公正對安全真的很重要嗎？

陳日新 譯

公正與安全相伴

近年與安全相關之意外事件其調查處理方式是否符合公正原則已變得越來越重要。這主要涉及安全調查，而非安全管理。雖然公正可能以非常間接的方式達成，但落實公正的確可提昇安全，而目前實務上則尚無法完全實現公正。的確；只有在安全專業人員確實履行其職責後，公正才會開始發揮作用並扮演一定的角色，所以我們仍期待事件的結果最後能符合公正的原則，為此可能必需進行持續性的安全調查，以決定某人的作為(或不作為)是否造成事件朝負面發展，並因而導致最後嚴重的不幸結果。

此類安全事件的數量數年來穩定成長。主要原因是：雖然航空科技及其他產業技術發展的概念是使系統能儘量不倚靠人的操作，所以比較不會出錯。但事實則剛好相反，因為科技的發展導致系統更難以駕御、操作更棘手，反而更依賴人的行為能力。因為人行為能力的重要性增加了(不論是正常或異常情況時)，因此如今意外事件發生後的調查重點為除了分析人們的機械性動作是否正確外，也要儘可能廣泛的蒐集其它資料，研究事發當時人們是如何思考及如何決定因應動作，所以意外事件的調查過程中也需要相關當事人的參與及投入。然而即便工作時已經非常小心審慎也非常專業，不論是管制員，飛行員以及其他人員，可能仍會害怕，擔心如果全盤托個人的實際工作情況，當進入司法調查程序後，最終可能會導致自己被判定有違法之虞。這種保守因而懼於吐實的心態最終將扼殺資訊的交流，其結果是影響後續的安全調查及可能進行司法調查程序的正確性。

處理這個問題的一個務實答案是：嘗試是否可免除涉入事件當事者的道德或法律責任，以建立公正文化。公正文化定義如下：

在非嚴重疏忽、非蓄意違規和非破壞性行為的前提下，如果第一線的工作人員或其他人員所做的決策符合其經驗法則和他所接受訓練時，不會因其行為、疏忽或所做決定而受到懲處的一種文化。

然而，此一理想與大多數其他的專業文化一樣有著相同的宿命-知易行難，單單是企圖去描述何謂“文化”就很困難，更別說是去定義它了。因為飛行員、管制員、管理人員、監理機構、檢察官甚至是法官，每個人對公正的認知都不一樣。雖然如此，但公正文化的形成或是否可以形成還不是問題，或許反而要注意是，公正本身並不是解決所有問題的萬靈丹。

何謂公正?

根據字典的定義，公正原則上是一種道德正義，即事情發生後追究責任時應力求公正，將責任歸咎於實際應負責的某個特定個人或某些人，亦或(理論上)一個社會的實體，如某一組織機構。現代社會中的一個極重要的準則是無罪推定原則-除非有事實證據為佐證，否則假定每個人都是無辜的。但這個準則也意味著兩種思維：一是相信所看到的現象可以反應真實情況，二是所有現象間都可以找出因果關係。學者們將後者稱之為“因果信條”，因果信條主要由以下三個假設組成：

1.負面結果(事故、意外事件)發生代表有某件事情出錯了。相反的，可接受結果會發生是因為所有的工作都依據計劃完成，同時工作人員的表現也都合乎預期。這也被稱為肇因不同假設，也就是說做對事情跟做錯的原因並不相同。

2.負面結果的發生必有其原因，而且其原因可以被發現和被改正。其次；事情發生的原因是實際而非難以捉摸的，而且可藉由可觀察到的現象或甚至是真相加以確認。事件的影響係源起其肇因，所以事出必有因，而不是自然發生。（所謂的自然發生事件其代表其事件結果不是外加的，而且也無法從最後結果的組成部分或是從結果可分解組成部份的知識預知。）

3.既然事故的發生事出必有因，而這些原因可被確認。依此類推，所有一切事故應該都是可以事先防範的。

如果我們接受了這種因果關係的說法，而且依此邏輯定義安全，那麼我們可以合理的推論；在事件的處理上公正和公正文化皆會發揮一定的作用。同時；當嚴重傷害已造成時，社會也會合理地試圖尋求公正，或基於公正原則，正確地找出誰才是對傷害造成應該承擔責任的人。然而，在此狀況下我們應該思考的不是這種作法是否合理，而是其是否與安全相關和是否具有安全上的意義。這個問題可依我們所偏好的安全定義而有兩個不同的答案。

第一類安全性（安全性I)：免於不可接受的風險

安全的傳統定義為：將眾多負面結果(事故/事件/幾近錯失)的數目儘可能地降低。由於這是對於安全的第一個；直到最近也還是唯一的定義，所以我們稱之為第一類安全性(安全I)。依照這個定義，事情一旦出錯那麼安全就會跟著出問題。根據因果關係的理論，出問題的時候一定可以找出理由或發生原因。在某些情況下，當不正常的人為操作或“人為疏失”是事件發生的理由或原因時，在某些特定的假設下我們可以合理地預期，對於人為操作部份的處理方式也可以符合公正原則。在第一類安全性的定義中，安全通常與一個已發生的事件相關，亦即導致負面結果的某一事件或失效。但是安全也可以與已發生事件無關，換句話說是與尚未發生的狀況相關，而不是與一已發生事件的負面結果有關。卡爾韋克(Karl Weick)所提出“動態非事件”(dynamic non-event)的安全定義已很適切地將此類狀況包含在內。動態非事件所描述的這類狀況為：人的作用是確保不會出錯(此即為非事件的動態特性)，或當事情出錯時原因不是系統失效，而是由於某人未進行必要或必需的操作步驟，例如省略掉某一個預防措施(或無作為導致失控)。依據第一類安全性的定義，在這兩種情況下，追查究竟發生了什麼事，從而對某人依公正原則進行究責及懲處是很合理的。

第二類安全性(安全性 II)：可達成功的能力

但是安全性還有另一個定義，即所謂的第二類安全性(安全II)。第二類安全性所描述的安全目標為將成功案例（指日常工作）數目儘可能提高。當安全性以此方式定義為不同狀況下系統獲得成功的能力時，則進行安全管理需要瞭解為何事情可以正確的運作，換句話說執行調查的人要對當事人的日常活動有一定的瞭解。安全調查的重點則須放在那些平常不會出錯現在卻不正常出錯的地方。負面結果的發生則應被視為在異常狀況下的正常動作結果，而不是被看成正常狀況下的異常動作結果。因此安全第二類安全性的作法並不是去找出導致負面結果的具體原因，而是試圖去瞭解工作人員通常是如何有效和安全地執行他們的工作。這顯然與安全管理和安全改善有關，反而與公正關係不大。沒有人會想去嚴厲地懲罰一個正確做事的人，即使那些做事的人沒有遵循及落實程序和指導方針。當然，如果工作人員沒有做好自己份內工作(進行裁罰當然仍然是可接受的，雖然這樣不得不依據第一類安全性所述“因果關係信條”來進行調查)。第二類安全性的觀點也明確主張，人們通常都會想把事情做好，雖然事件結果偶爾會出乎意料和危及安全。有別於第一類安全性，第二類安全性不同意肇因不同的假說。相反地，它假設把事情做對和搞砸的原因事實上是相同的，所以如果人們照平常做事的方式執行工作，卻只因結果出錯就進行裁罰就沒有什麼意義。

結論

認為事件發生後需要同步進行司法程序及安全調查

	正常操作	非正常操作
正常操作	結果：通常接受	結果：可能無法接受
	安全性 I：不相關	安全性 I：潛在相關
	安全性 II：絕對相關	安全性 II：相關
	公平正義：不受影響	公平正義：可能有影響
非正常狀況	結果：可能無法接受	結果：很可能無法接受
	安全性 I：可能相關	安全性 I：相關
	安全性 II：相關	安全性 II：相關
	公平正義：可能有影響	公平正義：絕對有影響

表一、操作行為、操作狀況組合及其結果之應對措施

的想法可被視為第一類安全性理論中一項特定觀點的產物，並依此作法(同步進行調查)來尋找事件發生原因。如此；假設肇因不同假說成立，那麼人員就可以依據良心判斷自己是把事情做對還是做錯。但是如果肇因不同假說是不正確的，換言之；即工作人員總會是試圖把事情做到最好。所以當人們按照平常做事的方式執行工作，而有時結果導致不安全情況發生時，他們仍不應受到責難；除非我們同意，即使事件結果是可接受的，他們一樣也要受到指責(因為人們的做事的方法並沒有改變)。依此，那麼合乎邏輯的推論為：不應同意工作人員以平常做事的方式來做事，而是要求他們依照要求的方式來做事（換言之；以我們認為適當的方來執行工作）。但其推行結果想必不是太愉快的。

第一類及第二類安全性等兩種觀點之間的差異可以總結如下：第一類安全性假設負面結果是於正常(或異常)狀況時因行為人異常行為所導致的結果。因此第一類安全性理論著重於研究人們的異常行為(或稱“錯誤”)。如果發現行為疏忽的明確證據，將再進行司法偵查程序，必要時並對當事人加於刑事起訴。因此基本上這被設定為一種嚇阻措施，並以這種方式來幫助提高安全性。反之第二類安全性假設負面結果是來自當事人在異常狀況下的正常操作行為。因此處理重點是藉由對當事人平常的操作行為或其日常表現進行研究，瞭解為何最後導致不安全結果的發生，另外第二類安全性也主張同步進行司法偵查程序則既不需要也沒有價值。安全可以藉由人們加強或強化他們的工作流程獲得提昇(即便他們已經做得很好)，而不是透過強制手段要求他們遵守規定和程序得到改進。

表1為一個四宮格矩陣，說明各種正常/異常操作及正常/異常狀況的可能組合。每個宮格顯示對結果的接受程度和受關注程度，而這些分別代表著“第一類安全性(安全性-I)”和“第二類安全性(安全性-II)”和“公正”所代表的觀點。也可以說，確保存在一個可接受的結果，比在乎是否會出現無法接受的結果更具建設性和成效性。因此，可從表1得出如下結論：公義在有安全缺失(即發生負面結果)時可能較能發揮作用，在相對安全(如日常工作時)的情況時則較無效果。

公正的普世基礎其歷史可追溯至西元六世紀初東羅馬帝國查士丁尼大帝所編纂(民法大典)(Justinian's Corpus Juris Civilis)中的羅馬法(Roman law)，而目前如果要改變這個普世基礎可能機會不大。儘管第二類安全性的觀點具有吸引力和優點，然而現實上我們也必須承認，第二類安全性將與第一類安全性的觀點在未來可見的許多年間仍將共存。但我們至少可以開始留心一下，不要只是按習慣做事情，而是做一些對我們的長期目標來說較具有意義的事情。對社會和廣義公義而言，尋找事發原因及追究誰該擔起責任的作法看來相當是合理的。然而，這種作法對安全性和安全管理而言，即使不是剛好適得其反，其實用價值也非常有限。

譯自Hindsight 18

Is justice really important for safety?

Erik Hollnagel

Justice follows safety

Justice has in recent years become of increasing importance in relation to safety, although more to safety investigations than to safety management. This has not happened because justice is something that actually improves safety, except perhaps in a very indirect manner. Indeed, the role of justice only begins after safety professionals have done their work. It has rather happened because justice can be the inevitable continuation of safety investigations that determine that the actions – or inactions – of someone have worsened the development of an event leading to a serious adverse outcome.

The number of such cases has been on the rise for several years. The main reason for this is that the technological developments, in aviation as well as in other industries, that were intended to make systems less dependent on human performance and thereby presumably less prone to failure, instead have made systems more intractable and therefore paradoxically more dependent on human performance. Since the importance of human action thus has increased (not least in non-routine situations), investigations into adverse outcomes now seek extensive information (data) about how people thought and how they acted in a situation – far more than that which can be obtained by 'mechanical' means. Investigations have therefore come to depend on the participation and contribution of people. Controllers, pilots, and others may, however, be reluctant to report fully on what they have done for fear of ending up under the radar of judicial authorities, even in cases where they have worked in a prudent and professional manner. This reluctance stifles the flow of information with consequences for both safety investigations and the legal procedures that potentially may follow.

The pragmatic answer to this problem has been to try to remove any responsibility or liability from people who might be involved in incidents by building a just culture, defined as:

"A culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated."

Achieving this is, however, easier said than done, a fate it shares with most other types of specialised

cultures. Attempting to describe, let alone define, just culture is hard, not least because justice is understood differently by pilots, controllers, managers, regulators, prosecutors, and judges. The existence or possibility of a just culture is nevertheless not the issue here, except perhaps to note that it is not a panacea.

What is Justice?

According to the dictionary, justice is the principle of moral rightness in the sense of determining in an impartial manner whether the responsibility for something that has happened can be assigned to a specifi c person or persons – and in principle also to a social entity such as an organisation. It is a paramount principle of modern societies that no one should be considered responsible except on the basis of facts. But this principle implies both a belief in the reality of the facts presented and a belief that causal links can be established among them. The latter, known by academics as the causality credo, consists of the following three assumptions:

- Adverse outcomes (accidents, incidents) happen when something goes wrong. Conversely, acceptable outcomes happen because everything worked as it should and because people behaved as intended. This is also called the hypotheses of diff erent causes, meaning that the causes for what goes right are different from the causes for what goes wrong.
- Adverse outcomes consequently have causes, which can be found and treated. Causes are real and can be established as facts – or even as truths. Because effects follow from causes, outcomes are resultant rather than emerging. (Emergent outcomes are not additive and neither predictable from knowledge of their components nor decomposable into those components.)
- Since accidents have causes and since these causes can be found, it follows that all accidents can be prevented.

If we accept the causality credo, and the definition of safety that follows from it, then it is reasonable that both justice and just culture play a role. It is also reasonable that society tries to seek justice when serious harm has been done, or try to find out whether there is a case for justice in the sense that someone rightly can be said to be responsible for the harm done. The question that is considered here is, however, not whether this is reasonable, but whether it is relevant and meaningful for safety. There are two different answers to this question depending on the preferred definition of safety.

Safety-I: Freedom from Unacceptable Risk

Safety is conventionally defined as a condition where the number of adverse outcomes (accidents / incidents / near misses) is as low as possible. Since this is the first definition of safety, and until recently also the only one, it has been called Safety-I. It follows from this definition that safety becomes an issue when something has gone wrong. According to the causality credo, when something goes wrong there is a reason, a cause, that can be found. In cases where that reason or cause is an unusual human action or 'human error', it makes sense (under certain assumptions) to see that justice is done with regard to that human action. In Safety-I, safety is usually linked to an event, namely the event or failure that results in an adverse outcome. But safety can also be linked to a non-event, namely the absence rather than the occurrence of adverse outcomes. This has been nicely captured by Karl Weick's definition of safety as a dynamic non-event1. Under those conditions the responsibility of the human is to make sure that nothing goes wrong (hence the dynamic nature of the non-event), and when something does go wrong it is consequently because someone did not do what was necessary or required, i.e. there was an omission of a preventive action (or a loss of control) rather than a failure. In both cases it may be reasonable to pursue what has happened and to involve justice in assigning the responsibility for the action to someone.

Safety-II: Ability to Succeed

But there is also another definition of safety, called Safety-II, according to which safety is a condition where the number of successful outcomes (meaning everyday

	USUAL ACTIONS	UNUSUAL ACTIONS
USUAL CONDITIONS	Outcomes: Usually acceptable	Outcomes: Possibly unacceptable
	Safety-I: Not relevant	Safety-I: Potentially relevant
	Safety-II: Definitely relevant	Safety-II: Relevant
	Justice: No interest	Justice: Potentially of interest
UNUSUAL CONDITIONS	Outcomes: Possibly unacceptable	Outcomes: Very likely unacceptable
	Safety-I: Potentially relevant	Safety-I: Relevant
	Safety-II: Relevant	Safety-II: Relevant
	Justice: Potentially of interest	Justice: Definitely of interest

Table 1: Reponses to combinations of actions and conditions

work) is as high as possible. When safety is defined in this way as the system's ability to succeed under varying conditions, then safety management requires an understanding of why things go right, which means an understanding of everyday activities. The focus of safety investigations must place what exceptionally goes wrong in a context of what frequently goes right. Adverse outcomes are seen as the result of usual actions in unusual conditions rather than unusual actions in usual conditions. Safety-II therefore does not look for specific causes of adverse outcomes, but rather tries to develop an understanding of how people normally do their work effectively and safely. While this clearly is of interest to safety management and safety improvement, it is of little interest to justice. No one seriously wants to prosecute people for doing their work well, even if that means that they did not follow procedures and guidelines to the letter. (It may, of course, still be reasonable to prosecute them in situations where they did not do their work well, although that cannot be done without returning to the causality credo.) The Safety-II view makes clear that what people usually do is done for good reasons even if the outcome is occasionally unintended – and unsafe. Unlike Safety-I, Safety-II does not subscribe to the hypothesis of different causes. It is assumed instead that the reason why things go right and things go wrong are the same. It therefore makes little sense to prosecute people for doing what they normally do, just because it turned out badly.

Conclusion

The need for judicial process to parallel safety investigations can be seen as a product of a particular view of safety (Safety-I) and of the search for causes that follows from that. This assumes that the hypothesis of different causes is right, and that people can make a moral judgement on whether what they did was right or wrong. But if the hypothesis of different causes is wrong and that instead people always try to do the best they can, then we cannot claim that it is reprehensible to do what they normally do in cases where the outcome is unsafe, unless we also claim that it is reprehensible in the cases where the outcome is acceptable. The logical consequence of that is that we should not allow people to do what they normally do, but instead oblige them to do what we think they should do (to work as we imagine work should be done). The consequences of that are unpalatable, to say the least.

The difference between the two views can be summarised as follows. Safety-I assumes that adverse outcomes are the result of unusual actions under usual – and perhaps also unusual – circumstances. It therefore becomes essential to study unusual actions (a.k.a. 'errors') and to complement the investigation with criminal prosecution if there is clear evidence of gross negligence. This is presumed to act as a deterrent and in

that way support the improvement of safety. Safety-II assumes that adverse outcomes are due to usual actions under unusual circumstances. It therefore becomes essential to study usual actions or everyday performance in order to understand unsafe outcomes and there is little need of or value in trying to accompany the investigation with a process of law. Safety can be improved by strengthening or reinforcing what people do well, rather than by obliging them to comply with rules and procedures.

Table 1 shows a matrix with four cells which represent the possible combinations of usual/unusual actions and usual/unusual conditions. Each cell shows the degree of acceptability of the outcome and the extent of concern which this represents to the perspectives represented by 'Safety-I' and 'Safety-II' and to Justice. It can be argued that it is more constructive – and productive – to ensure the presence of acceptable outcomes rather than the absence of unacceptable outcomes. The conclusion which may be drawn from Table 1 is therefore that justice may play a role in cases where safety is missing (adverse outcomes) but not where safety is present (everyday work).

There is probably not much hope of changing the common basis of justice today, which dates from the early sixth century codification of Roman law in Justinian's Corpus Juris Civilis. Despite the attractiveness and advantages of a Safety-II perspective, we must realistically accept that it will co-exist with a Safety-I perspective for many years to come. But we can at least begin to be mindful about it, so that we do not do things out of habit but rather because they make sense vis-a-vis our purpose. While finding causes and holding people responsible may be reasonable for society and for the general sense of justice, it is of very limited practical value, if not directly counterproductive, for safety and safety management.

From Hindsight 18