JUST CULTURE AND THE IMPACT ON ORGANIZATIONAL LEARNING

WHY A JUST CULTURE CAN HELP TO IMPROVE SAFETY BY INCREASING ORGANIZATIONAL LEARNING AT ALL STAFF LEVELS INSIDE A COMPANY

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Under supervision of Prof. Sidney Dekker

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ABSTRACT

The thesis is meant to examine the influence of Just Culture on Organizational Learning by highlighting its influence during observations and interviews inside the Austrian Air Navigation Service Provider – Austro Control.
The thesis is to highlight the necessity of Just Culture and of the by effects if reaction to reports according to Just Culture principles is not given.
The results, which are laid down in this thesis, have been collected throughout interviews and questionnaires with different persons from every level of the working environment.
The discussion of problems in this thesis is to underline the Just Culture principles and a possible way to increase any kind of Organizational Learning and an easier way of reporting by operational staff members from the same level of hierarchy.

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THESIS MAIN BODY

Introduction

Accidents are normal and cannot be prevented, whatever we are doing and planning - accidents will happen everywhere and every time (Perrow, 1984). Whatever organization you are working for – every mishap is part of daily life. The question now is, if all these things are normal, why do we have to take operator failures to court? High complex organizations need to learn from incidents or accidents. This is the only way to prevent future events of that sort.

A court case will not always improve safety (Dekker, 2007a) nor will it be just for everyone. The aim of a System Safety Expert should be to improve safety and not to find culprits. Inside a High Reliability Organization it is necessary to deal with incidents and accidents, which are the only way to learn about a system and to make improvements (Rochlin et al. 1987). The objective is to create this way of learning by fully disclosing an event and not by preventing learning by bringing up failures during a court case.

What are "Bad Apples" in this context? Bad apples are people who do not work or act in a designed system as they are expected to do. This can be true in several respects. First, it can be that one operator, or more than one, do not act in the way a certain social system (Rawls, 1971) wants them to. It is also possible that the outcome of their way of acting does not fit into the professional system they work for. Another aspect can be that a person or a group of people will not fit into certain hierarchical structures (Weber, 1978). People who are called "Bad Apples" are not bad right from the moment when they were born or started to work. They are labelled by the knowledge gained from hindsight. People are not born to become "Bad Apples" – they are turned into it by the system. Finally, Dekker seems to be right when he says: "No one goes to work to do a bad job". Why then do we have a law of torts?

The basic goals of tort law are (1) to compensate individuals who have suffered a loss or injury (2) to force the wrongdoer to be responsible for the costs and (3) to prevent future loss or injury (McIntyre, 2000). Will anything be prevented or improved by these three basic goals or does our tort law only exist to satisfy social needs? On the other hand, by understanding the system nature of error and by applying lessons learned to reduce the incidence rate of error and to improve efficiency - a real improvement of safety (Liang, 2004) can be achieved.

Just Culture is often seen as part of a so called Safety Culture (Patanker et al2005a). Patanker describes Just Culture as something necessary to achieve Safety Culture and a Reporting Culture (Baron, 2008) within an Organization. Safety Culture is based on assumptions and associated practices, which permit beliefs about danger and safety to be constructed (Pidgeon and O'Leary, 2000). This is proof of the necessity to create and to define Just Culture.
To highlight the necessity of Just Culture a questionnaire was used where the question about the implementation of Just Culture in certain Air Navigation Service Providers (ANSP´s) was answered. The statistics are to show that the blunt end (Reason, 1990) defines Just Culture on paper but this is not the same as implementing it and "living" it. Staff work at the sharp end of an organisation will sometimes see this implementation process from a different perspective.

The interview partners were either taken from the Management Staff, Air Traffic Controllers or from the administration staff. The interview partners work at Austro Control or are staff representatives representing Air Traffic Controllers inside the International Air Traffic Controller Association (IFATCA).

Just Culture in the definition by Eurocontrol cited below is often seen differently and interpreted differently. Eurocontrol defines Just Culture as a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them if they are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts will not be tolerated (Eurocontrol 2008, IFATCA Manual). Sydney Dekker mentions that Just Culture is hard to define (Dekker, 2007a). The implementation process is often understood as having to be finalized by the Management side defining Just Culture and by writing it down in a regulation document. People working at the sharp end of organizations do not understand Just Culture as something which can be regulated – Culture is a "living creature" so to say. However, during the interviews front line operators argued that Just Culture for them is a way to "do whatever we want without punishment" in other words: they thought that they only have rights and no duties inside a Just Culture. This is not true. Just Culture also involves responsibility and accountability for the operator to report and to fully disclose any mishap. This is the only possible way to increase Organizational Learning and Safety.

Nevertheless, even the Civil Air Navigation Service Organisation (CANSO, 2008) keeps talking about a Just Culture inside a Safety Culture (CANSO, 2008). They even talk about Enablers and Barriers to achieve it (CANSO, 2008). The only interesting thing inside the CANSO paper is that they argue about Just Culture but always call it Safety Culture.

So what is it now everyone in the aviation world is looking for? Just Culture – is it there to create safety, to help holding people accountable or to hide something?
What then is meant by the phrase "Just Culture". "Just" is derived from the word "justice". But what does Justice mean?

Hans Kelsen defined Justice as something possible but not necessary for creating social systems (Kelsen, 2000). Rawls defines Justice as the number one priority in social life (Rawls, 1971). Both talk about Justice and still it is not so easy for them to define it. So who has to decide about Justice? Rawls was unable to find a solution when he wrote "every law or institution which is unfair to human beings or does not function as intended has to be disestablished (Rawls, 1971). Nowhere in his book did he tell us who should do this and who should decide about it.
Is justice somehting to be left to the judge or is Justice something we have to define case by case – neither will suffice for improving safety. Justice has to be agreed on or defined prior to something being done. Who is going to draw this ominous line Dekker mentions in his book and articles (Dekker 2007a, 2007b, 2007c)? In some way he says that it is not important where this line will be drawn, it is important who draws it (Dekker 2007a) and whether there is a need for it. Dekker argues that the line drawn does not take into account the need for Organizational Learning. What is needed to prevent future accidents? The HRO´s have to get used to this philosophy in order to improve System Safety.
Both philosophies – Just Culture and Organizational Learning – are central to this thesis.

Is it really necessary to improve safety or to hold people accountable? Do we really need to hold people accountable? And what will be the impact on Organizational Learning if we hold people accountable?

Method

This study is meant to represent a concept of Just Culture and its impact on Organizational Learning in a European Air Navigation Service Provider (ANSP) and its effect on active international Air Traffic Controllers representing their colleagues within the International Air Traffic Controllers Association (IFATCA).

Just Culture nowadays is a "stylish" word in aviation society. There is, however, a huge gap in the understanding of Just Culture between the blunt and the sharp end of an ANSP. This thesis is about this gap and about the impact on Organizational Learning and it is also meant to establish a common idea on Just Culture.

To get a taste of the amount of dedication of the staff involved interviews were conducted throughout all levels of hierarchy within the above mentioned ANSP and with different representative from of Air Traffic Controller of different countries. The questions stated during the interviews were the same for everyone. The reason behind this method was to prove that the perception of modern slogans is different and that explaining the need of a Just Culture and the establishment of Organizational Learning might be different.

The interviews have been divided into two parts. In the first part, there were open questions with open answers, the second part consisted of multiple choice questions. The analysis of the second part is shown in the statistics inside the thesis. The first part was mainly about the essentials of this thesis.

All interviews were carried out anonymously some persons did not mind being mentioned in the thesis. In order, to treat everyone equally there will be no names given of interview partners inside this study.

Is accountability necessary and who should be held accountable?

If accountability is necessary, what is meant by accountability in case of an incident or accident and what does accountability contribute to Organizational Learning?

As mentioned above it is impossible to prevent all accidents or incidents. It has been argued that it is almost impossible to foresee the outcome of every act and therefore it is more desirable to apply rules that are likely to produce the greatest benefit for the greatest number of people (Patanker et al. 2005b). We can, however, improve the system by reporting near misses, incidents and, of course, accidents (Dekker, 2006, 2007b). To me this is the real kind of accountability. Every near miss must be completely disclosed. The way how the management reacts to any kind of reporting is however also important. In his book Bosk wrote about a procedure called "hair shirt" procedure and about open disclosure (Bosk, 2003). This kind of disclosure and open reporting combined with a blame-free law system is the only way in which we can improve system safety. In the medical field, investigations were held in the UK about how many medical incidents did end up at court and what happened to the doctors involved (McDowell, 2006). The interesting results raised in this article are that in the period from 1795 – 2005 only 177 health professionals were charged with manslaughter. Since 1975, 44 doctors have been charged, of whom 30 (68%) were acquitted and 14 pleaded guilty to or were convicted of manslaughter (McDowell, 2006).

Years	Total charged	Total convicted/pleaded guilty	Convicted
1795-1824	0	0	0%
1825-1854	11	4	36%
1855-1884	18	4	22%
1885-1914	4	1	25%
1915-1944	7	1	14%
1945-1974	1	1	100%
1975-2005	44	14	32%

Figure 1: Number of doctors charged with and convicted of manslaughter (McDowell)

In this study by McDowell it is shown that you will still have mishaps even if you take the persons involved to court and even if they were found guilty. Mistakes are normal and no ruling will prevent them. If not, there would not be any kind of medical incidents nowadays. If it really made sense to take someone to court to improve safety we would have to take everyone to court and the judges would have to decide about safety. On the other hand, if something happens – must the judge be held responsible because he did make the ruling?!

The only way to improve the safety of a system is to fully and openly investigate any report without punishment. After an incident you have to investigate why the system did not work as it was intended to do without trying to find culprits. This is the most important goal to achieve. Every investigation has to end up in some improvement of safety and some new aspect of Organizational Learning.

If you do not investigate according to these principles people will immediately stop reporting and they will start to hide mistakes or incidents. That, for sure, is the worst situation within an ANSP. You will hardly detect Safety Gaps and you will hardly improve Safety inside your organization. The vicious circle in that respect is that at the end of the year you will get statistics showing that you have reduced incidents, since no one has reported anything. This could lead to the assumption that everything functions as intended and the system works accordingly as planned

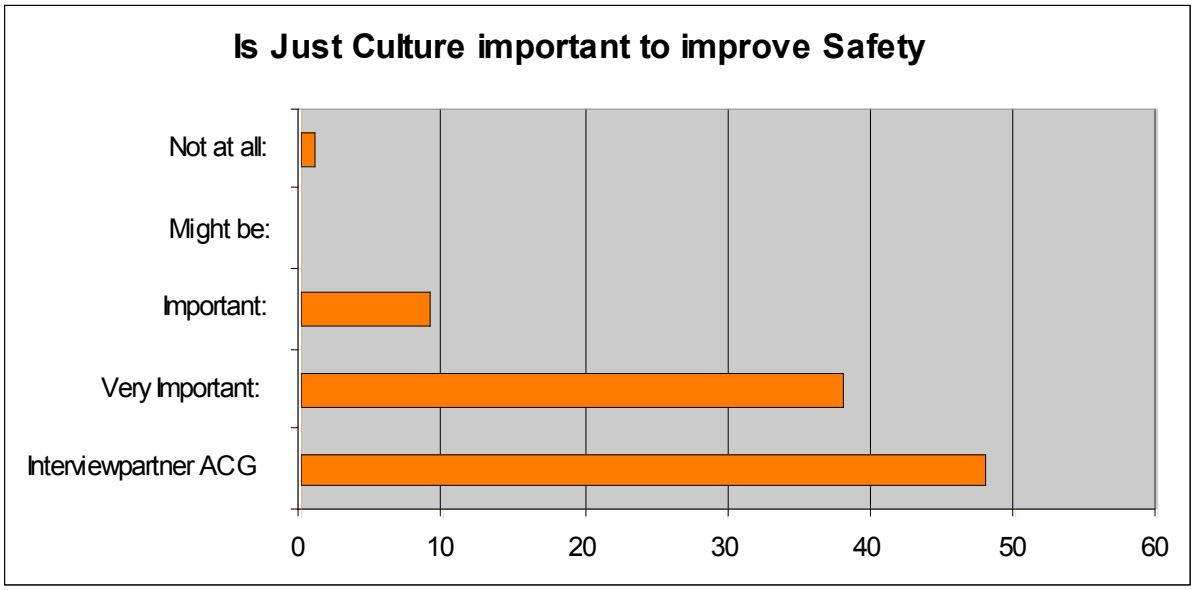
by the system designer. Yet the system does not work as intended. It is the other way round as the people are afraid of reporting.

A Just Culture approach implies learning from unsafe acts. The first objective of any manager is to improve safety and production. Any event related to safety, especially human or organizational errors must first be considered as a valuable opportunity to improve operations through experience feedback and lessons learnt. This is, however, the ideal world described by the International Atomic Energy Association (IAEA). Most of the time facts are different from that approach.

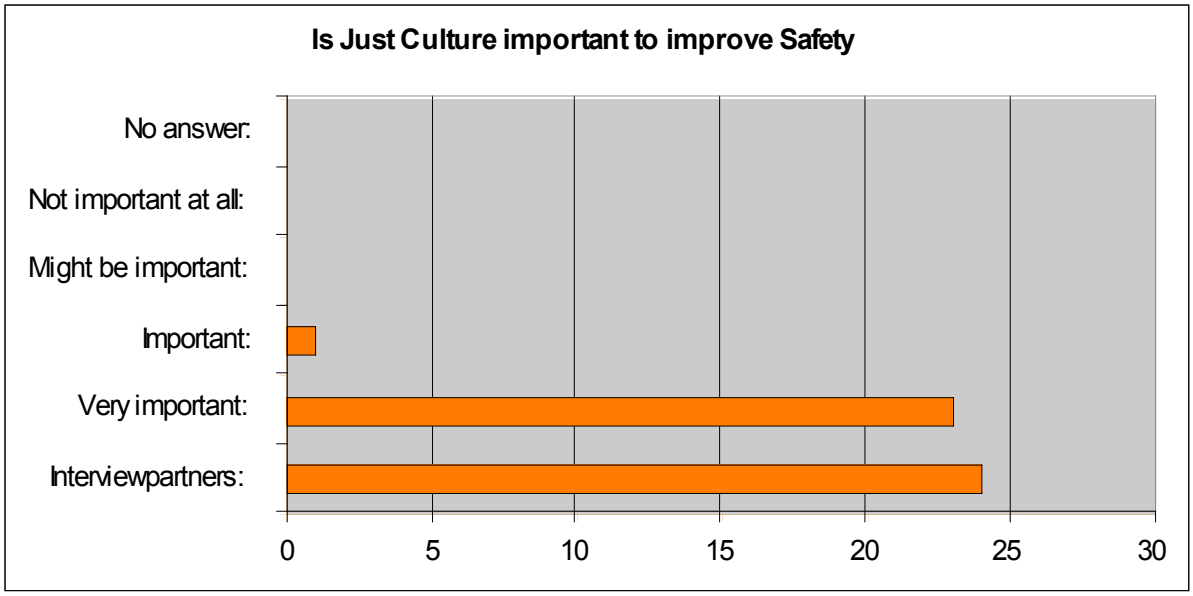
For organizations with a good safety culture failures and 'incidents' are considered as lessons which can be used to avoid more serious events. Thus there is a strong tendency to ensure that all events which have the potential of being instructive are reported and investigated to discover the root causes, and to give timely feedback on the findings and remedial actions, both to the work groups involved and to others in the organization or industry who might experience the same problem. This 'horizontal' communication is particularly important in view of the IAEA description mentioned above.

Organizations need to understand and acknowledge that people at the sharp end are not usually the instigators of accidents and incidents and that they are more likely to inherit bad situations that have been developing over a long period (Reason, 1997). In order to allow organizations to learn from incidents, it is necessary to recognize that human error will never be eliminated; it can only be reduced. In order to combat human errors we need to change the conditions under which humans work. The effectiveness of countermeasures depends on the willingness of individuals to report their errors, which requires an atmosphere of trust in which people are encouraged to provide essential safety-related information (Reason, 1997). This willingness to report for improving safety is also part of a Just Culture approach. This became clear as one of the results during the interviews and questionnaires.

Interview partners ACG	48
Very Important:	38
Important:	9
Might be:	0
Not at all:	1



Interview partners:	24
Very important:	23
Important:	1
Might be important:	0
Not important at all:	0
No answer:	0

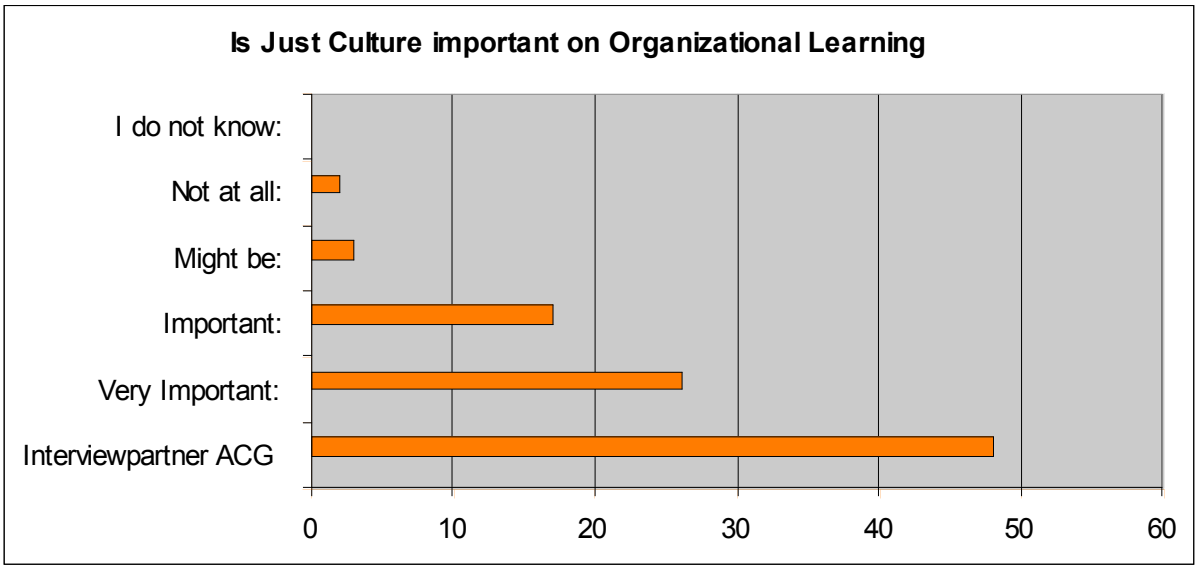


These statistics show that to improve Aviation Safety it is necessary to rely on a good reporting culture which also has to be embedded in a form of Just Culture.

A Just Culture, however, will be essential to a Learning Culture since learning will be necessary to maintain safety in a dynamic and changing organizational setting and environment (Rochlin, 1999). Learning from incidents and accidents, however, is not the only way to lower the risk in high tech systems (Marais et al., 2004) or any other organization (Kriegesmann et al., 2006). During Interviews which were conducted for this thesis all these factors have been mentioned and considered.

The statistics below are to show the results for the question about the contributing fact of a Just Culture approach to Organizational Learning:

Interviewpartner ACG	48
Very Important:	26
Important:	17
Might be:	3
Not at all:	2
I do not know:	0



Interviewpartners: 24

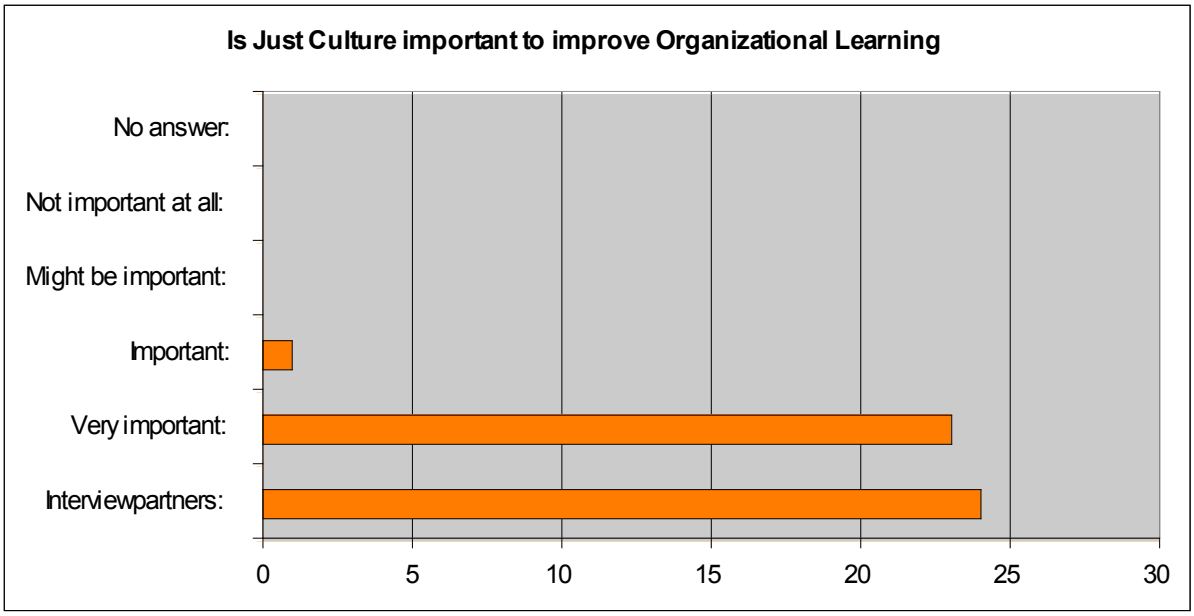
Very important: 23

Important: 1

Might be important:

Not important at all:

No answer:



If you do not adapt Organizational Learning to a Just Culture approach the reaction of the operator will be turned into the opposite direction. This was one of the main arguments during the interviews. The interesting part here is that, even if the front end operators do not see themselves as part of Organizational Learning they want to be part of it and they want to be accepted as equal and responsible partners.

The legal system, however, is bound to make Organizational Learning and a Just Culture approach compliable. Being an Air Traffic Controller and wanting to disclose everything you first have to trust the Reporting Management to treat your report confidentially without anyone from the outside world receiving your name or any other details which could take you to court (Austro Control Safety Reporting Procedure, v.2.0). This system is only built on trust – not in the system – it is built on the trust in acting people (Vlasek, 2009). It is however not that kind of trust which is necessary to build and to create a Just Culture approach and to improve Organizational Learning.

Every operator – it does not matter if front end or sharp end operator – has to be legally protected from any kind of prosecution after an accident or incident. By using a role play in a fictitious country called Tanaland, Dörner states in his book that everyone makes mistakes and that it is only dependent on a given context if the mistake will end up in disaster or if no one will ever take note of it (Dörner, 2006). Any kinds of mistakes have to be disclosed and treated according to Just Culture principles. During the interviews it was acknowledged that if the reports and the recommendations are blame-free, the operator from any kind of unit will accept the recommendations and will help to implement them and, most important, they will feel to have a "role to play" inside this process.

To clarify these arguments some examples ought to be given. In connection with the shooting down of two helicopters over the non-flying zone in northern Iraq, Snook made it clear to everyone that it is quite easy to drift away from procedures (Snook, 2004) and to lose situation awareness, even among a group of people. No one can be held responsible for this misstep because you will never know who took the first step away from a right procedure. You, therefore, cannot find anyone who is really responsible for it. Likewise you will never know if there is some production pressure behind the people who have to improvise to achieve certain goals if some over designed procedures are in place. Over-designed procedures make it hard for the operator to fulfil his required tasks as requested by the management or leader, so he has to improvise to achieve all goals. Sometimes even the goals are contradictory which makes it even more difficult to comply with all procedures. For example, in Air Traffic Control, you have to achieve a maximum of safety along with a maximum of capacity. This is simply impossible. If you are on

the safety limit you cannot increase capacity or efficiency. In that case it is better to reduce capacity – which the airspace users do not want. Still, they do expect 100 % safety along with more than 100 % capacity.
Another example is given by the Challenger Accident. Who was responsible for the first misstep? You cannot name a specific person and hold that person accountable (Vaughan, 1996). The arguments used above in the Snook example are also relevant to the Challenger Accident.

In the aviation world the Überlingen accident did show that drifting away from procedures is easy and normal until an accident happens. Every accident requires more than only one human person to happen (Nunes and Laursen, 2004) and sometimes a lot more than only human persons. If we make use of a systematic approach for any kind of incident investigation, we will certainly improve safety and there will be no need afterwards to take an operator to court. Only a systematic approach can take all variations and all facts into account as this kind of approach is intended for a safety improvement and not for finding culprits.

Normally, if you drift away from a procedure and you succeed in doing so, it will increase efficiency or capacity. People will see it as a success (Dekker in the Hindsight Magazine 2009). Society, however, always wants to see someone to "hang high" even if no one can be held accountable since a normal accident is part of the system and not due to a bypass of regulations (Perrow 1984, Vlasek, 2007a). There will never be a society as in Morus´s Utopia, where everyone and everything is regulated (Morus, 1983).

Due to the above mentioned examples and statistics there is only one way to achieve an increase of safety, which is learning from experience (Westrum, 2006) to increase safety. This, however, is only possible due to a Just Culture approach which afterwards leads up to an Organizational Learning. To clarify it, just finding and highlighting people's mistake does not explain anything (Dekker, 2006). If you want to improve safety by Organizational Learning you have to understand why dedicated actions do make sense to the operator.

In his Nicomachean Ethics Aristotle stated that people will act well out of their free will but never badly (Heiden, 2007). Rawls defined it by using the following words "our daily judgements will be just if they are the same as our personal principles" (Rawls, 1971). So in that special case of the accident in the Austrian Seegrotte (ORF Artikel, Nemeth 2008) I am sure that the boatswain did act in good will. Why did no one bother to ask about that? In other words, can

legal prosecution be expected to deal with all these questions? If we follow Kelsen, the law is only one possible way to keep society in line with the rules which have been created by other men.

In the Austrian "Strafprozessordnung" where all procedures about bringing persons to court are laid down there is a paragraph (§§ 84 Strafprozessordnung) which holds that, as soon as you discover someone who has broken the law, you have to inform the police and the state attorney so that both can start investigations into a court case. If you apply this to the safety regulations of Austro Control it means that you have to pass on every report to the state attorney and to deliver the names and the details as you might know that someone did not work "according to rules".

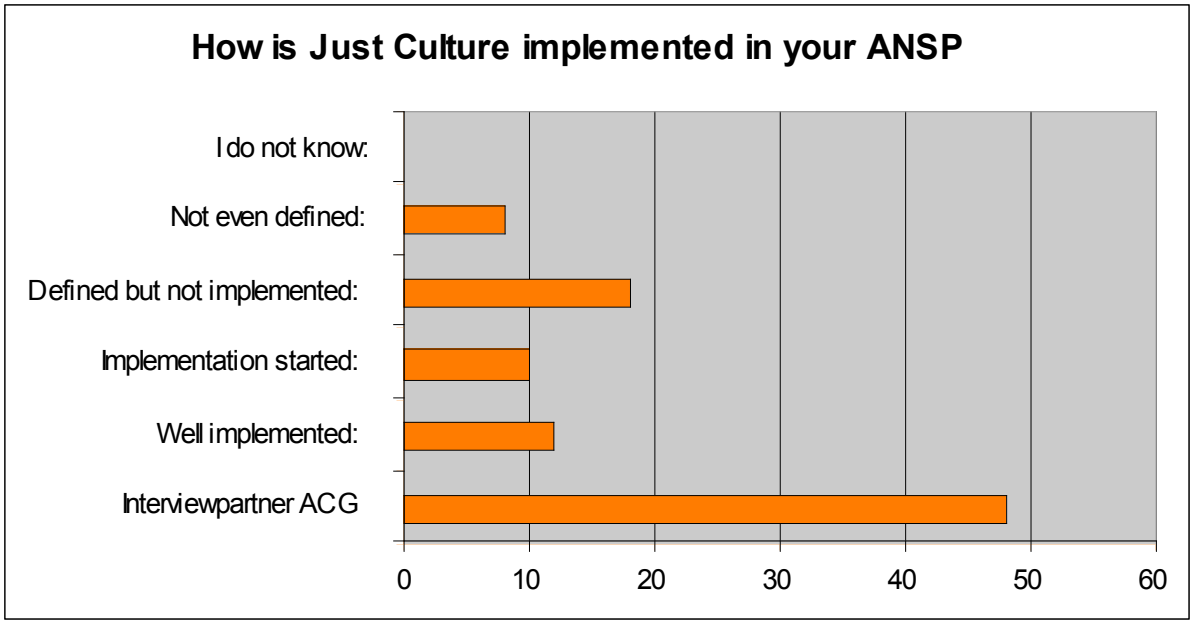
Austro Control, however, has been exempt from that paragraph since 2001 (Austro Control Internal Regulation 2001) So there is no need to deliver the data to the prosecutor as long as no one has been injured or killed.

What kind of accountability do we need within Just Culture?

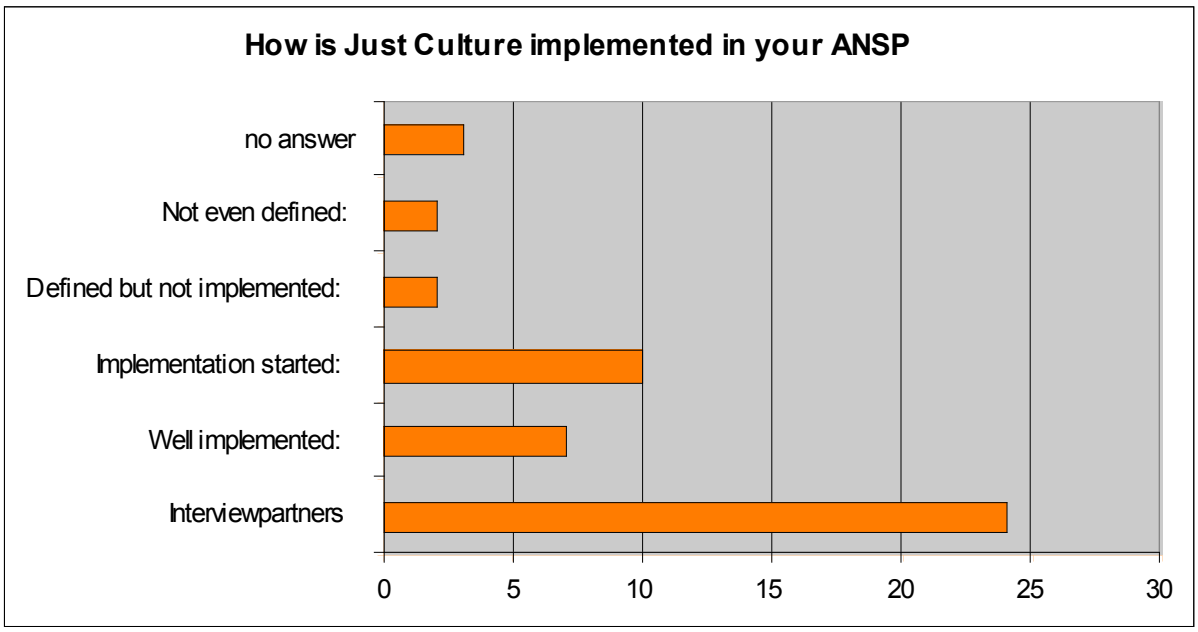
Within Just Culture accountability will not be seen as a cause for punishment. It should and it will be a way to increase safety and to put safety barriers into the correct place again or to create new and better safety barriers (Hollnagel, 2006).
But how should we do that?

For the front line operator (Reason, 1990) accountability should always be used to help to find the root cause of an incident/near miss or accident (Dekker, 2006, Reason 1997, Hollnagel, 1993). You cannot change what has already happened but you can change what will happen in the future. The main accountability for the operator should be, in that case, to submit a full disclosure of the situation as it sometimes happens in US hospitals (Bosk, 2003). This disclosure should be carried out in an environment, which functions to protect the operator against any kind of punishment or from being pilloried. Every operator has the right and the duty to disclose whatever may have happened in this protected environment. On the other hand, every investigator has to stick to that non-punitive way instead of pointing his finger or judging the incoming report. During the interviews it became clear that the implementation process inside an Air Navigation Service Provider looks different in the Operator view and in the Management view.

Interviewpartner ACG	48
Well implemented:	12
Implementation started:	10
Defined but not implemented:	18
Not even defined:	8
I do not know:	0



Interviewpartners	24
Well implemented:	7
Implementation started:	10
Defined but not implemented:	2
Not even defined:	2
no answer	3



There is no front line operator who comes to work to harm people (Dekker, 2006). Only Max and Moritz in the famous novel by Wilhelm Busch did cut the bridge and did make a lot of other bad things to hurt people. There is, however, no need to treat people as described by Busch in his story about the two "bad apples" –Max and Moritz (Busch, 1974).

It will take a long time to create Just Culture as a necessary kind of environment. Everyone has to understand and to believe that we cannot prevent anything by punishing people. We can prevent a lot of incidents/accidents by disclosing all mishaps totally and by protecting the informant. We have to establish a forward looking accountability, otherwise there will be no improvement to safety (Berlinger, 2007).

A good example was given by Niki Lauda in an interview after the US Airways 1549 Emergency Landing in the Hudson River. He was asked by a journalist if the emergency landing was comparable to the disaster crash by Lauda Air Flight 004 on May 26 1991. Lauda said that this disaster was worse but it did help to increase the safety of the software used inside an aircraft. Aviation was getting safer after this accident as a full disclosure was made possible then (Kurier, 2009).

In my view, we cannot promise to prevent all incidents or accidents in the future. We can promise to improve safety by a full disclosure of every report and by protecting the reporter and the people involved from any punishment – as is already done by the Danish Air Traffic Control Reporting System (Nørbjerg, 2001). We have to prevent a situation which existed 500 years ago when a lot of men and women were prosecuted according to the rules in the book "Maleus

Maleficiarium". This book was written to provide a kind of justice but it led up to one of the bloodiest chapters in human history (Kramer, 2000).

What is Organizational Learning?

Senge (1990) did define a learning organization as an entity that continually expands its capacity to create its future. He described five disciplines that lead to Organizational Learning:

Personal mastery

Team learning

Mental models

Building a shared vision

System thinking

At Austro Control Organizational Learning is a process underlying the Quality Management System theory. To illustrate this Deming set up a circle called PDCA – the Plan, Do, Check and Act circle. In this way the system how you should install a system and how you should work continuously on that system to improve it can be visualized.

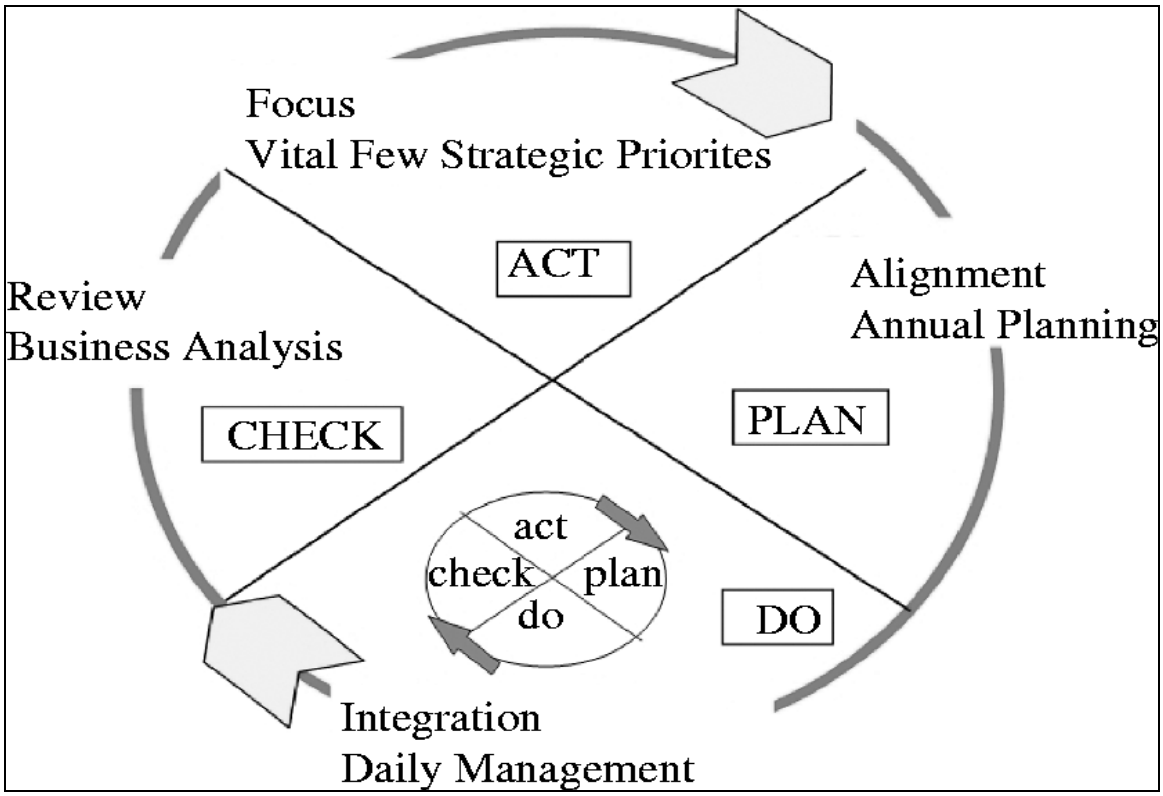


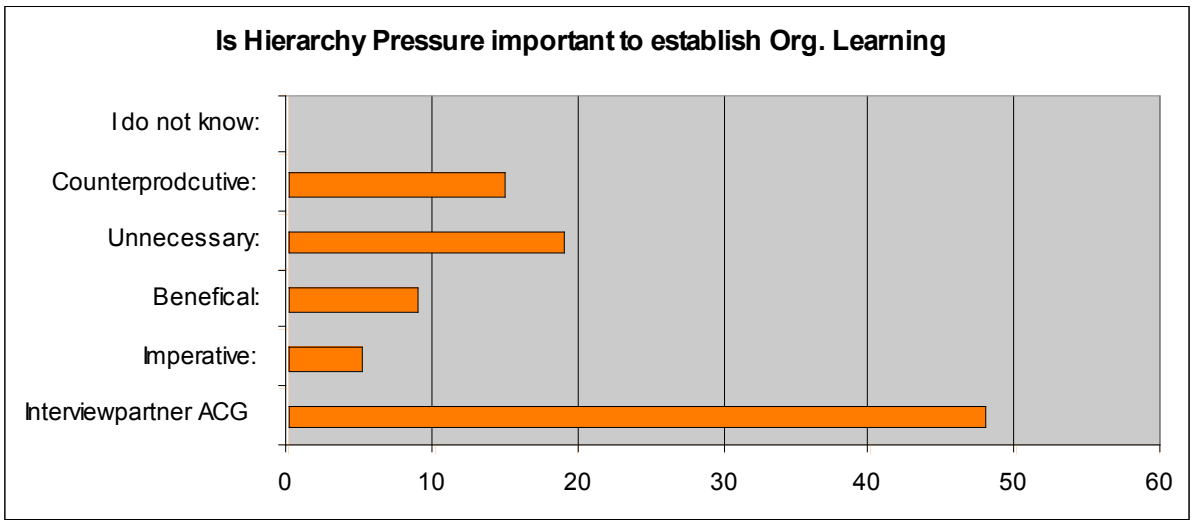
Figure 2: Deming circle according to Emerald Group Ltd.

Although it is a business circle, it also describes the reason behind Organizational Learning for an Air Navigation Service Provider (ANSP). Annual Planning comes as a first step in the Safety Plan of an ANSP or a special department, e.g. ATM inside the ANSP. Daily Management is made up by the front end operators who are the only ones to check the system if it works as intended. The front end operators do have the responsibility to report if the system is malfunctioning. This reporting has to be taken seriously and directly leads up to the check part. This part is to be arranged by the Investigation Office either Incident Investigation or Operational Safety Management. These reports can either be mandatory incident reports or any kind of voluntary reports. The check part is followed by revised acting and news planning. This circle can be applied to every active operational system throughout the whole life cycle of a system.

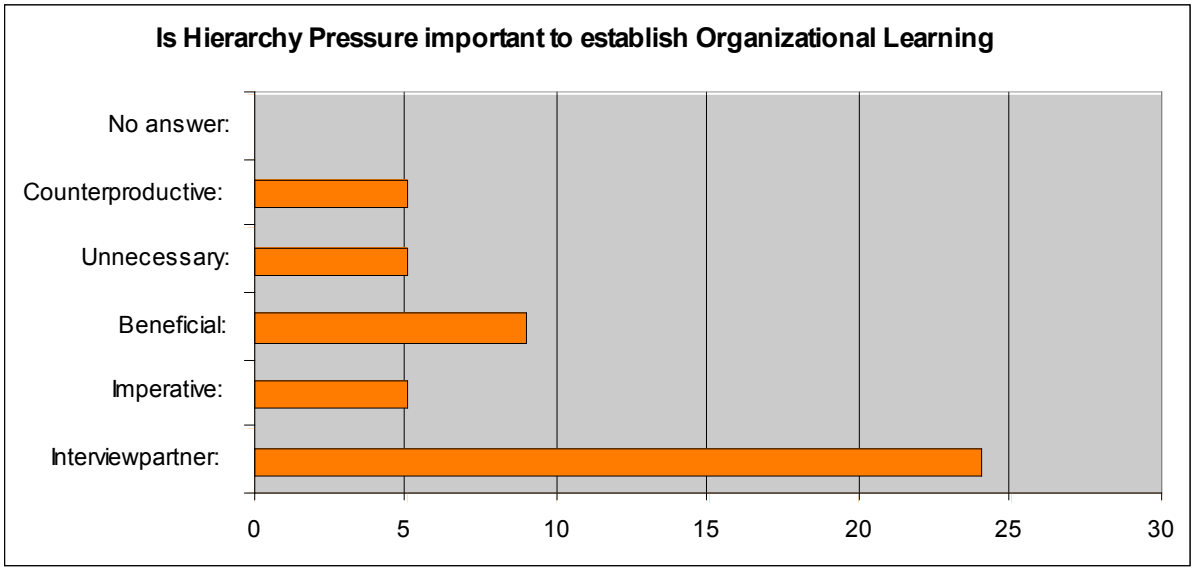
One of the most interesting aspects during interviews held was that almost every front line operator was unaware of any kind of Organizational Learning. No one was thinking about a process as defined by Senge or as it was defined by Austro Control GmbH. After a short explanation what Organizational Learning might be it was agreed on by Austro Control and it was recognized which important system part they where dealing with. Nevertheless, it was interesting to see during the interviews that this established process was not communicated directly and openly to the front end operator. The interview partners did not seem to be aware of

their role in this process of Organizational Learning and the important part they had to play to increase safety. All processes inside Austro Control are passed on from top – down.
The hierarcharchical system was, however, not seen as a necessary part inside the process of Organizational Learning. The pressure from "above" is not the thing the front end operator expects. They want to be treated as "mature" person not as annoying kids. He wants to be convinced by rational arguments – only a very few aspects have to be treated from top down with pressure due to hierarchy.
The management point of view during the interviews was that at the beginning it might be important to use hierarchy pressure but finally the whole process should work without any kind of pressure at all. The statistics below showed that during all of the interviews this point was interpreted differently.

Interviewpartner ACG	48
Imperative:	5
Benefical:	9
Unnecessary:	19
Counterprodcutive:	15
I do not know:	0



Interviewpartner:	24
Imperative:	5
Beneficial:	9
Unnecessary:	5
Counterproductive:	5
No answer:	0



What will happen by increasing Hierarchical Pressure and by not establishing Just Culture?

If you put too much pressure on the operator while creating a Reporting Culture based on Just Culture, you might even create the feeling of "hierarchical pressure". This will end up in a dramatic decrease in your reporting system.

The statistics below are based on what happened in a given ANSP when the Investigation Reports, were not based on a Just Culture approach and were not treated according this approach.

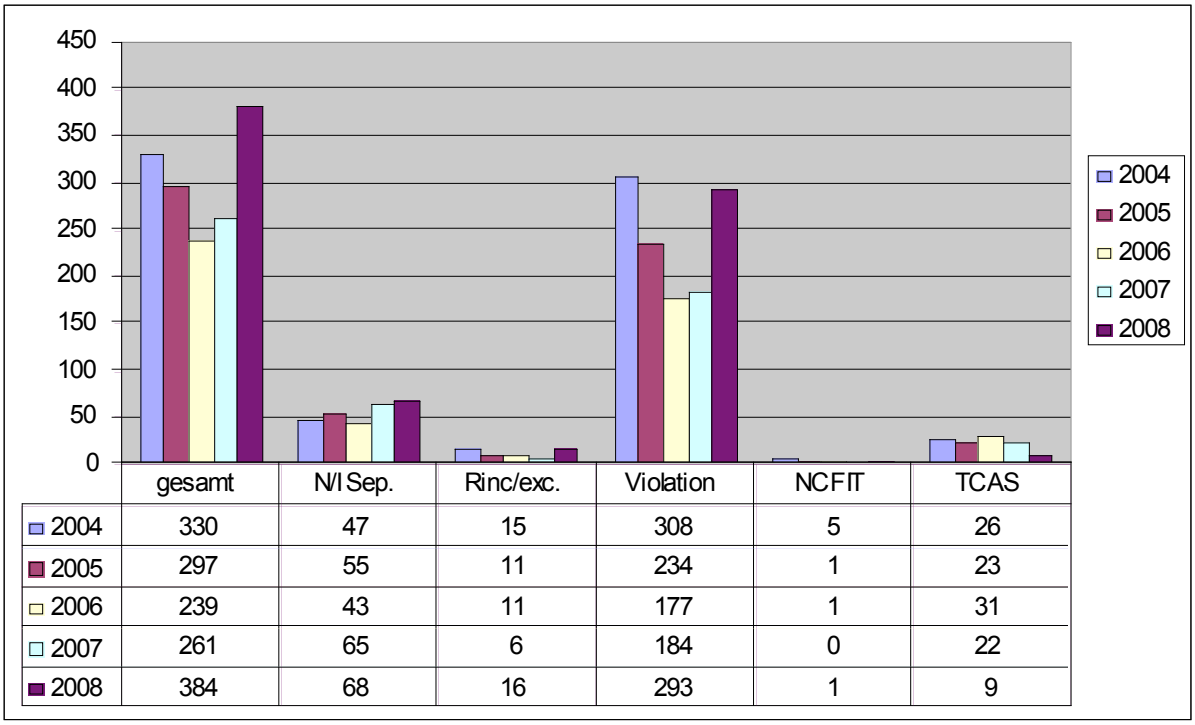
Number of reports and incidents 2004 - 2008

	2004	**2005**	**2006**	**2007**	**2008**
Total	330	297	239	261	384
N/I Sep.	47	55	43	65	68
Rinc/exc.	15	11	11	6	16
Violation	308	234	177	184	293
NCFIT	5	1	1	0	1
TCAS	26	23	31	22	9

N/I Sep…….Non Separation or Infringement of Separation

Rinc/exc……...Runway Incursions/Excursion

NCFIT…….Near Control Flight into Terrain



	gesamt	N/I Sep.	Rinc/exc.	Violation	NCFIT	TCAS
2004	330	47	15	308	5	26
2005	297	55	11	234	1	23
2006	239	43	11	177	1	31
2007	261	65	6	184	0	22
2008	384	68	16	293	1	9

Figure 3: Number of reports and incidents 2004 – 2008

These figures were dropped even as regards Violation Reports. During the interviews the results were acknowledged by the staff. Interview partners did mention that they have stopped giving reports, even mandatory ones as they do not see any kind of outcome from the reporting system. There have been only a few recommendations which did "find the way" to the operational unit. The acceptance of the operator by the Occurrence Management was also reduced during the period of the decrease in the reporting.

The recommendations which found their way to the operating unit were not well understood and implemented by the managerial staff. One negative example was the order by the Chief of a unit who stated: *"Everyone has to follow the procedures more strictly so that safety will be increased. Since all of the operators are showing bad behaviour"*. These sentences did influence the behaviour of the operators in the respective unit in a way that they ignored the procedures even more. This "try a little bit harder" sentence was seen as an offence to the operator.

The company was not really aware of the situation until the Occurrence Management did make an official report and the Safety Manager did start to investigate. During the process it turned out that this dedicated chief even punished people for filing a report.

Finally, all recommendations were blocked by the middle management. As a consequence it became clear to the operator that it was useless to file a report. They had two choices either

punishment or no recommendations to increase safety inside the system.
Due to this reaction on the part of the operator it was and sometimes it still is hard to recognize holes in the safety barrier system. Actually, people do not really hide anything, they simple do not report or sometimes report only verbally to anyone. During the interviews the answer was simply: Why should I file a written report as there will be no outcome?

The way back was and still is a hard one.

How can we increase the acceptance of facilities offered to the front end user by Organizational Learning?

To ensure a higher level of safety a system called Local Safety Committee (LSC) was established by Austro Control. This programme can be best described as Operational Staff for Operational Staff. Every Unit from the department Air Traffic Management (ATM), Aeronautical Engineering Services (AES) and Meteorological Services (MET) do have this Local Safety Committee.
LSC is part of the Operational Staff and its members are elected by all other operational staff members of their unit. This already is some kind of trust building activity. People are allowed to choose their own Safety Committee.
The interviews conducted with Operational Staff members from all these units did show that the acceptance of all recommendations did increase after the establishment of LSC. This became obvious when almost every interview partner made it clear that recommendations from the Occurrence Management or from Blunt end Operators are not accepted as the language used is not the same language as that by the Front End Operator. During the interviews the Management Side gave to understand that if they were using normal communication channels they could reach and achieve safety. Some of them also were of the opinion that they could make regulations and/or other kind of procedures to increase safety.
The activities and responsibilities of LSC members are defined by the Occurrence Management. The work can be described as Lesson dissemination, introducing and improving Safety Culture and working on the simplified reporting system – a system which has been in use since 2008. Simplified reporting means using a small sheet of paper and simply making marks on different boxes to express what did happen and which kind of situation did trigger off a safety relevant action or any kind of undesired state. Next below you will find an example of that kind of reporting.

This Simplified Reporting is based on the Threat and Error Management (TEM) framework. The analysis is carried out in the first and initial step by the LSC of the local unit. Nevertheless, a copy will be sent to the Occurrence Management for further investigations and, if necessary, for further actions.

This procedure is a good start in the right direction. In the conclusive section it will be shown, however, that it is not the perfect way to treat Just Culture and Organizational learning in a proper way. As these LSC members do not receive the adequate education and cannot have the "office" time to work for it – they have to do it, more or less, voluntarily during their normal working shifts.

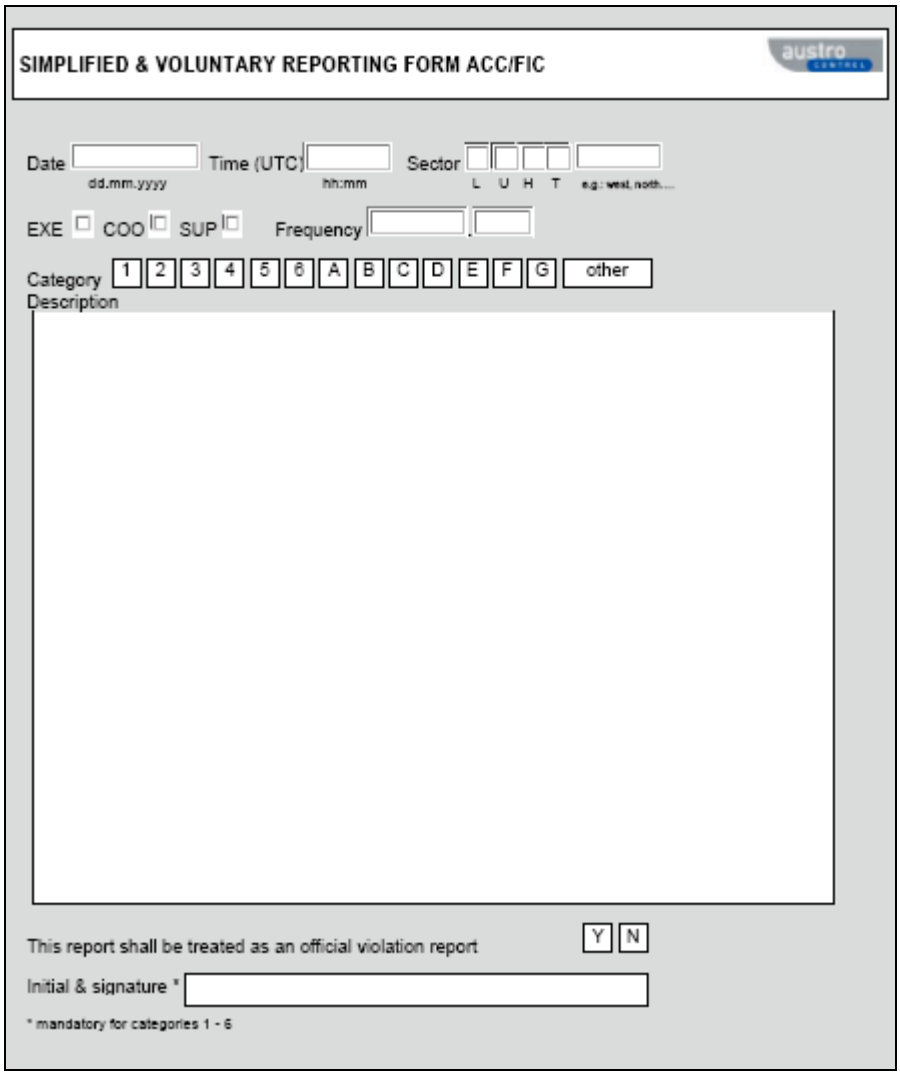


Figure 4: Simplified and voluntary reporting form ACC/FIC

This system might be only one possible solution to increase the acceptance of the Reporting System and to increase the process of Organizational Learning.

Simplified Reporting methods as laid down by the ANSP have been carried out since 2008.

Already in the first year there were 96 voluntary reports handed in. The reporting figures until 31st of May 2009 express the same attitude among operators. There have been already 59 voluntary reports so far.
This system in its simplicity is certainly one possible way to improve Organizational Learning.

Dealing with repetitive errors

Can organizations risk having staff members who make repeated errors while on the job?
The answer to this question is difficult as the causes of repeated errors have two different sources:

1) An individual may be performing a specific task that is very prone to error. Just as we can design systems to minimize human error through human factors, we can design systems that directly result in a pronounced rate of error. It therefore is necessary for the designers to be aware of the rate of error.

2) A source of repeated error may be caused by the individual. Recent traumatic events in a person's life or a significant distraction in life can cause some individuals to lose focus on the details of their work, possibly leading to an increased rate of error. In such cases it may be an appropriate remedy to remove the individual from his current task or to supplement the task by providing aid in controlling the abnormal rate of error. This might sometimes be the case if an ATCO is threatened by a court case and not able to fulfil his task properly during this period of time. This action, however, should never be seen as a punishment it should be seen as a way of protecting the front end user!

Another aspect which has to be dealt with is the problem caused by a lack of qualification in the field of Air Traffic Control.

What to do about lack of qualification?

An unqualified employee may come close to recklessness if he does not recognize himself as unqualified or as taking a substantial risk in continuing his current work. Lack of qualification may also reveal that an individual was not fully trained and qualified in the job and therefore show that it is a system failure not to have ensured that the appropriate qualifications were obtained.

This problem has often led to incidents as a Planning Controller is not always qualified as a Radar Controller and partly has to achieve the same tasks as an Executive Controller. These persons are in a "tricky" kind of situation as they are still in an education process and have to work fully involved in daily business and have to show the controllers that they are willing to join the Air Traffic Controller "society". This behaviour is error prone, as these students do not have the full qualifications. During an investigation this has to be taken into account and treated very carefully. Nevertheless, a procedure in place should be applied here to avoid this kind of situation. A possible solution might be that only qualified personnel are allowed to work in that position. Does it also mean that the transition from the simulation environment to the operational environment would take a bit longer?
On closer view, this would be the responsibility of persons designing or using the ATC system at the front end to give everyone the chance to get used to the system and to learn to treat the system properly.
This is also a way to increase Just Culture which involves fair treatment to students and increasing Organizational Learning.

The acceptance of Organizational Learning and the need for a Just Culture at the Management Level

Everyone in the operational environment is talking about the responsibility lying with the sharp end user. The flip side of the coin – the blunt end – is not always as deeply investigated after an incident as the sharp end is.

It is, however, important to strengthen the Just Culture philosophy and the importance of an Organizational Culture process even on the management level. A person working at this level is in a position to influence the system in such a way that both aspects can either be improved or "destroyed" from an organizational point of view.

There is an important need for reform also at this level. The first thing is that there are a lot of people working at the blunt end promoting the normal Quality Management System or Safety Management System approach. At first sight there is nothing wrong with that approach but it is not strong enough, in other words this approach is only meant to check if every worker in the company acts in compliance with a special requirement, if he works according to the designed rules or if he is deviating from these "assorted" rules.

The amount of deviation or compliance is normally checked by an Audit Team according to a prescribed Audit Schedule. Inside Austro Control this plan is made public already a year in advance so that every one can prepare himself for the Audit.

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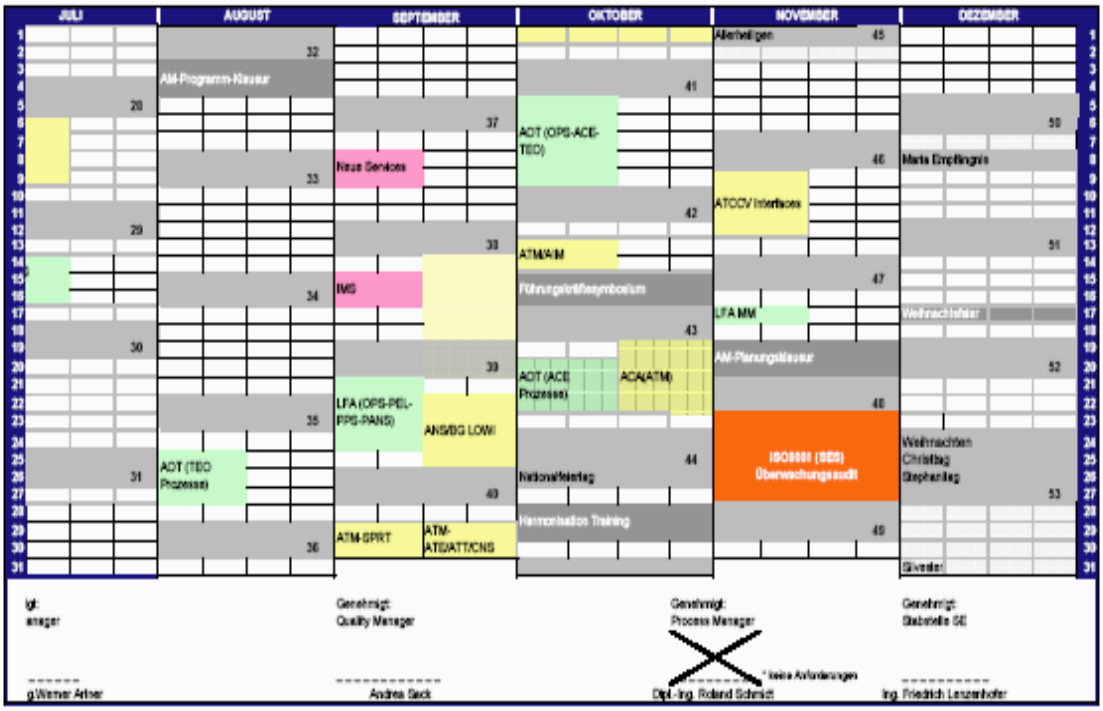

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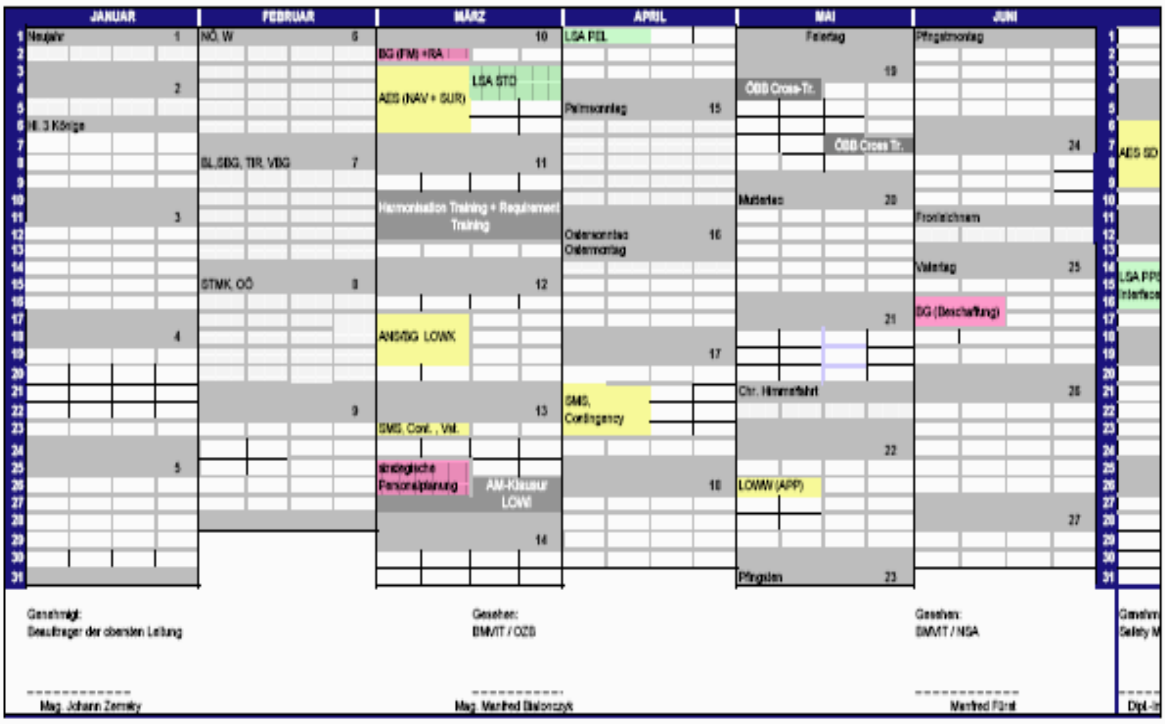

These Audits only serve to keep a check on the system and if they signal deviation, they start formulating so-called "findings". But they never signal the real strength, weaknesses or hazards of a system. The Auditors have been taught to act according to a prescribed system and they never check incident reports in advance or ask questions why someone has strayed from the norm. If you detect any kind of deviation during the Audit Process, you only tell your Auditee and you write in a report. Then the report is distributed to the high level management and to the regulator.

This system might be good to check the Quality Management system – if all documents are correct, etc. – but never to improve safety or organizational learning in respect to lesson dissemination.

The findings will be checked, no matter if they have been solved or not, at least every second year, but no one is going to check if the recommendations after investigation are accepted or rejected.

Cook and Nemeth described that problem in a wonderful way when they stated – "Safety Management is brought to an end by filing the investigation report and thereafter the line management has to fulfil the recommendation" (Cook and Nemeth in the book "Resilience Engineering, 2006)

In my perspective that is not enough – it rather is the easy way out!

The High Level Management has to make sure that all recommendations are carried out and they have to cross-check it. This has to be part of the process described at the beginning of this thesis and the Audit system can be a useful tool to verify these things.

How can we solve this problem?

In the method of the ANSP presented here the solution is to create a position inside the line management of the ATM department which is called Operational Safety Manager (OSM). This position is taken by a person who has to be an experienced ATCO. During the interviews with ATCO – the question was who was bound to gain most of the "operational trust" – it always became clear that controllers only trust someone who understands and speaks the internal language used by ATCO´s. A group of ATCO´s keep designing their own way of communication – something similar to what Vaughan describes in her book about the Challenger Disaster. In her view the situation to technicians was similar.
Yet only creating this post is not the full solution. The hierarchical problem also has to be solved and the OSM has to have the power to introduce new ideas and strategies of Organizational Learning, and he also has to have the mental strength to implement a philosophy and a cultural change - the so called – Just Culture.

According to Weber only a bureaucracy is in need of that kind of power or hierarchical pressure. In the Austro Control Company, however, the persons interviewed stated that they thought hierarchical pressure was not always necessary and that it was better to convince people by using arguments not with pressure. Below there is the planned structure to implement such an Operational Safety Management within Austro Control.

Still the solution proposed might only be one way to increase Organizational Learning and to implement a Just Culture approach.

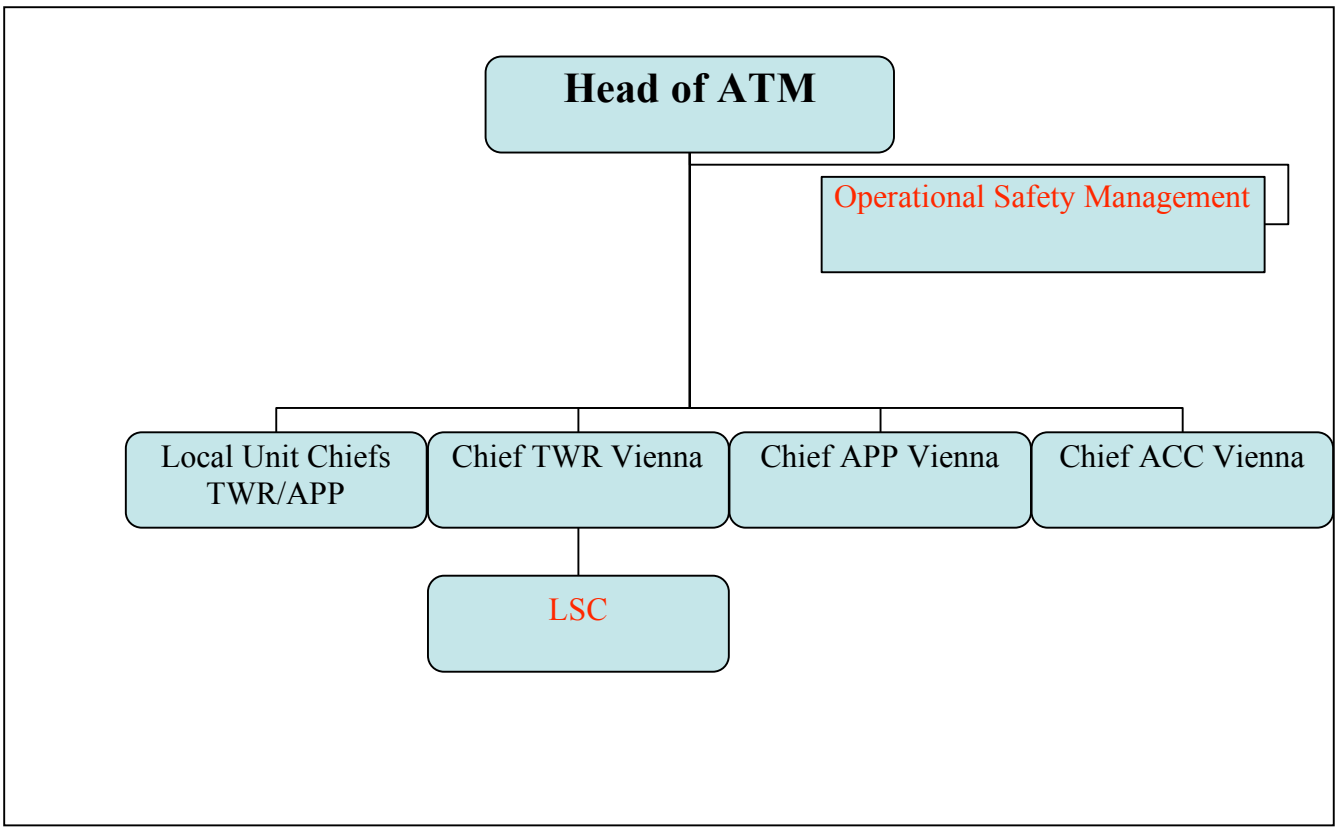

Figure 5: Planned organisation of the ATM department

In this structure all possibilities are given to the OSM. He has the responsibility and the bureaucratic power to influence the chiefs below him and to introduce all necessary steps. Below every Chief there are the ATCO´s who are bound up in a selection process to recruit a Local Safety Committee Member. These persons form the second link to the OSM. Not only have the chiefs reported to the OSM but also to the LSC and the Occurrence Management. Nevertheless, the Operational Safety Manager should establish the Organizational Learning process and implement a Just Culture approach with verbal arguments by convincing people to act accordingly. He should not use his high ranking power to establish either of the two processes. Pressure will only decrease the willingness to work accordingly.
The link to the Occurrence Management is called Safety Board Meeting.

The Safety Board is summoned in a weekly meeting and during these meetings all reports are discussed and all recommendations by this report are forwarded to a possible implementation. The aim of this meeting is to create a learning culture according to ICAO´s Annex 13 by which an investigation is seen as a process not to blame people but to create an opportunity for learning (ICAO Annex 13).
Unfortunately, the present situation at Austro Control is not like this. There are a lot of recommendations transferred from the Occurrence Management to the Operational Staff but

they are sometimes blocked as they cannot be used to fulfil requirements of the operational environment because people at the operational lower management level do not know the reason behind investigations.

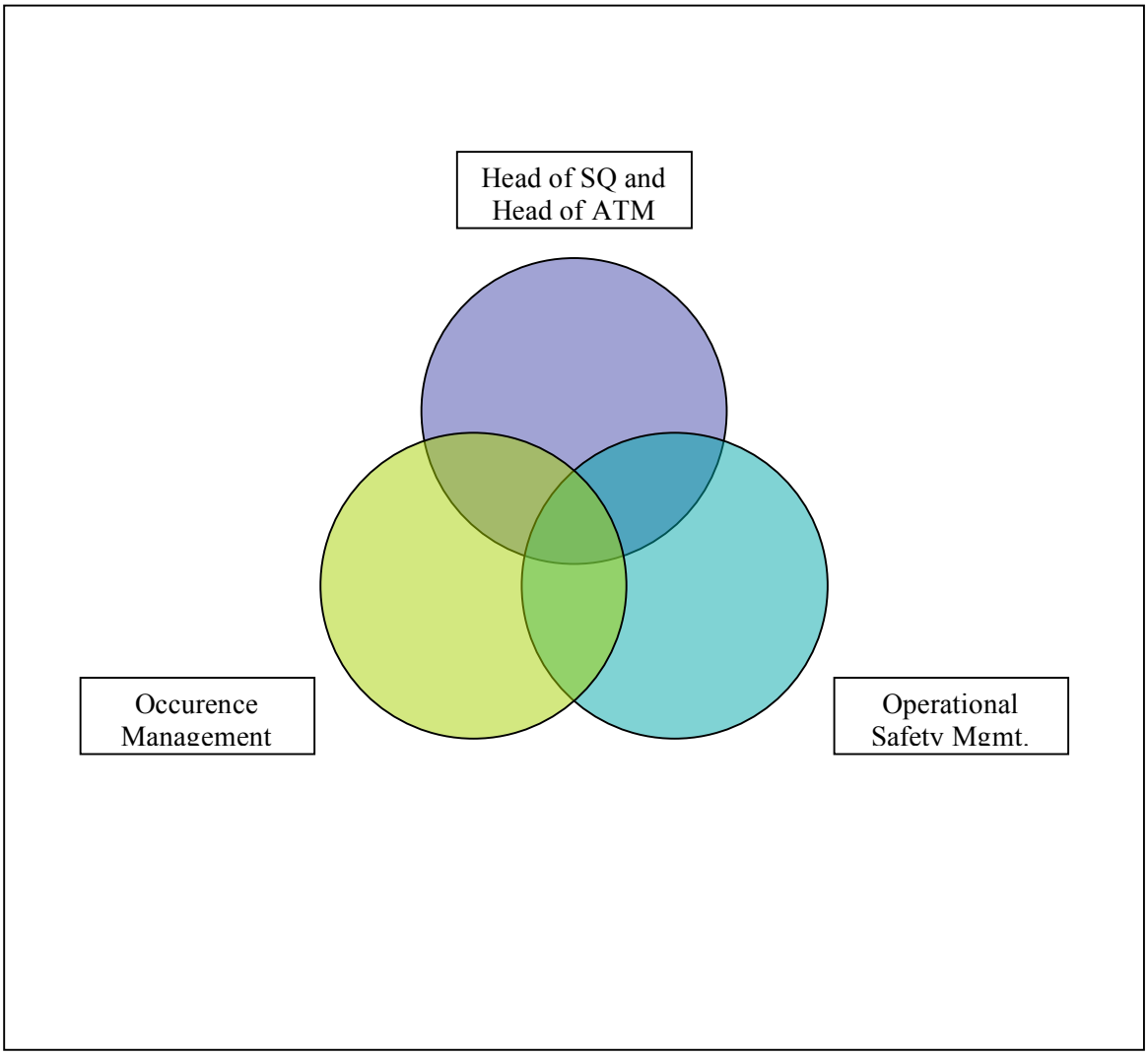

Figure 6: Overlapping structured tasks for the Safety Board

If implementation is not possible, for whatever reason, it will also be documented in this Safety Board Meeting. The reason is that if you have to investigate reports you have to know if recommendations are in place and if not why not.

In the diagram above the function of the Head of ATM and the Head of the Safety and Quality Department (SQ) is shown. Its function is to inform the responsible persons about all activities in their area. Occurrence Management and the outcome from reports rest with the Head of SQ. The implementation of recommendations, however, rests with the Head of ATM.

Due to this company setting it is not always possible to implement all recommendations or to report in a structured way.

However, inside Austro Control the final investigation report is distributed to all Business Units (TWR, APP and EnRoute) and the final version is anonymous.

Conclusion

Organizational Learning is the main contributing factor for the improvement of safety issues inside a High Reliability Organization. However, Organizational learning is not a product which can be bought in a shop. Organizational learning has to grow like a small plant. You have to start in each department and carefully cultivate it.
One part of this cultivation process has to be a Just Culture approach. Just Culture as a philosophy has to be applied across the whole organization. Each department and every person inside it has to understand to act and to live according to Just Culture principles. Only in this way the second step to an increased Organizational Learning, the Reporting Culture can be taken. Only if this Reporting Culture has been activated, it is possible to get data and facts to increase safety by – again – an overall Organizational Learning.
Organizational Learning, Just Culture and Reporting Culture will be the columns on which the improvement of Safety will be based. They have to be established side by side and very closely linked to each other. This openness and the will to establish all three columns inside an organization will increase the efficiency of all already implemented safety barriers and as a positive side-effect it will increase the loyalty and the self-esteem of the operator. In this way operators will get the feeling of being understood and being part of the system and, most important, of getting the impression that they can actively influence the system in the proper direction.

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