting functions differ in terms of educating their members. According to the data, purely fire fighting agencies such as NIA and CFA mainly rely on investigator’s knowledge to form other investigators. The only agencies encouraging the use of the Internet and other media are DSE and NIAB. Through some specific accredited websites, investigators from these agencies can keep up to date and can learn from other investigators that might be based in other states:

“I’m on the AFAC website which is a fire website, Fire Authorities Council, and that’s why I joined up membership with the International Association of Wildfire Investigators. That’s run through the MFB in Melbourne where we get a newsletter, as I say, from all over Australia for different fires. I learn the process and principles of fire investigation with an open mind” (auftdse61).

This investigator obviously appreciates being able to learn indirectly form others. It is interesting to note, however, that in the same interview the participant expresses his desire to learn directly from others:

“I would like to learn more. You know I wouldn’t mind going overseas to work with investigators overseas for instance. I think that would be a good exchange for people. Our investigation position [...] I don’t think it’s well supported. It’s almost like go and investigate this, give us a report and go back to you other work sort of thing. There’s not like a club where you can share knowledge and meet regularly and improve all your knowledge and experience” (auftdse61).

Another investigator felt that he could talk to others about many aspects of his work:

“From a national perspective, we’ve got an AFAC fire investigation group and we meet on a yearly basis. That is a great forum where we can discuss what’s happening in each state. We can compare ideas about reporting systems or about policies, or about training courses. [...] We also have an email group from a national perspective” (auftfcfa1).

In this case, media-based resources complement the input given by other investigators. It is also important to note the interdisciplinary aspect of the exchanges mentioned, where different companies come together to share their expertise.
However, too often, co-operation between agencies relies on the individual’s willingness to share their knowledge with their colleagues from other organisations and is not the result of a closely connected relationship between agencies. The following statement reveals the benefits from knowing other investigators who are willing to share their knowledge:

“Yeah, DSE, CFA and police. Yeah, that’s it. [...] In this area, in my experience, it’s been good and you know, you can swap articles from different, you know. Sometimes the police have given me articles on arson from newsletters that are internal to their organisation. If they think it’s going to interest us and vice versa, we do the same. That sort of stuff is good, you know, sharing information and knowledge” (auftdse5).

This investigator is sharing resources with other investigators. In this example, it would be easy to include investigators from different agencies in the newsletter, thereby sharing at least information between organisations.

The only agency with a majority of investigators educated by “other” sources is NIPAF. As we have seen in the previous chapters, NIPAF’s geographical localization has led to the development of a closely knitted bond to the regional communities. Some investigators therefore consider the community as a knowledge-sharing partner with which they have established a collaboration. As stated:

“Well, also with people outside because to know the social phenomenon, to know the social reality it is important to talk with...with outsiders. [...] It is essential to know the social dynamics in order to understand what are the motives otherwise we’ll never get there” (itftf3nipaf/4).

Without the help of local communities it would be extremely difficult for this participant to conduct an investigation.

Most investigators have drawn their knowledge from contacts with other investigators or from other experts. Only a minority depends on the media and the Internet to learn investigation-related techniques. An important question arises for those agencies that rely on the media to inform their members, such as DSE and NIAB. Once the investigators have been educated online or through other formal media, what will be their propensity to share their knowledge with others?
9.4.2 Summary

The focus of this section was on the educative process undertaken by members of the organisations involved in the study. The aim was to assess how these agencies approach sharing knowledge. Generally, if the investigators learned from their peers, this was considered as an encouragement of knowledge sharing. Findings show that half of the sample analysed learned about investigative techniques from other investigators, a third of the sample sought sources outside of their department (i.e. courses held by a University), and only a minority of participants learned investigative techniques through media, such as the Internet. This trend is similar in the two countries investigated and when other sources were engaged, this was done for specific matters (i.e. laboratory and telecommunication experts called to educate Italian investigators on specific techniques).

Certainly, the agency of origin largely contributes to the sharing of knowledge. However, despite an absence of encouragement from their agency, investigators can still have opportunities, perhaps more informal, to share their experiences. The next section will look at those relations.

9.5 Section 4: National/State bushfire investigative relationships

Studies on knowledge creation and organisational learning show that knowledge sharing is strongly influenced by employees’ values (Jennex 2006; Hutchings & Michailova 2004; Hofstede 2001; Pfeffer & Sutton 2000). Research also suggests that an organisation’ performance depends on the degree its cultural values are shared (De Long & Fahey 2000; Lai & Lee 2007; Lauring & Selmer 2012). In general, organisational culture is believed to be strongly influenced by the national culture of the place in which an organisation is located (Jung et al. 2008; Lindholm 2000). This section focuses on those relations, particularly at a national level between fire investigative departments.
9.5.1 Agency co-operation

When asked how the different agencies work together and if they influence each other in any way, half of the investigators answered that, at the national level, they have formal relationships with each other (Table 9.4).

Table 9.4 Agency co-operation

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In some cases, the collaboration is limited to outlining of the organisations’ respective roles. In one case, everybody’s role is very well defined and specified in an aide-memoire:

“Yeah, well we’ve got an aide memoire which sets out our roles and how we fit together, so we can investigate either DSE or CFA fires, depending on who tells us what to do; and then there’s a clear process if there’s some suspected criminal damage or something that we involve the police at certain stages of the investigation and hand over to the arson squad if it’s a serial offence so that we’ve got a set procedure which sets out the relationships between the various organisations” (auftfdse7).

The division of duties is clearly set out. The agencies work together to resolve a case in a complementary way. In other cases, however, the collaborative nature of the relationship is clear:

“I think because we’ve got a good working relationship with xxx and with DSE, the responsibilities I think are shared. We both commit to doing courses together. I know other fire services nationally will go off and do their own independent courses. Whereas in Victoria, we’ve said, well, gee, 12 - 14 years, we will work together. We’ve done joint courses - we’ve done joint documentation. We share the responsibility in that regards. [Even report systems?] Yeah, reports - absolutely, reports. Training seminars - X is invited to our regional meetings or to VAFI for example and vice versa” (auftfcfa1).
The sharing of courses, documents and, above all, responsibilities, testifies to a higher degree of co-operation between agencies.

When we move the analysis at country level, a major difference stands out. In Italy, there was a lack of engagement with other organisations. The lack of engagement by the organisations could be reflected in the investigators’ lack of informal meetings with each other. Given the results obtained in Section 2, this seems to be a plausible explanation.

In Australia (Victoria) the situation is the opposite. A vast majority had formal relationships with other national bodies. Some rely on personal networks, as outlined in the example below:

“I've done a couple of joint CFA-DSE fire investigations, it works fairly well. They could ring you up and say we haven't got an investigator to do on private land so they just give us a call and we go and do it, and vice versa [...] it's a pretty good working relationship” (aufbfdse3).

Here there is no necessity for official forms and authorizations, a simple phone call is sufficient to establish a new opportunity to work together. This testifies to a functioning mechanism between agencies, where collaborations happen organically without any formal input. It could also show a spirit of co-operation between investigators, even though, according to the following participant, competitiveness and co-operation are not mutually exclusive:

“I think there's a bit of friendly rivalry between agencies, but that's good because we're always - we're seeking to not only better ourselves, but better ourselves in front of the other organisation. We benefit from that. If we weren't talking to [...] CFA and Victoria police - we wouldn't be doing the right thing. We'd be very closed investigators, like we're only looking at our little bit; but there's a big picture out there. The other agencies help to bring that together. I get a lot of value out of that” (aufbfdse4).

In this case, the rivalry was a stimulus to improve and not a hindrance to working with others.

At an agency level, Victoria Police relies the most on formal relationships. This is not surprising, since Vic. Pol. is the only agency that benefits from having two external members, one from CFA and one from DSE, officially based in its offices. It is interesting to note that, in some cases, only the Victoria Police benefits from this collaboration, while the other agency does not get as much in return:
“Well we’ve obviously got the Country Fire Authority and the Department of Sustainability and we also have the Metropolitan Fire Brigade who will be basically joining on the spot or out there at the scene. We liaise with them and they tell us what they think has occurred and then we take it from there. So that would be on a daily, sometimes hourly theme. […] We allow them to investigate the cause and origin up to a certain point and then obviously it’s taken over by members of the Victoria Police and the forensic services” (auftfvicpol4).

In this example, the flow of information and help goes from the various agencies to the Victoria Police, and not the reverse.

CFA and DSE also have a majority with inter-agency formal relationships. However, unlike Vic. Pol., these two agencies also have informal bonds to other bodies:

“In the country area it’s mainly the CFA. […] And we do a pretty good job of it here. We often turn up at the same fire to help each other out. Not often, but it does happen. It’s not uncommon, I should say. We can talk to each other on the phone if we’ve got an issue or something. Pretty good communications” (auftfdse5).

This co-operation at the individual level, however, does not always stem from an organisational effort. The same investigator, when asked if and how the organisations influence each other, answered:

“I don’t think they do. I think the individuals might influence each other, that you deal with from the police or the CFA or vice versa. That’s at my level. I don’t know what happens up at the corporate level in Melbourne” (auftfdse5).

This example suggests that it is in reply to a lack of engagement on the organisation’s side that these collaborations are born, confirmed by the following interviewee:

“If you don’t ask, you probably wouldn’t just get a wildfire investigator to help you, unless we ask or organise it amongst ourselves” (auftfcfa6).

Investigators thus help each other.

Of note, this does not happen in Italy where personal efforts are not made to fill the gap between inter-agencies co-operation. As already mentioned, there is a lack of co-operation
either formal or informal between investigative agencies, summarized by an Italian investigator:

“During an investigation the limits for possible collaboration are, they are minimal. Precisely because they are completely sectorial activities [...] [Does this mean that you absolutely could not do an investigation on bushfires?] It’s not that we cannot, it’s that since it is the Forest Service’s competence, you leave it to them, you actually prefer that they do it. [...] Even though we might arrive first on the scene, then surely the Forest Service arrives pretty soon and then they carry out the investigative activity” (itftfvf).

Thus, collaboration is very limited in Italy.

9.5.2 Summary

At a national level, knowledge sharing is mainly done at through formal ways, if it is done at all. These formal ways go from the complementary division of duties to the sharing of courses and documents. Some investigators, however, do not even benefit from this kind of formal collaboration, and this is particularly true in Italy where most investigators do not experience any collaborative effort in bushfire investigation. Finally, when formal co-operation is absent, some investigators go through the effort of creating it at an informal level. This type of collaborative work seems to be more centred on equal exchange of knowledge, compared to some formal relationships that are only meant to be one-sided.

9.6 Section 5: international bushfire investigative relationships

The notion that bushfires do not respect borders between countries is not a surprising or a new concept. This is the reason why facilitating international relations not only builds strong ties among various governments and countries, but also helps to create, manage and transfer this knowledge which is a vital component of economic and social advancement for any country (Hutchings& Mohannak2007). In the previous section, we observed that the organisations involved in the study can share their knowledge at a formal and an informal
level, or in cases, not share their knowledge at all. This section will assess how much of this sharing between bushfire investigators takes place at an international level.

### 9.6.1 International relationships

Combining both formal and informal, knowledge sharing is very limited at the international level, as shown in table 9.5.

**Table 9.5 International relationships**

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The realities between countries can be very different, spanning topographic, organisational or juridical differences. Therefore, approaches to bushfire investigation that have been adopted in one country might be hard to transpose to another reality. However, some collaboration could be possible, as mentioned below:

“I don’t actually have any communication with international fire service, which is probably a shame in one respect because I think we can learn different experiences from - I’d be interested to know - Canada, for example, is very much like Victoria and America - I really haven’t had much involvement - I never had an opportunity to go over to America when the others went over. [...] It doesn’t have to be America - even South Australia, I think we should have more action within South Australia. So yeah, I don’t think we do that very well” (auftfca5).

In this context, countries like Canada and the US, or more simply neighbouring South Australia, could serve as a source of knowledge for Victorian investigators.

Interestingly, at the international level formal relationships are as rare as informal ones. Given the trend seen in the previous sections, it is important to note that inter-agency relationships are absent in both countries.
Some of these relationships are possible thanks to the networks that also operate at the national level, such as the ones described below:

“Well VAFI I know is part of an international I’m not sure and the other way I suppose when you look at it is with the CFA is part of AFAC which is then part of the international community” (auftfcfa3).

For this investigator, the fact that the CFA is affiliated with internationally-connected organisations (such as AFAC and VAFI) does not seem to offer him direct contacts at the international level but it is still perceived as a possible opening. Nonetheless, one member in particular seems to have regular meetings with inter-state colleagues:

“Here we’re members of what we call VAFI, the Victorian Association of Fire Investigators, and they have an affiliation with [...] the international arson, so that stems from the United States. So we have, and we - there’s a fellow over in New Zealand that we have a close association with. [...] This other VAFI organisation in Queensland/New South Wales, I’m the arson squad representative to the committee at VAFI. So I go to their meetings every month, and sit in on the committee meetings. [...] So that’s how we talk to the international side of it” (auftvicpol).

Of note, this participant benefits from an exceptional position as a committee representative of VAFI. It represents an example of a possible sharing knowledge at interstate level.

On the international sphere, the use of websites, newsletters and blogs is another way that some investigators use to keep in contact with their colleagues from different countries:

“We have exchanged by email with other international agencies as the need arises so [...] if we need help and we need to contact someone, we need to go on the internet, we need to speak to someone overseas, of course, we just link in with them. It’s pretty dynamic now” (auftvicpol1).

And:

“I subscribed to a newsletter that is also a kind of forum for all European investigators. Spanish, French and ... Scottish, that, let’s say, are passionate about the subject and that have been involved in community projects, some attempts have been made that have not gone well, in the sense that the project has not been funded in the end. But there is a willingness to confront our methods to others” (itftfniab).
The personal effort made by second investigator to keep in touch with his European colleagues is evident. The willingness to compare their methodologies, despite the cultural differences exemplifies how “passionate” he is about bushfire investigation. The use of such means might not be constant but it is a further resource to be used in times of need.

9.6.2 Summary

This section confirmed the trend observed in previous sections. The amount of co-operation in relation of knowledge sharing seems to be highest within a given department and lowest between organisations.

More specifically, the current section looked at the inter-agency collaborations taking place between bushfire investigators from different countries. The overall trend shows a limited knowledge sharing at the international level, either formal or informal.

9.7 Conclusion

Partnership working and the related sharing of knowledge are of particular importance in the context of post-bushfire investigation, mainly due to an improved service that individual partners can provide as a result of this inter-agency co-operation. Despite the many benefits of such involvement, knowledge sharing may be impeded by some barriers that are typically embedded in the social, economic, and political principles and values of the organisations (McCaffrey et al. 1995).

This phenomenon may be due to a lack of policies and procedures specifically oriented to the promotion of open discussions between organisations. This could be in turn due to other factors such as the historical and cultural environment of these organisations. Therefore, the analysis proceeded with a comparison between the two countries involved to assess if the degree of such association between agencies was similar in Italy and in Victoria.

When compared, Italy and Victoria presented some differences. In Victoria, a good proportion of staff normally shares all aspects of the investigative process with other investigators, and
the circulation of information, even that confidential, is a common practice for many investigators. In contrast, in Italy investigators tend to limit the sharing of information and to do not rely on colleagues from other agencies when facing unexpected situations. Some interviewees indicated a distrust of other agencies. Moreover, the system does not foster cooperation between different bodies. Forms of collaborations were found but these usually rely on the investigator’s personal relationships and friendships with other investigators.

The promptness of sharing was found to also be influenced by the nature of the organisation to which the investigators belong. Police agencies are generally less prone than fire fighting agencies to share all bushfire related information and to have other people involved in ongoing investigations.

The analysis took into consideration three level of professional meetings: (a) those arranged within the department; (b) within the organisation; and (c) meetings with other organisations. Findings showed that meetings within the same department are usually held and attended several times a year for half the sample. However, for the other half, a maximum of one meeting a year is scheduled. This is likely to be related to the importance given to tacit vs. explicit knowledge, which, as described in chapter 6, constitutes a difference between Italy and Australia (Victoria).

When comparing the two countries, attending meetings are an integral part of the Australian investigators’ job, while in Italy a greater proportion do not seem to attend such meetings. Even when scheduled, the simply arranging of formal meetings is not enough. Scheduled meetings are not always held either.

At an agency level, a difference is noticed in those organisations with police functions (i.e. Vic. Pol. & NIPAF). These tend to arrange meetings for their members more often than fire-fighting agencies. Furthermore, there were variations within a same organisation, in relation to the frequency of meetings. Since investigation is not the sole role of these employees, their other roles might take over and reduce their attendance at investigation-related meetings.
A similar trend is also found in the frequency of meetings scheduled between organisations. If the time to meet is an obstacle for the investigators of a same organisation, it becomes even harder to organize meetings with colleagues from different agencies. Additionally, in some cases the need to plan formal inter-agencies meetings is not seen as useful. The infrequency of formal meetings, however, does not necessarily indicate a lack of collaboration between different bodies. In several cases members still consult or rely on each other, through personal contacts and friendships, rather than through formal networks.

The overall trend shows that in both Italy and Australia (Victoria) investigators learned from their peers, with only a minority of participants learning investigative techniques through the media (i.e. the Internet). The main explanation is the difficulty in transposing someone else’s techniques to their own reality. Geographical differences, for instance, are sometimes significant for an adaptation of techniques and approaches. In some cases, geographical localizations have a peculiar effect on the participants’ educative process. It is the case of the NIPAF members that were mostly trained by “other” sources, typically local communities. Being physically separated from Italy’s mainland, these investigators have developed a closely knitted bond with the regional communities, considered as knowledge-sharing partners and with whom they have established strong collaborations.

The last aspect analysed and presented in the chapter was the dissemination of knowledge to a broader context, national and international. The overall trend indicates a generally low level of knowledge shared between agencies, with the extinguishment of fire and fire protection being still the most common aspects shared. However, findings show a cultural difference between the two countries. Australia (Victoria), in fact, is responsible for the 80% of the total amount of formal inter-agency national relationships, typically a complementary division of duties, and sharing of courses/documents. In this context, Victoria Police is the agency that relies most on formal relationships with other organisations, having two external members (one from CFA and one from DSE) officially based in its offices. The Italian sample, instead, confirmed a general lack of formal engagement with other national organisations, with 80% of its participants having no relationships at all.
If intra-national co-operation is limited, it is almost absent at an international level. Several and devastating episodes in recent years have demonstrated the necessity to share knowledge, practices and experiences in fire management between researchers, organisations, states and even countries. Indeed, bushfire risk management should incorporate the complex interactions between the ecological, environmental, socio, political and psychological aspects due to the fact that the impacts of bushfires are complex and of a multidisciplinary nature. Moreover, it is evident that fires do not respect borders between countries. Despite this, international relationships are difficult to build.
Chapter 10

WHAT DOES IT MEAN?

10.1 The analytic points

The purpose of the current research project is to study the extent and the quality of knowledge sharing within and between bushfire investigative related agencies. The rationale behind the study is that agencies are unlikely to provide effective post-bushfire investigation activity in isolation (Dwyer & Esnouf 2008). Bushfires are not limited by any geographical boundary and a multidisciplinary approach is required in order to deal with such a global dilemma. In this context, intra and inter-organisational communication is crucial to develop an integrated all agency approach.

Based on the literature review presented earlier in this thesis (see Chapter 2 and 3) as well as on a preliminary analysis of the current real-life agency situation, some questions arose. These questions have shaped and driven the entire thesis (see section 2.9). To answer these questions the ‘Four communication flows’ model of McPhee and Zaug (2000, 2009) was adopted. As a result of this analysis, three analytic points emerged from the data. These are: (1) the role of the bushfire investigator; (2) tacit knowledge vs. explicit knowledge; and (3) sharing knowledge within and between agencies.

A strict connection has been created, throughout the thesis, between the research questions, the four flows and the analytic points. Therefore, the thematic points will allow the understanding of each communication flow as well as the answering to all research questions. More precisely:

1) The first analytic point discusses the role of the bushfire investigator and how the role is ‘negotiated’ within the organisation. As such, this theme relates to the first flow,
Membership Negotiation, and answers the first research question “How do organisations deal with post-bushfire investigation?”

2) The second analytic point describes the importance of both tacit and explicit knowledge in having an efficient post-bushfire investigation. Explicit knowledge represents the following of rules and protocols whilst tacit knowledge refers to personal initiatives and creative inputs. Such awareness relates to the second communication flow (Self-structuring) and, along with the previous analytic point, it contributes to the answering of the first research question.

3) The third analytic point focuses on the way and the degree to which investigators’ knowledge occurs at intra- and inter-agency level respectively. The link of this theme is with both the third and the fourth flow; Activity Coordination and Institutional Positioning. By discussing the sharing of knowledge within and between agencies, this point answers the second research question “What are the conditions that enable or prevent effective collaboration in bushfire investigation? ” Besides, the national and international perspective adopted in this thematic point outlines the answer of the fourth research question, “Should there be an international dimension to such investigation?” This answer contributes to the overall conclusion of the analysis and sets the context of future recommendations.

1-2-3) In regard to the third research question, “How can organisations structure themselves to deal effectively with a post-bushfire investigation?”, this is drawn from the three analytical points, combined together.

10.2 First analytic point: the role of the bushfire investigator

Future members of an organisation must be evaluated and categorized, while current members status needs to be definite and confirmed (Miller 2014). The Membership negotiation flow elucidates the fact that organisations are communicatively constituted through people who bring the organisation into existence and enter and exit over time (Miller 2014). Membership negotiation concerns members’ recruitment and socialization (Jablin 2001) and answers to the question ‘Who we are?’ In the present study, this flow has been used to understand the role of the bushfire investigator in the six agencies. Information about the
profile of the bushfire investigator revolves around three major features: (a) gendered recruitment, (b) maturity/experience of the investigators, and (c) part-time work.

10.2.1 Gendered recruitment

The typical bushfire investigator is a man; this is even more evident in those agencies with police functions such as the DSE, the Victoria Police and the NIAB. The few women employed were in managerial roles. This pattern appears to question the relevant literature, where it is argued that women face barriers to senior positions when compared with men (see Harrington & Shanley 2003; Indvik 2004; Chin 2007). These barriers are amplified within the military type agencies, where a masculine environment is often in place (Aldrich 2008). Given this pattern does it represent a change in the way these organisations are structured and managed? It may be that leadership styles are changing (Melero 2004; Vojdik 2002). Nonetheless, low numbers of women are employed overall in the six investigative departments. These two features raise questions about these military style organisations. They would benefit from further research.

10.2.2 Maturity / experience of the investigators

The bushfire investigator is someone that has spent many years (twenty on average) working for his/her organisation, regardless of the organisation or the country to which they belong. This also explains why the age of the typical investigator is between forty and sixty years old. In this context, the bushfire investigator is someone who tends to be loyal and committed to his or her organisation. Certainly, the six organisations involved in the study are highly specialized and their staff have specific skills and experience, not easily transferrable to other enterprises. These six organisations have probably succeeded in promoting a climate of reciprocal trust and commitment between themselves and their members (Luthans 2011). Nonetheless, organisational commitment has a multidimensional nature and, as such, it is difficult to determine whether the high level of loyalty shown by the bushfire investigators in both countries is due to an affective commitment (involving attachment to and identification with the organisation), to a continuance commitment (based on the costs associated with
leaving the organisation) or rather to a normative commitment (feeling of obligation to stay with the organisation) (Meyer & Allen 1991).

Regardless of the specific type of commitment, these findings demonstrate a high level of commitment and an extensive experience acquired by the investigators during twenty years of working within their own organisations. The same cannot be said in relation to bushfire investigation, where the average years of experience dramatically drop to less than ten. Such phenomenon is due to the fact that bushfire investigation is a ‘new’ practice in both countries. Fire preparation and suppression are still perceived as the main activities of agencies, such as the CFA. Nonetheless, the attention given to bushfire investigation during the last two decades is indicative of a new trend; a switch from the ‘old’ culture exclusively based on fire suppression to the ‘new’ one, more focused on fire prevention and, therefore, investigation. This switch is still at its initial phase indicated by the part-time commitment to fire investigation by many.

### 10.2.3 Part-time work

What emerges from the interviews conducted is that the fire and police agencies do not have any employee covering bushfire investigator on a full time basis. Such a role, in fact, does not exist within the emergency agencies as a job position. This means that bushfire investigation is carried out on demand yet, quite often on a seasonal basis. Those staff members who provide the investigation are full time employees but work in a diverse range of jobs such as rangers, forest officers, planning officers, wildlife officers, technical officers, fire management officers, district managers, training coordinators, etc. While police agencies have full time paid employees, these are however crime and/or environmental detectives rather than bushfire investigators as such. In other words, they investigate crimes and not fires per se. Thus, when it comes to investigate a bushfire, police agencies rely on experts for the determination of deliberate versus accidental fires. Their investigation concerns more who committed the crime as they are “far from fire experts” (aufgvicpol). The only exception is represented by the NIAB whose investigators are both full time and specifically employed with the role of bushfire investigator. Nevertheless, the department comprises nine staff for the entire nation (Italy).
Given the limited staffing, they focused more on teaching and technical-support activities rather than investigation in the field.

The six agencies seem aware of the difficulties that this condition brings. As emerged during the focus group with some staff members of the Victoria Police: “A person who does it once a year is not the best person for the job”. In the case of the CFA, volunteers also are entitled to carry out the investigations and this may exacerbate the problem. Anyone can be a fire investigator, “there is no rank to a good investigator” (aufgcfa). In this light, even if reports are assessed by the District Coordinator before having them formally submitted, the fire investigator who has carried out the investigation is responsible for the quality of the investigation itself.

As a result of these dynamics, there is a generalized lack of clarity about the role. Since a bushfire investigator can be a volunteer as well as a station officer, his/her identity remains the same but the rank, the position and the degree of experience within the organisation changes. In other words, status or rank differences disappear at the level of membership negotiation and activity coordination, where the interactions see staff working together as an investigation team. However, power imbalances reappear at a ‘self-structuring’ level where reports and feedback are generally one way, rather than mutually reinforcing the job of investigator.

Since that the outcomes of fire investigation contribute significantly towards the strategic development of fire prevention, education and suppression strategies, it is unfortunate that the investigator role is unclear and limited, in relation to time commitments and support. As one member of the CFA during the face-to-face interview stated:

“Fire investigation is something you have to do a lot and continue – it’s not a matter of just detaining those skills you’ve got to continue to go to fires and practice those skills” (auftfcfa).

The extreme situation is that of DSE members, where they do not have “a formal fire investigation unit within DSE. It is really a unit of one” (auftfdse), with the other sixty investigators dispersed around the State all holding other roles. In this context, when a fire
needs to be investigated the nearest fire investigator is called by the local District Duty Officer. If, for any reason, this person is not available, then another one is called and then another, until one is found. If no investigator is available within a reasonable distance, the DSE approaches the CFA to check the availability of its investigators. This process occurs since members from the agencies have got:

“Another job as well. This is only a fill-in; Like a sideline. Well, sort of more like an extra really mate. That’s it. Well, a bit extra. Yeah. Not a fill-in. It’s extra. It’s taking time that you could be doing some other normal business with, right?” (aufgdse).

Such practices may indicate an underestimation of the importance of bushfire investigation or, more precisely, a limited value of the role of the investigator.

10.2.4 Summary

The first flow of the McPhee and Zaug’s model (2009), that is membership negotiation, guided the analysis within the six agencies. Since membership negotiation concerns processes that identify, evaluate, and categorize the roles present in an organisation, the present study highlighted an ambiguity in the role of a bushfire investigator. Sometimes it is a seasonal role; at other times it is defined by need or event such as a crime investigator. Thus, in relation to Membership Negotiation, bushfire investigators are tentatively connected to their organisation, as such.

10.3 Second analytic point: tacit knowledge vs. explicit knowledge

Organisational Self-Structuring concerns all those managerial activities that “guide but also controls the collaboration and membership-negotiation processes” (McPhee & Zaug 2000, p. 37). This flow is about an authoritative meta-communication and communication process among organisational role-holders and groups. Planning, decision making, manuals, organisation charts, announcements and other official documents constitute this kind of communication. Likewise, policy and procedure manuals, employee evaluation/surveys and feedback underpin organisational self-structuring. This second flow answers the question ‘What rules do we operate by here?’
Organisational self-structuring has been investigated in each of the six investigative departments, particularly to understand members’ adherence to and importance given to rules and procedures, protocols and policies. In other words, the second analytic point concerns the importance given by the agencies to particular skill sets in relation to knowledge for an efficient bushfire investigation. These skills such knowledge can be explicit (i.e. the following of rules and protocols) or tacit (i.e. the relying on personal initiatives and creative inputs).

10.3.1 Bureaucracy as an obstacle

The literature on knowledge management suggests that mutual benefit can be gained from the development of skills that fulfil the goals of the organisation as well as meet the individual’s aspirations (Suhasini & Babu 2014). However, there is often much confusion about which skills should be developed. Encouraging personal initiative, creativity and intuition has gained attention recently (Bennet & Bennet 2008). The rationale is that tacit knowledge evolves more quickly than explicit knowledge because it is less structured or codified. Therefore, tacit knowledge naturally leaves more room for improvement and innovation (De Long & Fahey 2000; Wegner & Snyder 2000).

In accordance with the literature (Wybo & Lonka 2002), five out of the six agencies (with the exception of the DSE) give more weight to tacit knowledge. The knowledge form associated with bureaucracy is seen as an impediment rather than a frame that favours the investigative process (Kenneth 1993). There seem to be two main reasons for distrust of the bureaucratic system. The first one is that the bushfire investigation is a relatively new practice (started in the last two decades) that has to deal with a great extent of uncertainty and a rapidly changing environment. Therefore, policy and procedures are not always perceived by the investigators as something well defined and up to date. The second aspect is related to the concept of operational time. As emergency disaster organisations, the gold rule for all investigators is to act and investigate a fire event as soon as possible. This is critical if important data and evidence are not to be lost or destroyed by others working on the scene or degraded over time. As a result, bushfire investigators show a lack of trust in protocols and rules and, for
their daily activities, and rely more on personal initiative and creative input. This finding is emphasised when the context is that of a volunteer organisation, such as the CFA. In this case, in fact, personal initiative and creativity assume a central role and none of the CFA staff members sees rules and protocols as the key skills of a good bushfire investigator. This outcome also fits with Hofstede’s (2010) description of the organisation as a cultural environment in which emphasis is on interpersonal relations.

10.3.2 The subjective dimension for an effective management

The most important characteristic of tacit knowledge is that it is linked to the evolution of each person, and therefore it grows with that person (Wybo & Lonka 2002). Knowledge and experience acquired on the field by disaster practitioners are of a tacit kind. Thus, even though ‘know how’ is that type of knowledge difficult to be written or verbally transferred to others (Collins 2001), it has received attention and it is considered one of the major supports of the organisation. This feature is evident in the six cases.

Since a great deal of organisational knowledge is tacit in nature (De Long & Fahey 2000; Wegner & Snyder 2000), some technical questions arise: do the six agencies have the structural capacity to generate and enhance this kind of knowledge? Do they have the feedback mechanisms to foster organisational as well as individual learning? The literature recognizes the importance of obtaining success through the effective management of people and their commitment to, and engagement with, the organisation (Heller 1997; Luthans 2011; Mullins 2010; Watson 2007). Thus, Organisational Self-Structuring should be conceptualized as “a communication process among organisational role-holders and groups” (Organisational Self-Structuring section, par.1, McPhee & Zaug 2000). It reflects a subjective dimension and, as such, it is influenced by and has influence on the individuals, their interests, and their traditions (McPhee & Zaug 2009).

10.3.3 The value of feedback

As described above, if organisations fail to take into account their members’ opinions and experiences, staff members have no way to feel appreciated and then the level of
commitment can, with time, decrease. Indeed, it is only when members feel engaged in the decision-making process that motivation and satisfaction for the job can occur and the department’s goals be accomplished (Vance 2006). Employees’ engagement can only be achieved if they are able to give their feedback to the department and if, in turn, the organisation gives feedback on members’ input. In this specific context, the investigators of the organisations involved in the study rarely receive feedback in relation to their job/investigation. The report system and the related feedback is an essential procedure at a managerial level either for statistical purposes, for answering in a court case or for fulfilling policies and inter organisation co-operation and collaboration. At ground level, investigators obtain indirect feedback (“unless something went terribly wrong”) and through an informal system (“from other people rather than from your boss” or “from your boss but in a very informal environment”). As one person stated during a focus group:

“You very, very rarely get direct feedback. The boss might buy you a beer every now and again for a Friday drink. That’s probably the best feedback you can get, I imagine, but you’re not really likely to get negative feedback either. You’re more likely to be probably ostracized or left to your own devices, so it works both ways”(aufgvicpol).

In most of the cases, investigators do not even know where their feedback physically goes, for what purpose and, as a result of it, they do not feel involved in decision-making process at all. A number of staff shared the sentiments of the following statement:

“I don’t know where that report goes to. I’ve always sent it up to line. It’ll be on the file there, but exactly what’s happened to it... it’s only the next person up the line, so as in feedback back down the line to you doing that report, I must admit I haven’t had one in all the years that I have filled out reports” (aufgdse).

The reality is that they write recommendations and notes based on their practical experience gained on the field but without knowing if these input are useful or not. Nobody tells them.

10.3.4 Learning organisations

The ultimate issue for the bushfire investigative agencies is to obtain the right balance between explicit and tacit knowledge. Policies, procedures and norms regarding the activity of bushfire investigation represent the explicit knowledge of the organisation. The experience
gained by the investigators working directly on the field, instead, comprises tacit knowledge. To become real learning organisations, these agencies need to facilitate the sharing of both types of knowledge (Bennet & Bennet 2008). At this stage, it should be acknowledged that formal controls and rigid processes are unlikely to be suitable for transmitting this type of understanding. So, “how does an organisation structure itself to promote knowledge sharing?” becomes the central question.

Undoubtedly, post bushfire investigation is a complex process that needs to be based on a strict and well-organized chain of reports and communications. However, these reports should not only be seen as something well understood and followed by all staff members; they should also constitute a reciprocal way of learning where the organisation has the opportunity to hear from its employees. Thus, organisational learning occurs within a dialectical process and it is, or it should ideally be, bidirectional. Following this logic, bushfire investigators (the bottom) should send reports on the fire incident, along with their personal notes and/or observations; the department (the top), on the other hand, should send them feedback on the quality of their job and/or their reports. This feedback mechanism, also defined as the ‘knowledge of results’ (Luthans 2011), is the way members of an organisation know how well they are performing in their tasks.

Is the bi-directional communication process occurring within the six investigative agencies interviewed? Unfortunately, all agencies involved in the study are characterized by a lack of a feedback-oriented environment. The reports that members of the investigative departments have to fill do not constitute real instruments for sharing opinions, yet. Reports, the only way bushfire investigators and detective have for sending their feedback to the top, is not the beginning of a dialogue within the organisation. Such vertical communication process is not bidirectional at all. As a consequence, reports are only seen as “a tick the box thing”, just “a formal reporting lines” that has to be filled.

10.3.5 Summary

Organisational self-structuring concerns all internal relations and norms that form the skeleton of an organisation and that do not concern work directly. Organisational self-structuring of the
six investigative departments has been studied and the emerged situation is that personal experience and creativity (the anti-organisational self-structuring by definition) gained over policy and procedures. Tacit knowledge had more importance due to the fact that is often under considered when policies and procedures are drafted and implemented. The latter are often considered too slow by those who are in the field, who are mostly in the need of quick and more concrete guidelines to follow.

What emerged as a result of the analysis of the self-structuring dimension is that bushfire investigators often do not feel part of the broader decision-making process and system, nor they feel appreciated by the upper levels. There are two important reasons behind this lack. The first regards the top-to-bottom organisational approach. Some organisations tend to be characterized by a kind of communication that travels from top to bottom and typically concerns directions on duties (Mihm 2010). These organisations expect communication from bottom to top as well (i.e. reports), but such communication does not usually centres around sharing opinions, ideas or feedback. Similarly, the staff hears from the top only when something goes wrong. This approach is not uncommon in those organisations of a military kind or on those dealing with complex phenomena such as emergencies.

The second reason for the missing system of feedback in the organisations is linked to the membership negotiation dimension. Since the role of bushfire investigators is still being developed, and the investigation is carried out on a seasonal basis, the question becomes: how can a bi-directional reporting system be developed?

Since membership negotiation has been found to affect the self-structuring dimension, it can be expected that, in turn, ‘Self-Structuring’ has an effect on the ‘Activity Coordination’ as well as ‘Institutional Positioning’ processes and dynamics. For this reason, the third analytic point is based on the analysis of the last two flows of the model.
10.4 Third analytic point: sharing Knowledge within and between agencies

Knowledge management is a key factor particularly for those organisations operating in very dynamic and high-risk environments (Mintzberg 2001, 2009). Work activities need to be adjusted and work-problems solved quickly in order to be able to face critical situations and life threatening circumstances (Kolditz & Brazil 2005). This aspect is termed by McPhee and Zaug’s ‘Activity Coordination’ and concerns an organisation’s ability to adapt interdependent activity to specific work situations and problems (McPhee &Zaug 2000). It is about those interactions and communication occurring within an organisation to align or adjust work activities. Activity Coordination answers the question ‘What work are we doing together?’ and occurs between members of the same organisation.

Since organisations exist and function within a certain environment, to which they relate and confirm their own identity as organisation, there is one more type of communication flow to be discussed. This is that concerning communication occurring at an external level with other organisational entities. This flow is termed ‘Institutional Positioning’ (McPhee & Zaug 2000) and is established at a more macro level to build an image of the organisation as a viable relational partner. This flow answers the question ‘What external forces provide legitimacy and what kinds of communication are necessary to please them?’

These two types of communications (Activity Coordination and Institutional Positioning), have been used during the present study to investigate the sharing of information and knowledge between members from the same organisation as well as the sharing between those belonging to related organisations, both at national and international levels.

10.4.1 Intra-agency knowledge sharing

Given the importance of knowledge sharing in order to become a learning organisation, the current study spanned different levels of analysis. The research project investigated not only the level to which the bushfire investigative departments develop and encourage a knowledge-based environment, but also whether such a knowledge is communicated, shared and used amongst the investigators. The intra-agency knowledge sharing was investigated in
terms of how and to what extent it is shared and managed amongst members of the same organisation. The analysis focused on whether staff members are engaged in interdependent work or deviated from a collaborative engagement. Of note, is the understanding of whether, within the investigative departments, the knowledge is considered important or rather it is the ability to communicate given information.

In line with the literature (Dalkir 2013; Cairns et al. 2012; Lauring & Selmer 2012), importance is given by members of all of the six agencies to sharing knowledge. The idea that both knowledge and value of an organisation are enhanced if the totality of the individuals’ knowledge is shared is widely accepted in both countries. Nonetheless, while the majority tends to share knowledge with their colleagues, such knowledge is usually limited to specific common aspects of the work undertaken such as investigative technical information. Investigator’s doubts and insecurities, unexpected events or difficult interpretations are discussed only by a minority, personal experiences are not discussed at all. In this generalized context, however, an interesting difference was noted. Members of agencies with police functions (i.e. Victoria Police and NIAB) are those who share almost everything of relevance to the investigation, while members from fire agencies (i.e. CFA and NIA) only share some common and technical aspects of their work.

Despite this divergence, the sharing of knowledge is more complex than a simple communication process (Zhang et al. 2005). It implies a bi-directional communication of personal insights and experiences rather than a transmission of rational and objective information (Eppler 2006). In this light, within the six bushfire investigative departments, effective sharing of knowledge is still an uncommon practice. Confidentiality, lack of trust, and lack of time to meet and discuss the various cases are the main obstacles for shared investigative knowledge.

Recognizing the benefits of the sharing of knowledge is not sufficient to address the barriers and impediments that make such sharing difficult to achieve and that normally concern the organisation as a whole. The sharing of knowledge is an opportunity to generate ideas and strategies that are more complete and accurate than done by an individual alone. Besides,
open discussions contribute to building and consolidating team practices and spirit. As highlighted by one of the participants:

“ [...] I treat them all in the same way because I believe that a work like this must be a team work... each with his peculiarities, weaknesses, strengths etc. etc. However I think it is important to work as a team” (itftfinab).

Nonetheless, sharing knowledge is not simply what, but also how something is communicated. It is not just the act of distributing information but rather a cultural approach that needs to be supported by both the employees and the organisational system as a whole. By investigating this aspect, it may be possible to assess whether agencies consider whether it is more important to have knowledge itself or the way that information was communicated. Of course, either of aspect of the question may be a problem in itself. Therefore, the key question of this analysis was: to know or to know how to communicate what we know?

Accordingly to the concept that “it takes knowledge to acquire knowledge and, therefore, to share knowledge” (Hendriks 1999, p.22), the knowledge itself was more highly regarded than the way it is communicated. Even if for many both aspects were equally important, it may also be the case that communication is easier to achieve if grounded on a solid and robust corpus of knowledge. Once again in Italy, where interpersonal communication and relationships are emphasized (Hofstede 2010), a higher number of participants believed that communication increases knowledge. In other words, communication is the way to educate and learn. Overall though, Italian investigators consider knowledge and professional communication as equally important. In contrast, in Australia investigators consider knowledge as the underpinning an effective bushfire investigation, and hence enabling communication.

10.4.2 Inter-agency knowledge sharing

Another important aspect of organisational communication is that concerning communication occurring outside the organisation with other entities (McPhee &Zaug 2009). This kind of communication, defined “Institutional Positioning” (McPhee &Zaug 2000, p.39), aims to locate an organisation’s identity among a larger societal system. It refers to the environment of an organisation and to the possibility of inter-organisational co-operation (Putnam & Nicotera 2008). The institutional positioning dimension of the six investigative departments was
analysed and differences, especially at country level, were found. Italian investigators do not rely on their ‘colleagues’ from other agencies, not even when facing unexpected situations. As expressed by some of the interviewees, there may be feelings of distrust, jurisdictional boundaries or competition. Yet, forms of inter-agency collaborations are found in Italy but these are usually based on the investigator’s personal relationships and friendships with investigators from other agencies.

In Australia (Victoria), formal relationships are present at a national level, typically concerning complementary division of duties, and sharing of courses/documents. All Victorian agencies rely on formal relationships with other organisations. A practical example of such an approach is that two external members, one from CFA and one from DSE, are officially based in the Arson and Explosive Squad headquarter. The rationale is to facilitate the inter-agency collaboration, especially in terms of exchanging information and having access to the relevant data of each agency. Nonetheless, the nature of the organisation still influences the sharing of knowledge between agencies, particularly in terms of promptness. Police agencies are generally less inclined to share all information and to get other people involved in on-going investigations. As a CFA member stated:

“It's about going for a cup of coffee with them [referred to police members], just having a chat, have a beer with them or whatever and when you get to know them it makes it so much better on the ground” (auftfcfa8).

What we witness in Australia is that there is an extensive amount of well written policies addressing sharing; “it is standard”.

Yet, at a deeper level of analysis it emerges that a lot of personal dimension is involved in the bushfire investigation practice. Regardless the policies and priorities, different realities and approaches are found across Victoria. Remarkably, one of the members interviewed said: “It takes people to make policy work” (aufgcfa). This view underpinned inter-organisational team working. Often members do not know each other before the fire event. There is no sharing of information about it. They do not know respective individual strengths or weaknesses or how to accommodate these when examining an event. They have to “start off a cold plate”.
Unfortunately the reality of the bushfire investigation world relies on the individual’s personal choices or behaviour. The following is a representative example of such gap:

“Where I live, ... detectives that I work with at fire investigation live in town. My kids go to school with one of their kids, so we know each other on a personal basis as well. Yet, you go to the fire scene with the copper in uniform, ... they don’t want to know you. There’s no relationship at all with them. They protect the scene and they, what are you doing here, sort of thing” (aufgcfa).

This picture of the dynamics occurring between staff members of different emergency agencies can be interpreted as the logical result of the lack of the organisational feedback system. This discrepancy between policies and activities is determined by the fact that investigators are not engaged in the decision-making process. Therefore, their feedback often is focused on technical and legal aspects rather than on improving the operational and collaborative system.

Sharing knowledge is marginal, when the analysis of inter-organisational collaboration and sharing knowledge moves to an international level. There is almost a total absence of sharing practical bushfire investigative knowledge, either formally or informally. A CFA member provided an explanation of this phenomenon that most likely reflects the overall situation.

“Not a lot of organisations need to do it [...] You can look overseas but a lot of time their processes are different, you can’t really steal stuff from them. Sometimes the basics of fire investigation don’t change wherever you go. Probably historically, a lot of the fire investigation training in Victoria we know has been taken from other parts of the world, so the US. So initially, a lot of the information for fire investigation was taken from the US and other countries. Now we’ve got all that information and now we probably need to be a bit more specific. So we probably don’t go outside the organisation very often (aunftcfa2).

Bushfire investigative approaches are felt to be difficult to adapt to different realities. Topographic, organisational, or juridical differences are likewise perceived as serious obstacles. This perspective adds to the findings an important meaning; whereas it cannot be simplistically said that members are not willing to share knowledge but that there are a number of obstacles that need to be overcome in order to make this possible. While it is true that institutional positioning rests to a degree on individuals, likewise organisations exist
within a broader environment, a societal context with its own norms and regulations. In order to relate with this existing environment, a number of external communication activities in which an organisation is constantly involved are present. These allow links between the organisation and the political, cultural, economic, and social environment.

10.4.3 Summary

The analysis of organisational communication through the last two flows of the McPhee and Zaug model (2000) highlights important aspects that resonate within the bushfire investigation field. Despite the theory, knowledge sharing is not occurring or considered as a flow as yet. Information not only does not freely and regularly pass from one member to another, but also, understandably, it does not circulate between members of different agencies and different countries.
11.1 Brief overview

This thesis analyses bushfire investigative organisations, focusing on knowledge sharing. The rationale behind this is to consider how the investigative process can be improved by identifying both the strengths and weaknesses of the communicational dynamics that are currently in place amongst members of different agencies. Such improvement is seen as important and pressing, given the increasing number of bushfires and their devastating consequences.

Until recently, the emphasis was on bushfire suppression, with little to no attention given to post-fire investigation. The increasing specialized courses to become bushfire investigator, the improvement of data collection and the increasing precision in the attribution of causes are all representative of an initial switch in the focus from fire suppression to include fire ignition investigation. This switch is crucial in order to develop an effective strategy to counter the increase in bushfires.

The difficulty in developing effective investigation strategies is based on the complex nature of this discipline and on the diversity of the actors. Indeed, the investigation will vary according to the geographical, social and environmental context of the event, to name as a few. It will also vary according to the different emergency roles that will be involved in both the suppressive and the investigative processes, including, but not limited to, fire fighters, police officers, forensic scientists and private investigators from insurance companies. The logical consequence of this complexity is that single agencies cannot produce an effective investigation on their own. Therefore, by focusing on removing the communication barriers between the different organisations involved, bushfire investigation could be improved significantly.
The present work points out the different steps that need to be taken in order to improve the investigative process (see also Figures 4.3 and 4.4, in chapter 4). The first step is the exchange of information or data between investigators, that we will call the establishment of “interactions”. If these interactions are effective, the actions taken after this exchange of information can be fine-tuned and therefore allow better “coordination” of different activities. As stressed throughout this study, the process of “sharing knowledge” cannot be reduced to a simple exchange of information but includes the adjustment of subsequent actions taken by all the members involved, in the pursuit of a common goal. Thus, knowledge sharing is at the basis of “inter-agency co-operation” where resources and information are shared to obtain a mutual benefit and to create something new. Only when the different organisations learn how to cooperate effectively with each other, can they move on to another level of more “complex collaboration” and work jointly to accomplish a shared vision and use joint resources. It is at this level that new capabilities are acquired and new knowledge is generated. This is the starting point for the development of new policies and procedures that are not based on the knowledge of a single organisation but of an entire network.

Currently, the investigative knowledge existing and circulating within and between the six investigative departments operating in Italy and Australia (Victoria) is characterized by three main aspects. These are separation, unidirectionality and interpersonal disengagement. With regard to the first aspect, all changes made towards increasing inter-agency collaborations will benefit both countries but especially Italy, where every agency acts on its own, within the limits dictated by its jurisdiction. These changes would also promote future efforts to implement further co-operation on a bigger scale, both at the national and the international level. From this point of view, Australia (Victoria) seems more advanced compared to Italy. However, in both countries the sharing of knowledge suffers from the fact that agencies do not give each other anymore than formal feedback after an investigation. Indeed, we have observed throughout this study that investigators have very limited time to share their knowledge even within their own organisation. This leaves no time to share it with other agencies, with the exception of the Victoria Police, who benefits from the proximity of a DSE and CFA agents. However, this level of sharing remains unidirectional, as the data collected by the Victoria Police is not communicated back to the other agencies. More important, a prerequisite for effective knowledge sharing is the
establishment of interpersonal engagement, but it appears that this condition is absent in both countries. In Italy, a feeling of distrust and competition reigns between organisations. In Australia (Victoria) this appears not to be the case, although the absence of full-time bushfire investigators is not favourable to the development of an on-going sense of engagement.

This view has been extensively criticized based on the fact that bushfire investigation is a function of the geographical, social and political reality of the area in which it takes place. Therefore, practices and policies cannot be generalised at a national or international level. Indeed, we observed that inter-organisational national (State) sharing is absent in Italy and limited in Australia, while both countries lack international collaborations. However, this work was conducted with the perspective that, despite these differences, there is a common ground between the two countries analysed. Both Italy and Australia (Victoria) rely on several emergency bodies, similarly structured, to conduct the investigation. The ability of an organisation to learn not only from its own employees but also from others seems beneficial in the context of emergency intervention.

11.2 Outcomes

The global incidence of bushfires has steadily increased in the last few decades and yet the causes of bushfires are not fully understood. There are also questions as to the efficacy with which the organisations that investigate the causes of these incidents share the information they gather in order that the causes and impact of such fires can be mitigated.

Given these facts, the current research project was subdivided into and based on four research questions. These are addressed through the employment of the Four Flows’ model of McPhee and Zaug (2000). The research questions and the analytic findings are summarised.
1. How do organisations deal with post-bushfire investigation?

To understand how emergency organisations deal with post-bushfire investigation the analysis begins with the understanding of the role of their main actors, the bushfire investigators. This first thematic finding delineates that a bushfire investigator is usually a male, typically between thirty-five and sixty years of age, who has worked within his emergency organisation for a long time, on average twenty years. However, the most consistent observation is that the role of investigator is an addition to their everyday roles within the organisation, since none of the participants works as a full-time bushfire investigator. The participants themselves raised this point as a subject of concern, explaining that this results in a lack of clarity of the role and does not provide a stable point of reference across the organisations involved in the bushfire investigation.

The second thematic point concerns the way that organisations gain, manage and transmit investigative knowledge. This knowledge is classified as explicit when it is captured in protocols and policies or implicit when it relies on personal experiences and initiatives. The current analysis shows that, amongst bushfire investigators, tacit (or implicit) knowledge is the most valued of the two. It allows investigators to exercise personal initiative adapting to the situation they face and remodelling their know-how based on each experience. Tacit knowledge is more suited to highly unpredictable situations such as bushfires and it also evolves more quickly than a situation where the emphasis is placed on formal procedures alone. In other words, it is the investigator’s personal experience and first-hand learning that are most valued. This personal knowledge, however, needs to be transposed into explicit knowledge if the organisation is to benefit from it. Personal experience needs to be translated into policies and procedures so that other members of the same organisation can benefit from someone else’s experience.

In terms of organisational structure, it is important to bear in mind that the bodies that deal with and investigate bushfires operate in a high risk environment. This factor helps determine their structure and style. Often these organisations are military in structure, especially in management and ranking (Lang 1965). This has implications for communication within and between organisations. However, effective communication is key if the learning from any incident is to be captured and incorporated in future action. As Argyris and Schon have pointed out (1978), such
learning is vital for such organisations. Moreover, if learning is to be shared and enhanced between organisations this requires codes of communication and procedures to ensure it takes place (Mankin & Cohen 2004).

Findings show that in these agencies reports are the main form of feedback that the investigators provide to the higher ranks of their organisation. However, in practice such reports are mostly required for technical information collection rather than for promoting the sharing of knowledge between members and organisations. It seems that little beyond the formal report to higher level in the agencies occurs. Often, the investigators question whether their feedback is taken into account and the consequent role of their feedback in the decision-making process. The lessons learned from each experience are not formally captured and communication within the agencies is limited to a vertical, unidirectional flow of information going from the investigators to the higher spheres of the organisation. This factor compromises the investigators sense of engagement towards their agency.

2. What are the conditions that enable or prevent effective collaboration in bushfire investigation?

Here the analysis looks at how activities are coordinated between agencies and how these agencies act towards each other. Since the analysis looks at the quality of the information shared, it is evident that most of the sharing gravitates around common aspects of the investigators roles, especially in those agencies concerned with fire suppression. While many investigators with a police background tend to share their experience, few focus on the dilemmas and the more ambiguous areas of the investigation. In this sense, the need for confidentiality and the lack of time dedicated to discussion are clear obstacles to knowledge sharing.

When looking at the quality of the information shared an important difference emerged between the two countries. In Australia (Victoria), investigators consider the quality of the information delivered as more important than the ability of their interlocutor to transmit it. In Italy both aspects are considered equally important. This difference should be acknowledged if actions toward effective collaboration are to be taken. In other words, an improved collaboration
between agencies would result only when each agency’s needs or preferences are taken into account. In this case, more importance is given to the message communicated rather than to the way it is communicated.

Another critical aspect of collaboration in the context of bushfire investigation is the way organisations communicate with each other (McPhee & Zaug 2009). Italy and Australia differ significantly. In Italy there is a general feeling of competition and distrust that prevents any formal collaboration taking place, while in Australia (Victoria), there is inter-agency co-operation in the form of shared courses and documentation. Nonetheless, both countries do not collaborate at an international level, a reflection of the belief that countries with different realities, contexts and perhaps cultures have little to share. Once again, the focus should be on the feedback that agencies could give to each other in order to promote learning. Therefore, the absence of formal processes and procedures appears to be an obstacle to capturing and sharing understandings.

3. How can they structure themselves to deal effectively with post bushfire investigation?

The answer to the third research question cuts across the three analytic points analysed above. One of the key points that emerged from the analysis is that organisations would benefit from bushfire investigation positions, on a full-time basis. Such a pool of investigators could focus on the improvement of fire investigation activities and the development of prevention strategies throughout the year. This development would provide the agencies with a stable investigative work force that would provide consistency and would also institute exchanges and feedback between different organisations.

Finally, there is a need for formal review, identification of key learning points and their incorporation into revised processes, procedures and approaches. Systems should be implemented so as to give more weight to the investigators feedback. This is a multidimensional factor: communication needs to take place in a “vertical” way both from the bottom to top and from top to bottom. But it also needs to take place at a “horizontal” level, between different agencies.
4. Should there be an international dimension to such investigative actions?

The direct and indirect costs of a bushfire can reach multi-billion dollar levels ranging from the ecological to the economic ones. Bushfires, through combustion, contribute to pollution, desertification and to the loss of bio-diversity, facilitating climate change. In densely populated areas, even small fires can become disasters by claiming lives and destroying properties. Furthermore, everywhere, nearly 90% of all bushfires are attributed to the human hand, whether unintentional or malicious. Such features are not aspects existing within the state boundaries of one country or another. They represent a global dilemma that affects all industrialized societies. In this context, despite their social, juridical, environmental and geographical differences, Australian and Italian agencies could learn from each other how to investigate and understand better the phenomenon of bushfires. Both countries have to deal with bushfire. Both have witnessed an increasing number of bushfires every year. More importantly, they rely on similar agencies to put out and investigate bushfires and, in both countries, these organisations are structured in ways that follow a military hierarchy. Despite these similarities, no measures, at least from the managerial point of view, have been put in place to establish an effective collaboration with each other and/or little with other countries. The research found that the efforts to open up at the international level are rare and based on a personal desire to seek some information from the outside. Therefore, they are also very limited in nature since they rely on the information that can be found by anyone online.

In the context of this study, it has been demonstrated that both countries can learn from each other and the readiness of the six agencies interviewed in participating to this study further confirms their ability to question themselves in order to improve. The existence of common courses, joint manuals and the sharing of human resources and equipment is something that would benefit the Italian agencies that are still trapped in a competitive and jurisdictional mindset. Moreover, the Australian agencies might want to focus more on the separation between bushfire suppression and investigation, a distinction that has been made clear in Italy. Indeed, NIPAF was the first agency in Europe (from 1980 onwards) to specialise in bushfire investigation and, therefore, it has an extensive history and experience in this field. Also, it is only in Italy that the full-time bushfire investigators were found, as opposed to the seasonal and/or part-time roles appointed in Australia (Victoria).
11.3 Future research

This study represents the point of departure for further studies and publications, whether locally-focused or, similar to the current one. Indeed, the answers to the questions posed at the commencement of the research and the body of information generated by the project give rise to further questions and possible areas of investigation. Five themes might be considered in future research.

1. The appropriate balance between formal procedures and the experience and initiative of the investigator

Bushfire investigation is a relatively recent area of activity with a history of just over two decades. Given this short history, three questions arise:

- Has the experience gained to date been effectively codified into efficient processes and procedures – both within the investigating bodies and, possibly more importantly, between them?
- What levels of discretion are acceptable for the single investigator as s/he gains competence in this area of investigation?
- What are the competencies required for the bushfire investigator at each stage of his/her career?

2. Capturing the knowledge gained from each investigation

The organisations investigated are military in structure and culture. Yet, they seem to lack one fundamental activity that is at the core of all military organisations – the routine review of each “battle” and the lessons gained from it (Fisher et al. 2010). In this context, the following questions could be addressed:

- Which review procedure is the most appropriate to gain and encapsulate new knowledge from an investigation?
- How can this new knowledge best be incorporated into processes and procedures where necessary?

3. The role of women in bushfire investigation

The women interviewed in the investigation held key roles, none was a ‘simple’ investigator. Given the issues identified in information sharing, both within and between organisations, there would appear to be some potential benefit in addressing questions such as:

- Are there gender differences in perception and interpersonal skills that would enhance the investigation process?
- Would women bring a less hierarchical and more effective/adaptive leadership style to the investigation process?

4. The balance between interpersonal and technical skills

The apparent difference in emphasis between Australia (Victoria) and Italy vis-à-vis technical and interpersonal skills raises further questions that could be investigated:

- Is there a competency profile(s) for bushfire investigators that could be drawn up?
- What is the psychological profile of the effective investigator?

5. The model: top to bottom and vice versa

The literature has pointed out that the “top to bottom” approach of the McPhee and Zaug model limits the analysis of an organisation to the managerial point of view (Cooren & Fairhurst 2008; Schoeneborn 2011). Here, we chose to focus on the investigators’ perspective. This could be the starting point of other research questions, such as:

- How much more effective would it be to combine a “top to bottom” approach to a “bottom to top”, as opposed to either approach?
- What are the strengths and limitations of an investigator-focused approach?
- How could the existing approaches be strengthened via the incorporation of an investigator-based focus?

11.4 Conclusion

The present study does not intend to be a final statement but rather a starting point for research to come. Its value resides on the examination of the importance of bushfire investigation seen as the foundation of any prevention strategy and educational program. The rationale is that the more fires are prevented, the less suppression work will be required and the less emotional and financial damage will occur to communities. The thesis provides agencies with a more coordinated approach to bushfire investigation. This is made possible through the view that the current perspective of bushfire investigation as a simple instrument of enhancing bushfire suppression needs to be changed to that considering investigation as a prevention tool. However, unless the fire agencies, police and other stakeholders work closely together it is difficult to determine how and who caused a fire. An all agencies approach will ensure all agencies work closely together and prevent many fires from occurring. By adopting a novel approach, the thesis explores the topic of knowledge sharing between agencies involved in post-bushfire investigation. Challenges to an effective communication as well as an efficient multi- and inter-agency collaboration are analysed and suggestions on how to overtake such challenges presented. While the current study is not designed specifically to facilitate generalizability, the thesis has practical implications. Comparative data from different countries and the inclusion of diverse agencies provide a valuable insight for those practitioners involved in post-bushfire investigation. The outcomes of the thesis will assist bushfire practitioners with preventing the impact of bushfires, investigating the origin and causes of such events as well as reducing fire crime within their communities, if the case.
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APPENDIX A

Questionnaire - Face to Face
Communication Question List – Interview
Based on constitutes organisation (CCO) theory – four flows
(McPhee & Zaug, 2000)

Membership Negotiation (who are we? Socialisation, identification, self-positioning)

1. What is your experience with bushfire investigation?
2. When did you begin in the Department?
   a. Have you worked elsewhere, either some other bushfire investigation departments or in a completely different field?
   b. What do you think is the value of your previous working experiences in dealing with bushfire investigation?
3. What is your specific role (job title) within Fire Investigative Department?
4. What do you think are the main requirements of your current position?
5. How much time do you spend talking with others at work about your job as an investigator/manager/support staff? (What? To and from who?)
6. What initiative and creative input is allowed or expected among:
   a. Investigators?
   b. Managers?
   c. Support members?
7. From your perspective, what are the key factors that make for a good fire investigator?

Organisational self structuring (what rules do we operate by here? Managerial Activities)

8. What are the principal formal and informal procedures and directives that you should follow during your daily work life?
9. How are these procedures and directives communicated and directed upon in this Department?
10. Are there any surveys and feedback that you need to give and/or receive regarding to the quality of the work you have done?
   a. How much attention do you think is paid to your working reports?
b. Please give an example.

11. Who have you talked to about the procedures about fire investigation?
12. Why have you chosen them and what do you think to have learnt from them?
13. Which way of communication (face to face, phone, email, report) at work do you feel more comfortable in using to express yourself? And in which one less? Could you provide some examples?
14. To what extent have you been involved in the decision-making process of bushfire investigation activities?

Activity coordination (what work are we doing together?) Interactions that serve to align or adjust local work activities)

15. When you discuss your work as an investigator/manager/or support staff with your colleagues, what is it about?
   a. With whom?
   b. How often?
   c. Please give an example.
16. What do you understand are the key activities involved in the bushfire investigation?
17. In terms of post bushfire investigation, which activity is the most important point of strength of your Department? And what are the weaknesses?
18. How can organisations structure themselves to deal effectively with a post bushfire investigation?
19. Within post bushfire investigation, do you think that knowledge increases professional communication ability or rather than the latter one increases knowledge? Could you provide any example to support your statement?
20. Are there examples of professional messages that were deficient in producing learning and an efficient post bushfire investigation activity?
   a. If yes, how do you think that these messages could be improved in efficiency and efficacy?
   b. Please give an example.
Institutional positioning (what external forces provide legitimacy and what kinds of communication are necessary to please them? External communication)

21. In dealing with post bushfire investigation, which organisation is your department in partnership with? How would you describe the nature of the relation with them (e.g. Victorian Arson Squad/CFA/DSE)?

22. How often do you have professional updating meetings within your department? Within your broader organisation? With other investigative departments/organisations?

23. In what way do fire agencies work together in terms of investigation of bushfire risks?
   a. What level and kind of responsibility does each agency have regarding the investigation of bushfire?
   b. How do they influence each other?
   c. How much information is designated to remaining within the organisation itself and how much it is expected to be shared with other bushfire stakeholders?
   d. Could you give an example?

24. Have you only spoken with who is involved within the bushfire investigation or have you looked outside to learn more about bushfire investigation? Could you provide some examples?

25. What kind of formal and/or informal interconnections exist between fire agencies at international level? (Do they share their knowledge?)

26. Is there anything else that you would like to discuss about investigation with me?

ABOUT YOU

➢ What is your age/sex?
➢ What is your education level?
➢ What is your role and job position in the organisational structure?
➢ Are you a part time/full time employee?
➢ When did you start to working in this department?
APPENDIX B

Questionnaire - Focus Group
Focus Group

1. What do you understand are the key activities involved in the post bushfire investigation?

2. From your perspective, what are the key factors that make for a good fire investigator?

3. In dealing with post bushfire investigation, which organisation is your department in partnership with? How would you describe the nature of the relationship with them (e.g. Victorian Arson Squad/CFA/DSE)?

4. Are there any surveys and feedback that you need to give and/or receive regarding to the quality of the work you have done?
   a) How much attention do you think is paid to your working reports?
   b) Please give an example.

5. How can organisations structure themselves to deal more effectively with a post bushfire investigation?

Membership Negotiation
Question no. 2

Organisational self-structuring
Question no. 4

Activity coordination
Question no. 1 and 5

Institutional positioning
Question no. 3
APPENDIX C

Interview with most senior employees - Unit context
Interview with most senior employees - Unit context

I would like you to talk about the history and context of the whole unit. In this sense:

- When was this Unit established?
- What was the original purpose to the establishment of this Department?
  a. Why?
  b. Is the purpose still the same?
- What are the major changes since this Department has been formed?
- Do you review the organisation’s structure? If yes:
  a. When?
  b. Why?
- In providing bushfire investigation, which are the majors partners of this Department?
  a. Who is responsible for deciding who to work with?
  b. Are these partnerships based on a formal or informal system?
  c. Could you give me an example?
- What in your view has been the major success of the unit over:
  a. Previous 12 months?
  b. Previous 5 years?
- What in your view has been the major difficulty faced by the unit over:
  a. Previous 12 months?
  b. Previous 5 years?
- Are there any other points that you would like to make?

ABOUT YOU

- What is your age/sex?
- What is your education level?
- What is your role and job position in the organisational structure?
- Are you a part time/full time employee?
- When did you start to working in this department?
APPENDIX D

LIST OF DOCUMENTS COLLECTED
Documents identified from the six organisations for the purpose of the analysis

The table below briefly summarised the manuals institutionally collected by the researcher.

<table>
<thead>
<tr>
<th>AGENCY</th>
<th>LIST OF DOCUMENTS</th>
</tr>
</thead>
</table>
| Victoria Police – Arson Squad | • Victorian Fire Investigation Policy & Procedures (2009)  
| Country Fire Authority (CFA) – Fire Investigation Unit | • CFA Act 1958  
- Section 20 General Duty of Authority  
- Section 98 Place where fire occurs  
- Section 98AA Restriction of access to fire area  
• Chief Officer’s Standard Operating Procedures (SOP) 14.03 – Fire Investigation  
• Joint SOP between Fire Services Commissioner Victoria, CFA/DSE/and MFB – J11.01 – bushfire investigation  
• CFA & DSE Partnership Guidelines  
- Section 11 – fire investigation  
• CFA & NSWFS, Memorandum of Understanding  
- Schedule F – fire investigation |
| Department of Sustainability and Environment (DSE) – Wildfire Investigation Unit | • Fire Management Manual 8.1 Fire Suppression (2010)  
• Wildfire Investigation Learning Manual (CFA and DSE, 2009)  
• Forest Act 1958  
• Code of Practice for fire management on public land (2006) |
| Italian Forest Corps – Anti-Forest Fire Investigation Unit (NIAB) | • Bushfire Technical Manual (2008)  
• Practical methods of collecting, packaging, labelling and transporting evidence  
• Fire Management: voluntary guidelines (FAO – Forestry Department. 2006) |
| Italian Fire Brigade – Fire Investigative Unit (NIA) | • Guidelines for Fire Investigation (2009)  
• Italian Fire Brigade & Civil Protection, Memorandum of Understanding (Lazio region. 2011) |
| Sardinian Forestry and Environmental Surveillance – investigative unit | • Establishment of investigative units (1996)  
• Regional catalogue of the fire ignition devices (2001)  
• Wildfire scene investigation |
APPENDIX E

ETHICS APPROVAL
RMIT BUSINESS
COLLEGE HUMAN ETHICS ADVISORY NETWORK
(BCHEAN)

Application for Approval of Research Project

SUMMARY & APPROVAL

Project Title: The Complex Network within Bushfire Protection Strategy
Principal Investigator: Marco De Sisto
Supervisor: Peter Fairbrother
Project Category: Low Risk
School Name: Management
Contact Telephone Number:
Email Address: marco.desisto@student.rmit.edu.au

BUSINESS COLLEGE HUMAN ETHICS ADVISORY NETWORK USE ONLY:

Date Application Received: 14 April 2011
Business College Human Ethics Advisory Network Register No: 1000272
Period of Approval: 17 May 2011 to 1 March 2014
Comments / Provisos: N/A
The Business College Human Ethics Advisory Network assessed the Project as Low Risk

Signature: ___________________________ Date: 18 May 2011
Professor Roslyn Russell, BCHEAN Chair
APPENDIX F

CONSENT FORM
RMIT BUSINESS COLLEGE HUMAN ETHICS ADVISORY NETWORK

Prescribed Consent Form for Persons Participating In Research Projects Involving Interviews, Questionnaires, Focus Groups or Disclosure of Personal Information

COLLEGE OF SCHOOL: Business Management Project Title: The Complex Network within Bushfire Investigation Strategy

Name(s) of Investigators: Marco De Sisto marco.desisto@student.rmit.edu.au Phone: xxxxxxxxxx
(1)

Peter Fairbrother peter.fairbrother@rmit.edu.au Phone: 03 9925 1505
(2)

1. I have received a statement explaining the interview/questionnaire involved in this project.
2. I consent voluntarily to participate in the above project, the particulars of which - including details of the interviews or questionnaires - have been explained to me.
3. I authorise the investigators to interview me/conduct a focus group or administer a questionnaire.
4. I give my permission to be audio taped: □ Yes □ No
5. I give my permission for my name or identity to be used: □ Yes □ No
6. I agree to make myself available for a further interview if required: □ Yes □ No
7. I acknowledge that:
   (a) Having read the Plain Language Statement, I agree to the general purpose, methods and demands of the study.
   (b) I have been informed that I am free to withdraw from the project at any time. And if I do revoke my consent I understand that all information I may have given you will be destroyed and not used in any research.
   (c) The project is for the purpose of research and/or teaching. It may not be of direct benefit to me.
   (d) The privacy of the information I provide will be safeguarded. However should information of a private nature need to be disclosed for moral, clinical or legal reasons, I will be given an opportunity to negotiate the terms of this disclosure.
   If I participate in a focus group I understand that whilst all participants will be asked to keep the conversation confidential, the researcher cannot guarantee that other participants will do this.
   (e) The security of the research data is assured during and after completion of the study. The data collected during the study may be published, and a report of the project outcomes will be provided to Bushfire Cooperative Research Centre (CRC). Any information which may be used to identify me will not be used unless I have given my permission (see point 5).

8. I give permission for anonymous data to be shared with researchers from other universities involved in the Bushfire CRC
Participant’s Consent

Name: ___________________________ Date: ______________

(Participant)

Name: ___________________________ Date: ______________

(Witness to signature)

Where participant is under 18 years of age:

I consent to the participation of ___________________________ in the above project.

Signature: (1) ___________________________ (2) ___________________________ Date: ______________

(Signatures of parents or guardians)

Name: ___________________________ Date: ______________

(Witness to signature)

Participants should be given a photocopy of this consent form after it has been signed.

Any complaints about your participation in this project may be directed to the Chair, Business College Human Ethics Advisory Network, College of Business, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 5598 or email address rdu@rmit.edu.au. Details of the complaints procedure are available from http://www.rmit.edu.au/browse;ID=2jqrmb7hnpyo
APPENDIX G

INVITATION TO PARTICIPATE
**INVITATION TO PARTICIPATE IN THE RESEARCH PROJECT:**

The Complex Network within Bushfire Investigation Strategy

**COLLEGE OF** Business  
**SCHOOL OF** Management

Name(s) of Investigators:  
(1) Marco De Sisto  
marco.desisto@student.rmit.edu.au  
Phone: XXXXXXXX  
(2) Peter Fairbrother  
peter.fairbrother@rmit.edu.au  
Phone: 03 9925 1505

You are invited to participate in a research project being conducted by RMIT University and the Bushfire Cooperative Research Centre (CRC). This information sheet describes the project in straightforward language, or ‘plain English’. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate. If you have any questions about the project, please ask one of the investigators.

**Who is involved in this research project? Why is it being conducted?**

The research project is conducted by PhD student Marco De Sisto, who is supervised by Professor Peter Fairbrother, from RMIT University. This research aims to identify strengths and weaknesses of the sharing knowledge between bushfire investigative related agencies as well as to study their internal practices and procedures in undertaking bushfire investigation. The project has been approved by the RMIT Human Research Ethics Committee. This study is funded by the Bushfire CRC.

**Why have you been approached?**

You are being approached to participate in the project because of your involvement in the fire investigation unit. We are interviewing a range of people who are working within bushfire investigative departments.

**What is the project about? What are the questions being addressed?**

The project aims to analyse, through the lens of professional communication, bushfire investigation activities. Overall we expect to interview 80 people from five fire investigative agencies. A further 20 key members of these departments may be interviewed and participate in focus groups.

**If I agree to participate, what will I be required to do?**

If you agree to participate we will discuss with you your experience and understanding of bushfire investigation activity, awareness and information within your organisation. If appropriate we will discuss with you your awareness and knowledge of the policies and procedures adopted as well as the material and devices used by the fire investigative department and the outcome of the various information, awareness and investigation training programs. We have a list of guideline questions for you so that you can see the type of subjects we will address. If there are other areas that you want to discuss you are perfectly welcome to do so. The interview will last approximately an hour.

**What are the risks or disadvantages associated with participation?**

There are no risks associated with participation in the project apart from the risks that derive from normal day–today activities. We guarantee no names will be used in whatever is produced and we guarantee absolute confidentiality.

Should you become concerned about your participation in the study, please contact Marco De Sisto Centre for Governance, Work and Technologies, RMIT University, xxx xx xxx or marco.desisto@student.rmit.edu.au; Professor Peter Fairbrother Centre for Sustainable, Organisations and Work, RMIT University, 99251505 or peter.fairbrother@rmit.edu.au. They can deal with your concerns, discuss them confidentially and suggest appropriate follow-up and in the event of distress the project team will facilitate contact with an appropriate community counselling service. For urgent help you could also contact the National Lifeline on 131114.
What are the benefits associated with participation?
The value of participating in this project is that it will contribute to our understanding of the most effective ways to communicate and sharing bushfire investigation abilities and practices between all of the investigative bushfire agencies. More holistically, police and fire agencies will improve, by studying their barriers, in awareness on what are the major weaknesses in their own investigation of bushfire risk and, by maximizing communication and co-operation with all fire stakeholders, in quality of their interconnections.

What will happen to the information I provide?
You will not be identified by name in any written documents. You will not be identified at any stage in the research. We also ensure confidentiality of the information you provide to us in any published work or any reports that are produced. Any information that you provide can be disclosed only if (1) it is to protect you or others from harm, (2) a court order is produced, or (3) you provide the researchers with written permission.

The results of the research will be reported at conferences, publications and PhD thesis. The data will be kept in a secure place at RMIT University for five years and then destroyed. Unidentifiable, anonymous data may be shared with other universities involved in the bushfire CRC projects.

What are my rights as a participant?
At any point during the interview you have:

- The right to withdraw your participation at any time, without prejudice.
- The right to have any unprocessed data withdrawn and destroyed, provided it can be reliably identified, and provided that so doing does not increase the risk for you.
- The right to have any questions answered at any time.
- The right to request that audio recording be terminated at any stage during the interview

Whom should I contact if I have any questions?
Should you have any questions about the project please contact one of the researchers listed below.

What other issues should I be aware of before deciding whether to participate?
We do not envisage any other issues, but if you have any queries, etc. before, during or after the interview, please contact one of the researchers below and they will endeavor to provide the information you need

- Marco De Sisto (BA.(Hons); M. Skill Acquisition in Criminal Investigation; PhD candidate) Centre for Governance, Work and Technologies, marco.desisto@student.rmit.edu.au xxxx xxx xxx
- Professor Peter Fairbrother (BA (Hons) First; D Phil.) Centre for Governance, Work and Technologies, RMIT University, peter.fairbrother@rmit.edu.au 99251505

Yours Sincerely.

Any complaints about your participation in this project may be directed to the Chair, Business College Human Ethics Advisory Network, College of Business, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 5598 or email address rdu@rmit.edu.au. Details of the complaints procedures are available from http://www.rmit.edu.au/browse;ID=2iqrb7hnpvo