Safety Culture

Assessing and Changing the Behaviour of Organisations

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Organisational Safety-Culture Theory

Safety-Culture Theory

The concept of safety-culture emerged from the analysis of the 1986 Chernobyl nuclear power plant accident. Having delivered a severe political and social shock to Europe it was an imperative that the causes of this event were fully understood.

Although the initial causes were considered to be engineering design failings with contributing operational equipment failures, there remained considerable unease that these immediate causes may not be the root cause. Because of these misgivings and the severity of the accident, there were moves towards a standard industrial practice of inquiring more deeply into the root cause of accidents. This required looking beyond the immediate engineering and technical failures. The Chernobyl event analysis applied this approach.

Taking investigations beyond engineering failures brings into focus the performance of ‘the person’ managing, designing, constructing or operating hazardous facilities. This embraces the psychology of why people behave as they do in the workplace and how they interface with complex technology. In addition, the work environment’s social factors that shape people’s beliefs and attitudes towards safe operations become important.

From the technical inquiries into the Chernobyl incident with a concentration on the ‘person dimension’, it emerged that inadequate organisational safety-culture was a possible major contributor to the accident. Retrospectively, it was also considered a possible contributor towards many historic accidents where the root cause was not necessarily due to less than optimum engineering design or equipment failures, but people’s ‘poor’ human performance.
The inquiries suggested that the designers and operators ‘good’ safety-beliefs, attitudes and behaviours act as additional accident barriers. The human performance element, safety-culture, in accident causation cannot be ignored. Safety culture emerged from the Chernobyl experience as a complex, psychological, human behavioural phenomenon that needed to be addressed. Some safety-culture definitions are given in Appendix I.

Evidence suggests that if safety-culture is not understood and managed then its possible weakness can lead to the failure of the designed engineering or procedural safety barriers.

Safety-culture theories indicate that different levels of an organisational hierarchy have different influences on the safety-culture. These levels need to be differentiated. In this text an organisation is considered as having four levels:

1. executive and senior management
2. middle managers
3. supervisors
4. The workforce teams. (These can be plant designers, the plant operators, maintenance engineers, technicians and contractors, and so on, who are assumed to work under a supervisor.)

The employees, or the staff, are the aggregate of the workforce and management.

There have been many contributors to safety-culture theory with various models arising, for example Turner 1998, Rasmussen 1997, Reason 1997 and Leveson 2004. However, to enable a practical understanding of the phenomenon a culture model attributed to original work by E. Schein in his study of business culture is introduced. For this text it is termed the ‘generic culture model’ as the key elements of the model can be considered as universal to most culture types. A discussion of the model’s components may be helpful.

The work by E. Schein, who examined US business cultures, has generic elements transferable into the safety discipline. The possibility of transferring the concept was first proposed by specialists at the International Atomic Energy Agency (IAEA) and the concept was in due course developed by the Agency
into a methodology for ‘measuring’ safety-culture in high-hazard industrial complexes.

The theory suggests that organisational culture arises from shared beliefs. These beliefs driving an organisation’s collective behaviours are not always overt but in reality are buried beneath observable supportive layers of values, attitudes and artefacts. It is suggested that beliefs and hence culture can only be assessed and interpreted indirectly through observing human behaviours.

The layered generic model’s culture elements can be summarised as:

- beliefs
- espoused values
- attitudes
- artefacts
- behaviours.

This is shown schematically in Figure 1.1.

As a combination of the elements; beliefs, values, attitudes and artefacts, the culture manifests itself through behaviours or human performance. Although behaviours have strong links to the culture elements, the generic model suggests that an organisation’s shared beliefs in particular mould staff behaviours. In addition, if a set of shared beliefs and associated behaviours deliver organisational ‘success’, their validity will be reinforced leading to a stable and enduring culture.

An alternative presentation is given Figure 1.2. Here organisational culture is considered to be like onion layers. Within are hidden shared beliefs. To understand a culture, the elements or the layers have to be peeled back or more practically, each layer needs to be analysed to reveal the basic organisational beliefs. Within the context of organisational safety-culture, if the safety-beliefs cannot be revealed then little can be concluded about an organisation’s safety-culture or the motivation behind its members’ safety-behaviours.
Figure 1.1  Safety-beliefs and espoused values leading to attitudes and safety-behaviours

Source: Schein, E. Reproduced by the kind permission of John Wiley & Sons.

Figure 1.2  Schematic of safety-culture layers

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BELIEFS

Beliefs are emotions and assumptions that something is true. They can become deep seated to the extent that a person unconsciously subscribes to them. Because they are deep seated and fundamental they are usually stable. ‘Good’, shared safety-beliefs, if unconsciously adopted with associated good safety-behaviours, can deliver business success. On the other hand, ‘poor’ shared beliefs can give a perception of business success. Usually this is illusionary as the associated poor safety-behaviours may eventually lead to a severe event or the progressive deterioration of the business.

Examples of ‘good’ shared organisational safety-beliefs are:

We believe:

- The safety of staff, contractors and the public is our number one priority in all circumstances
- *Accountability* for safety rests at all times with managers
- *Responsibility* for safety rests with all employees
- In safety vigilance at all times
- Human error is normal and can be expected
- Our engagement in safe behaviours is necessary for safe operations
- Human errors are a learning opportunity
- People are fallible and will make mistakes
- Legal compliance is a minimum requirement and we strive to do better
- In a ‘just’ safety-culture and that people do come to work intending to do a good job.
Some mature organisations have only one or two founding beliefs with others arising naturally from these. Beliefs are usually supported by safety-culture values that are conditions and actions that are held in high esteem by an organisation because they assist in fulfilling beliefs. As discussed later, values are regularly espoused or spoken by an organisation.

In general terms, beliefs are not inherent to individuals; they are learnt, shared and arise from a common experience of organisational ‘survival’. Although reflected in espoused values, artefacts and personal attitudes, beliefs become overtly observable through behaviours. Where beliefs are shared and reinforced with values and artefacts a sense of community and group cohesion arises.

Safety-beliefs cannot be seen or measured even though they give rise to behaviours. They can, however, usually be understood indirectly through the supporting elements, the espoused values, attitudes and artefacts. Even with these observable elements however, an organisation’s true safety-beliefs may still remain hidden. The observed organisational elements may be indicating ‘good’ safety-beliefs, but may in reality not be reflecting the true beliefs and be misleading. This misalignment is usually identified through the observation of staff’s ‘poor’ safety-behaviours. The behaviours will expose the truth, or falseness, of espoused values, attitudes and artefacts and hence the truth, or falseness, of the shared safety-beliefs.

Artefacts, spoken values and attitudes that are supportive of good safety-beliefs are usually indicative of an organisational commitment to safety and observable good organisational safety-behaviours should contribute to confirming that there are good shared safety-beliefs.

One should not overwork the generic model, if indeed it can be considered truly generic. There are internal organisational feedback loops and external effects.

Feedback on the viability of beliefs arises from behavioural consequences. These consequences if not delivering ‘business success’ may lead to belief change. Positive feedback arises from safety achievements, for example, or meeting business targets, whilst negative feedback would be an operational safety incident or plant process shutdown. The quality of feedback can be influenced by the human social environment. Within an organisational hierarchy individuals have their own expectations, social needs, their survival needs.
These are fulfilled by various behavioural tactics. These adopted strategies can support or hinder line managers, peers or their subordinates in shaping the culture and stabilising beliefs. The employee’s age distribution, experience, the exercising of perceived organisation status, or the strength of an organisation’s sub-cultures can influence beliefs and behaviours. An open dialogue culture is an approach by which an organisation can ensure the human social needs are managed and the adopted strategies are directed to positively supporting shared safety-beliefs. Finally, superimposed on the broader feedback loops is the influence of the senior management through their specific business requirements, safety expectations, resource control and authority.

External influences such as public pressure, regulatory interventions and the national culture can modify an organisation’s perception of its success and the adequacy of its beliefs.

The layered generic model is helpful but perhaps not perfect.

Beliefs as ‘truths’ cover many aspects of human experience. Religions, politics, various social interactions and family cohesion are based on belief platforms. This arises from people’s life experiences being evaluated, and over time influencing the collective sharing of cultural social beliefs. Within an industrial organisation safety-beliefs of individuals are influenced not only by general experiences but more specifically by the work environment. This is a natural extension of concept of learnt beliefs.

An individual’s beliefs are formed from life’s events. They arise, inter alia, from interactions within the family, through formal education, friendships and workplace colleagues. An individual’s behaviours are an expression of accumulated long-term beliefs and supporting values which stabilise and if delivering ‘success’ become resistant to change.

Individual’s beliefs are reinforced, modified or changed depending upon the consequences of their personal social behaviours. In this context consequences arise from interactions with peers and authority figures. If behaviours are misaligned with the group’s ‘cultural’ norms, the consequences to individuals may be unwelcome and unpleasant. Within an established culture behavioural consequences for an individual can be delivered by peers, parents, teachers, a management hierarchy, a professional society, a government body or ultimately through a society’s legal code. With adverse consequences, belief change may be necessary to modify behaviours.
The converse is true. There can be supportive behavioural consequences, welcomed by the individual and giving positive belief reinforcement.

A society’s beliefs and behavioural norms historically deliver societal ‘success’ and in the interests of continuity, the norms are enforced by the group. Understanding and conforming to a society’s accumulated beliefs and behavioural expectations assists individuals in achieving their goal of ‘survival’ within a group environment. Since group membership has ‘survival’ advantages, understanding social beliefs and expectations is in an individual’s ‘self interest’.

Within a social group individuals usually maintain their group membership by sharing common beliefs and aligning with the behavioural norms. If delivering group success this commonality reinforces the faith in the group’s beliefs, entrenches the behaviours and brings group culture stability. If, however, the group behaviours fail to deliver success the beliefs and behaviours may change.

Situations can arise where group peer pressure is imposed to modify an individual’s beliefs. This may invoke superficial behaviour. The individual may conform and reflect changed beliefs whilst their real beliefs remain hidden. If real beliefs are hidden in possibly a hostile group environment, this can lead to stress for the individual through internal self-conflict.

If organisational belief change is required individuals develop uncertainty, confusion and perceived loss of control. Changing long-held beliefs can be difficult, uncomfortable and is usually resisted. Because of this, organisational change has to be sympathetically managed.

On occasions, however, safety-belief change needs to be rapid. If too slow, an organisation may be overtaken by events rapidly deteriorate and go out of business.

Shared safety-beliefs are fundamental to developing a ‘good’ organisational safety-culture and it is in generating and embedding beliefs where management’s influence is most valuable. Since organisations have different business objectives, have variable management skills and different levels of safety commitment, beliefs can vary. As previously noted they can extend from the sound belief that ‘safety will be the organisation’s number one priority’ to a less viable belief that the organisation needs only ‘to just comply with safety law and no more’. In either case an important feature is that the adopted
safety-beliefs arise at the hierarchy’s highest level, are learnt, impressed upon the staff and become shared. From these adopted beliefs arise the behaviours that may enhance organisational safety or, if the beliefs are inappropriate, be detrimental.

Evidence indicates that the effectiveness of an organisational culture and its contribution to safety risk minimisation is dependent upon the senior management’s commitment to organisational safety as a business risk and encouraging ‘good’ shared safety-beliefs. Senior managers are the organisation’s safety-culture custodians and shapers.

As an example of management’s role consider a conceptual group of senior managers accountable for a hazardous industrial chemical complex. Assume their current safety-belief is one of having minimal compliance with safety law whilst emphasising the business belief that high chemical production output is the priority. The success of this strategy is reinforced by the organisation having had no recent significant safety losses or any regulatory interventions. These ‘positive’ consequences give belief stability that minimal compliance achieves business success whilst demonstrating management control. The belief in minimalist compliance is then impressed on the organisation through the senior team’s spoken values, attitudes, a limited interest in safety issues and possibly minimalist safety documentation. These behaviours strongly align with the belief.

The belief of a minimalist approach to safety may be incorrect and suggests the management’s approach to business risks generally could be inappropriate. There may be insufficient scrutiny of the plant such that with the passing of time its true safety and technical condition becomes hidden. However, as far as the management are concerned, everything is fine and their safety-beliefs become ‘the truth as they see it’.

Through their beliefs the management may have created a climate of limited care towards staff safety. Many industrial examples can be given. Because of the belief that safety-performance will be adequate with just legal compliance, managers begin to pay scant attention to operational safety and overtly focus on production. In such a postulated situation if management’s organisational safety-beliefs are not supporting good safety, a condition can arise where the management’s perception of the safety status of the plant becomes misaligned with that of the workforce. The workforce is fully aware of the plant’s hazardous chemicals and places top priority on safety. In this scenario the workforce safety-beliefs are not aligned with the management’s beliefs. Productivity is essential
but secondary. For the workforce the priority given to chemical handling safety has become entrenched possibly by experiencing first-hand the consequences of mismanaging the hazard. In their own self-interest the workforce may have established ad hoc safety-behaviours for handling the chemical plant. These become learnt behaviours and possibly independent of any organisational management system. The behaviours, good or poor, are adopted for ‘survival’ and passed down to each workforce generation. The workforce acts as a sub-culture. Perversely, the sense of self-preservation and the sub-culture’s imposed safety rules may be all that keeps the business from a major event.

In this mismanaged environment, an individual’s beliefs may come under pressure. They may consider it against their self-interest to espouse safety concerns to peers or seniors. If they do it may be interpreted as having the potential to interfere with the business priority – production. The behaviour of questioning or challenging may not be welcomed and possibly result in negative individual consequences. In this arena it is advantageous for an individual to follow the management’s safety-beliefs, avoiding a challenge and any adverse consequences.

In an established organisation the management’s production first belief may be organisationally shared and a staff norm. For example, bonuses may be attached to production targets and be an important income supplement. If an individual’s safety concerns are misaligned with the group’s norms, peer pressure can be bought to bear. This atmosphere may establish ‘fear culture’. Here an individual’s true safety-beliefs may remain hidden and because of the self-interest of remaining in the group, an individual may continue to adopt the group’s poor safety-beliefs, attitudes and behaviours. This is symptomatic of the failure of dialogue and communications. With openness inhibited the opportunities for management to receive real plant-safety information are reduced. Workforce input to safety discussions is not encouraged and diverse safety views fail to emerge. A ‘plant is safe’ consensus can emerge reinforcing the management’s belief that process safety and performance are adequate. The adopted management beliefs and minimalist safety strategy appear to be sound.

Most will recognise a ‘fear culture’ and the following are possible consequences from adopting a questioning and challenging behaviour within such a culture:

- Appearing to be stupid/silly
- Appearing to lack knowledge
• Seemingly incompetent or unprofessional
• Considering others are far more knowledgeable and experienced
• Being seen as weak at a moment of decision
• Letting the team or side down, not being ‘on board’
• Being possibly seen as purposefully obstructive
• The cause of schedule delay or possibly adding cost
• Afraid of losing one’s job
• Afraid of a manager’s personality or authority
• Actually having little faith in one’s assessment of a safety issue
• The ‘new boy’, best to be ‘seen and not heard’
• A fear of not being ‘liked’ or ‘accepted’ by the group.

All these issues are natural human frailties. However, if ‘fear’ exists, matters of safety importance in facility design, build or operation may pass unchallenged or be suppressed.

In this hazardous chemical-plant scenario the senior team’s poor safety-beliefs have had a significant effect on people’s safety-behaviours and the shaping of the safety-culture. Matters not being discussed openly or a fear culture existing can lead to a behaviour of hiding degraded safety conditions. This and the stability of the management’s poor safety-beliefs can suggest a significant deterioration in risk management.

The converse of this scenario is true. Here there would be a strong senior management commitment to integrate safety into all business activities. Through the business strategy and documented processes the senior team focus on the fundamental belief in the importance of operational safety as a business risk to be managed. Emerging from this safety-belief will be observable good safety-behaviours, safety attitudes and an overt commitment by managers to an open culture. This scenario is a frequently observed good practice in high-
hazard industries and contributes profoundly to such industries being low-risk enterprises.

Because human performance arises from learnt beliefs, a good safety-culture cannot simply emerge and be self-sustaining. It has to be encouraged by senior managers, then sustained with peer discipline and overt management safety behaviour leadership. The alternative will be an organisation liable to pockets of safety excellence and areas of safety chaos.

If an organisation is failing to achieve good safety-culture expectations, a fundamental safety-belief change at senior management level is usually required. This is then cascaded down the organisation. Any currently held management beliefs will be stable and change at this level can be threatening, destabilising and bring uncertainty to senior management. This is perhaps particularly so for a management where old certainties bring control and predictability. Bringing about such change takes time, anything up to a year or more.

On the other hand, although initially threatening an enhanced safety-culture can give many long term business benefits. If senior management adopt a strong belief that safety is a business priority organisational safety-behaviours will usually be good. In addition, the associated business rewards are, inter alia, low injury statistics, a committed management, high morale and a commercially effective workforce.

Developing a good safety-culture has wide business benefits. Research reveals that a good safety-culture is more that just the sum of individuals’ safety-behaviours but that it has an intangible attribute. There is a noticeably cohesive organisational business ‘spirit’ that develops from safety-behaviours being integrated into all work activities. As important is the noticeable transfer to other functions of safety-management system principles giving an integrated approach to business. The belief in the business importance of safety has at this stage embedded itself as a part of the organisation’s spirit and identity.

ESPOUSED VALUES

Previously it was suggested that there is linkage between shared organisational safety-beliefs and how these beliefs are revealed in observable safety-behaviours. This linkage is achieved through the elements, espoused safety
values, attitudes and visible artefacts. The organisational strength of these elements can be indicative of strong shared safety-beliefs.

Espoused or spoken safety values are central principles held by the organisation’s members and around which decisions are made, tested and actions occur. Managers and workforce place importance on them as preferred desirable conditions that assist in fulfilling beliefs. Values enable an organisation’s shared safety-beliefs to be upheld. For example, if the belief ‘safety is our top priority’ is a conviction this leads to supporting safety values that enable the belief to be fulfilled. Values gain particular strength when espoused and practiced by the senior managers within their role of culture shaping.

Safety values are spoken but they can also appear in documents, an intranet or posted around a facility. In this way they become embedded organisational artefacts. Safety values like beliefs need to be specifically generated, owned and shared by an organisation. Developed with senior management, this is an important cross-organisational activity in which most employees can engage. The beliefs and values, as an integral part of a management system, would be periodically reviewed and rejuvenated to meet the changing needs of the business.

Although values are specific to meet an organisation’s safety needs, the following are some examples:

We value:

- Our individual attention to safety is a condition of employment
- That everyone is responsible for safety, our own, others’ safety and the protection of the facility
- That respect is given to all safety views as everyone has the right to question and report safety issues
- People’s interventions to ensure all potential health and safety incidents are prevented
- Everyone has the right to challenge on safety issues
- That the organisation strives for an open dialogue culture
• That teamwork to resolve safety matters is strongly supported

• That all events and near misses are reported as we recognise that even minor injuries or events are important

• Thorough safety training and competence as essential for safe working

• That we regularly check and report our safety-performance.

These values are considered further in Chapter 3 of the text.

It is noted that the values are typically associated with actions enabling safety-belief fulfilment and, inter alia, will develop into expected organisational human performance behaviours.

Shared values that are frequently espoused by management and reinforced through supporting good safety-behaviour norms will eventually become engrained within a business. To achieve a stable safety-culture a challenge for managers is to ensure that, once established, safety values, like beliefs, are owned, periodically refreshed and regularly communicated.

An issue for the workforce is the interpretation of managers’ espoused values. On occasions managers’ spoken values can be misleading if the subsequently observed safety-behaviours are misaligned. For example, if ‘team working’ is an espoused value yet receives no management recognition or acknowledgement then a contradiction arises. For the employees the observation is ‘what is said’, not ‘what is done’. A behaviour that fails to align with the stated safety value degrades the efficacy of the value.

When stated, values may lead an observer into misunderstanding the real safety-beliefs and hence the true organisational culture status. Values need to be analysed with caution and set in the context of the observed employee behaviours. If there is misalignment between behaviours and the stated values this may indicate that the deep-seated safety-beliefs are not shared or fully supported within an organisation. Here, values may be espoused for a purpose other than a true demonstration of organisational commitment to safety. They may be to appease a regulator, the public or possibly the workforce.
The converse is true. Good, shared, owned and understood safety values will contribute to good safety-behaviours and provide business benefit.

ATTITUDES

Attitudes can be considered as a state of mind towards a subject or an object. For example, consider a maintenance team that experiences no negative feedback from gaining a personal or collective advantage from poor safety-behaviours. These may be rushing tasks to save time by taking procedural short-cuts or using unapproved equipment to do the task. With no negative feedback it may become an embedded team belief, a state of mind, that the adopted behaviours are condoned by supervisors and managers. No feedback becomes positive feedback for belief reinforcement leading to a less than diligent attitude towards maintenance tasks. This lack of diligence, a careless attitude, can become an accepted group norm and ignoring procedures or using inappropriate equipment can become an unchallenged part of the team’s cultural behaviour. This poor behaviour can, if not arrested, pass to new generations of maintenance workers.

For designers and in operations appropriate safety attitudes are an important safety-culture element that needs to be trained at all organisational hierarchy levels. If inappropriate group or individual attitudes occur they are immediately obvious to other staff members and in a good safety-culture the attitudes will be challenged.

Some unsafe attitudes that can develop are:

- Past personal performance justifies current and future performance
- Heroics
- Invulnerability
- The best in the field, we have nothing to learn – arrogance
- Look after ‘our’ group not the organisation
- Eleventh-hour excitement (lose safety focus and become careless close to task closure)
• Love a crisis; ‘fire-fighting brings out the best in people’
• The facility is inherently – safe nothing can go wrong
• The engineering and systems will always protect us
• Lack of safety unease
• Financial decisions affect only the balance sheet, not safety
• Organisational structural changes have no effect on safety; they just improve efficiency and competitiveness
• Procedures can occasionally be ignored.

Some attitudes that can contribute to good safe behaviours:

• Safety questioning
• Safety challenging
• Conservative safety attitude to resolving problems
• Unease about safety
• Mindfulness, continual vigilance at all times to identify deviation from normal operations or practice
• Supportive of team problem-solving
• A concerned attitude for one’s personal and others safety
• A ‘nothing is routine’ on a high-hazard facility
• We can always learn and improve – humility
• There are inherently safe features, not inherently safe plant
• The engineered systems as safety defences are only as good as the people nurturing them
• Systems can and will degrade
• Cooperative attitude – dialogue culture
• Supportive attitude towards individual team members – dialogue culture
• Readily open to discuss our safety problems to seek resolution – dialogue culture.
• For hazardous industries positive attitude expectations are required to be communicated as a frequent daily diet.

New people, particular young employees, wishing to be accepted by a group, will quickly adopt the group’s attitudes. This makes them particularly vulnerable to accidents if individual or group attitudes are misaligned with good practice. Further, ‘measuring or testing’ attitudes requires to be treated with caution. Observed attitudes may not be a true reflection of how a person really feels; true beliefs may be hidden particularly if a ‘fear culture’ has developed. Here, if challenged or questioned on safety, an individual or group may adopted the ‘expected attitude’ in support of their immediate self-interest.

ARTEFACTS

The robustness of an organisation’s safety-culture can be indicated by the presence or absence of artefacts. These contribute to establishing a safety climate as a reminder to all staff of their shared safety-beliefs, values and behaviours.

Whereas safety-behaviours are considered to be the informal dimension of safety-culture, artefacts can be the formal, documented and physical reminders dimension. Artefacts can include aspects of the informal dimension such as organisational safety activities and rituals. A significant formal artefact is an organisation’s documented safety-management system with its safety policy and supporting procedures. This is normally integrated into the business quality management system.

Artefacts are typically symbols of an organisation’s identity. Some formal and informal examples are given.
Formal artefacts:

- The organisation’s environment, health and safety mission and policy statement
- The safety-management system, corporate procedures and processes
- Safety progress reports and programmes
- Plant design safety cases
- Public, annual safety reports
- Safety guidance pocket books
- Safety posters in the plant
- The company logo
- The company flag
- The safety news bulletin
- Results of questionnaires on safety-culture climate
- Safety awards
- The quality and standardised work attire
- Collated safety-performance data.

Informal artefacts:

- The technical jargon used by an organisation
- Corporate stories about which the organisation has pride
- Company rituals – safety schemes, the annual safety conference
• Partitioned walls and private offices (may show the importance placed on status and hierarchy that may hinder dialogue)

• Reserved car parking (suggesting the importance of status and hierarchy)

• People’s posted photographs showing safety merit or achievement

• A well-maintained safety wall board; statistics, posted achievements, conferences, lectures

• A computer-based safety-culture intranet.

Artefacts can generate pride and give a visual association with the organisation’s values. As can be regularly seen with familiar brand names, there is a psychological power in symbols. They assist in developing organisational ‘team spirit’ and group cohesion.

Some everyday examples of artefacts are given in Figures 1.3 and 1.4.

In Figure 1.3, the artefacts are the people’s uniform, the lines of soldiers and the weapons. These give clarity that there is a cohesive ‘team’. The artefacts also demonstrate purpose, tradition and learnt common beliefs; they are military. The uniforms and the ordered ritual suggest a disciplined organisation. To achieve this, the artefacts reflect a command and control management regime with a rigid culture of compliance. By adopting a particular command culture and being a cohesive and obedient body the group appears successful.

In this example the observation of the artefacts suggests some preliminary understanding of a group’s culture and a hint of the shared beliefs. Artefacts can, however, mislead. The group may not be a military body but actors on film location. Observing the artefacts out of context, in deciphering the organisational safety-beliefs, would have been unhelpful in this case.

An industrial parallel could be an organisation’s safety-management system. As an important artefact such a system documents the processes and mandatory procedures required to safely operate high-hazard plants. Although the system may exist, meets all expectations and is available, it may not be owned by the senior team, used or kept up to date. A belief structure could exist where business risk management excludes safety as a priority. An
outcome of this could be plant that is operated, not by complying with the management system, but by ad hoc local rules, through custom and practice and with a minimal investment in safety requirements. The artefact suggests a strong commitment to safety. However, in this case it is a misleading safety-culture element that is not used as a management tool for lowering safety risks but produced for other reasons; possibly to pacify legal or regulatory requirements.

Figure 1.3  A military parade

The flag, Figure 1.4, is readily recognised and is an artefact representing an ‘organisation’, in this case the United Kingdom. The flag gives identity and because of the shared national experiences ‘under the flag’ it visually represents the nation’s values and beliefs.

Figure 1.4  The Union Jack
When a national leader is espousing values and beliefs the address is normally against the backdrop of the national flag, subliminally reinforcing the national culture. The relationship between the espoused values, the leader’s beliefs, the country’s beliefs and the artefact, becomes visually dominant.

Figures 1.5 shows a specific recognisable artefact that is identified with a particular profession. When seen, it suggests the profession’s purpose and values.

Figure 1.5  A barrister’s court wig

Figure 1.6 shows formal documented artefacts that support safety-culture. Personal protective equipment, its quality and associated procedures are examples of readily recognised safety artefacts.

Figure 1.6  Documents and equipment – artefacts
Some artefacts are particularly difficult to observe. For example, people’s corporate knowledge, the ‘war stories’ of safety experiences, are artefacts. These shared experiences, which are safety lessons to be learnt, are difficult to capture and can soon be lost.

Apart from an organisation’s safety-management system, artefacts generally are a low-cost investment and relatively easy to maintain. If there are only a few artefacts, safety-management becomes difficult as there will be limited documentation to guide, nourish and support the culture. Artefacts can be one indicator of a good organisational culture but can occasionally give misleading signals on culture status. As noted, an organisation can have excellent documented procedures that are not actually applied. Here the safety-management system is not owned by the organisation and if not a valued business artefact it fails as a demonstration of commitment to public and workforce safety. A paucity of safety artefacts may be indicative of an organisation’s limited belief in the importance of safety.

BEHAVIOURS

By establishing good safety-beliefs, safety-management becomes a matter of influencing and directing good safety-behaviours. These are the most visible expression of safety-culture.

Culture has generally been described as deep, broad, and stable. Also, having a large psychological and social element it is not a superficial phenomenon. Further, culture stability infers development over time, with its robustness tested against many internal and external factors. Because of this, detailed behaviours at each hierarchical level in an organisation cannot be generically prescribed as they emerge from the shared beliefs, become tacit rules and lead to good safety behavioural awareness. Detailed behavioural sets emerge from within an organisation on a platform of safety-beliefs that meet the business needs.

Chapter 3 develops the concept of expected role behaviour, but only within the framework of a safety-culture review process example. They are not prescriptive or universal; for example, safety-behaviours for designers will not be the same as for plant operators, although there will be some common elements. To present generic safety role-behaviours can only be guidance. However, experience suggests that there are some overarching common behaviours at various hierarchical levels that assist in promoting good
safety-culture. These generate further supporting detailed behavioural subsets which when shared within an organisation form an integrated safety awareness. It is emphasised the overarching behaviours noted are samples and organisations need to generate, encourage and implement their required safety-behavioural expectations.

Executives and senior managers:

- Give visible leadership and commitment to safety
- Communicate, espouse and implement agreed organisational safety-beliefs and values within a dialogue culture
- Challenge and question on safety issues at all times
- Have a positive attitude to safety
- Exercise a transformational and mentoring management style
- Actively delegate safety responsibility within their framework of safety accountability
- Generate trust and openness
- Personally commit to and exercise good (physical) safety-behaviours.

Middle managers:

- Give visible leadership and commitment to safety
- Communicate, espouse and implement agreed organisational safety-beliefs and values within a dialogue culture
- Challenge and question on safety issues at all times
- Have a positive attitude to safety
- Are periodically actively engaged in facility safety interactions
Demonstrate safety is a business priority in operations

Actively generate trust and openness within facilities

Have a humanistic management practice

Personally commit to and exercise good (physical) safety-behaviours.

Supervisors:

Demonstrate safety leadership

Have a positive attitude to safety issues at all times

Challenge and question on safety issues

Support the teams’ safety decisions

Motivate teams for safety improvements

Develop trust within teams

Communicate, espouse and implement agreed organisational safety-beliefs and values

Promote an open safety dialogue culture

Promote a learning culture

Be seen to personally display good (physical) safety-behaviours.

Workforce:

Are actively involved in safety initiatives

Demonstrate autonomy through questioning and challenging on safety issues

Show risk perception and risk aversion with safety demonstrably the first priority
• Actively promote a cohesive team spirit
• Self-motivated to be compliant with systems
• Communicate, espouse and implement agreed organisational safety-beliefs and values.

There are two essential factors that are fundamental to safety behaviour implementation. First, antecedents have to be in place to enable individuals to implement agreed role safety-behaviours and second, there has to be feedback regarding the adequacy of implementation. These two factors can on occasions be neglected and safety-beliefs remain unfulfilled and safety values not upheld.

An antecedent is an event or circumstance that exists before another event or behaviour occurs. An example is where a driver sees a vehicle speed restriction sign. The sign, the antecedent, triggers the reducing speed behaviour. Whether the antecedent is acted upon and the appropriate behaviour adopted usually depends upon the driver’s belief system. If compliance has become a deep-seated belief the behaviour will be automatic. Antecedents are conditions that act as enablers, providing the opportunities for agreed behaviours to occur.

As an operational example, consider a situation that whenever events are reported to the ‘new’ supervisor the consequences to the worker are blame and discipline. The antecedent now influencing the reporting behaviour is the changed management climate. This climate may bring about an undesired behaviour of not reporting events. The consequences for the worker are positive, immediate and welcomed. The worker is not blamed. However, the antecedent and the positive consequences are not supportive of a good safety-culture. Progressive degradation of the plant, the physical processes or obsolete safety procedures may occur.

Antecedents and consequences to achieve good safety-behaviours are a managerial accountability and require discussion, training, understanding and agreement. They are the bridge between the philosophy of safety-beliefs and the manifestation of the beliefs as human performance. Antecedents and consequences are a management tool that influences the quality of human performance and the organisational commitment needed to drive a good culture.

During informal management or peer observations, if agreed safety-behaviours are being applied then the positive feedback of praise and
appreciation needs to be given. Such feedback can be manager-to-worker, peer-to-peer or in an open culture, worker-to-manager. When feedback is purposeful, frequent and welcomed by the individual this promotes a reinforcing climate.

If an individual’s safety-behaviours are not as expected, then adverse corrective feedback is required. This needs to be immediate, purposeful and frequent. Delivered in a constructive mentoring style and with skill, feedback should focus on supporting individuals to learn from errors and enhance future safety-performance.

Mentoring feedback given immediately has a more positive impact than feedback left until sometime later. Feedback, if delivered skilfully at the moment of observation, reinforces safety-beliefs and values and is more influential when given to individuals.

In the speeding example, if the sign had a speed camera attached the consequences for inappropriate behaviour could be early, certain and most unwelcome. The camera suggests modified behaviour is important to the local community who value enforcing reduced speed in the interests of safety. Conversely with no camera present the consequences to a driver of failing to comply become uncertain and distant. As there are essentially no consequences, the sign – the antecedent – will be regularly ignored if safety is not a driver’s priority.

In an operational environment, when consequence feedback is delivered from the authority of the management structure, it helps shape the culture. With these interventions, managers are seen to be purposefully supporting the organisationally agreed values and safety-beliefs.

If adverse consequence feedback is given this should not lead to conflict. Feedback needs to be immediate, delivered well and in a cooperative spirit. In a good culture the individuals are trained to receive comment on misalignment and through training be aware of the expected safety-behaviours. If handled with good interpersonal skills, feedback will be recognised by all parties as a helpful learning opportunity.

Non-aligned behaviour may not necessarily be within the control of the individual. If deviations are identified appropriate action to eliminate the root cause is required. This cause may lie with training, poor equipment or lack
of management diligence. As a culture matures, effective feedback dialogue should reveal such weaknesses and promote continuous improvement.

It is not necessarily workforce members who deviate from agreed safety-behaviours. Supervisors, managers, senior managers and executives can deviate from their agreed role behaviours. With such events open mindedness to receive constructive feedback is required. If, however, the hierarchy levels are not open to mentoring from seniors, peers or subordinates then there is a fundamental difficulty within the culture. If not addressed, it will inhibit the effectiveness of a dialogue culture.

If non-positive feedback leads to disruptive conflict this is a safety-culture learning opportunity in itself, requiring ‘time out’ to seek and eliminate the root cause.

Giving or receiving behavioural feedback can be an emotional experience. To deliver feedback requires the embedding of appropriate interpersonal skills at all levels. In particular, skill is required for people to be able both deliver and receive feedback.

An example of the importance of antecedents and consequences on safety-behaviours is given in Tables 1.1 (a)/(b). Here, a need has been identified by a senior management team to encourage middle managers ‘to do safety behavioural observations within operational plant’. The observations are to become integrated into the middle managers’ role and the observations of staff behaviours can be made at any hierarchical level.

It is postulated that a change in middle managers’ behaviours is required to support the organisational belief that ‘safety is the top priority’. In addition it has been agreed with the middle managers that more on plant visits will enhance safety dialogue at various levels of employees. This will be an opportunity to continue to promote the safety values and contribute to fulfilling the organisational safety-belief.

The senior managers are taking action to change middle managers’ current poor safety behaviour of ‘avoiding behavioural observations’ to the positive safety behaviour of ‘carrying out regular observations across a sample of all employees’.
Table 1.1(a)  Antecedents and consequences – current behaviour, middle managers do not frequently carry out behavioural observations across a sample of all employees

<table>
<thead>
<tr>
<th>Current behaviour</th>
<th>Antecedents</th>
<th>Consequences</th>
</tr>
</thead>
</table>
| Managers do not carry out safety behavioural observations and discuss safety across a sample of employees | a. Managers are not monitored by senior managers to deliver observations  
 b. There are no negative consequences from senior managers for continuing the current behaviour  
 c. Managers are unsure, or uncomfortable with 'one-to-one' discussions with various employee levels  
 d. Managers are not trained in observation techniques  
 e. Managers have no time to carryout observations, they are 'too busy' on other tasks  
 f. Managers anticipate that all behavioural safety matters affecting employees are dealt with by the employees line management | a. Managers can avoid taking the time out to carry out observation – an early, welcomed, positive, consequence  
 b. Can stay in the office and do more 'important' production tasks – an early, welcomed, positive, consequence  
 c. Senior managers are pleased to see attention being given to production issues – an early, welcomed, positive, consequence  
 d. Always around (not on plant) when a senior manager needs comment or advice – an early, welcomed positive, consequence  
 e. The middle managers are seen by others to be avoiding their safety responsibilities – this is a distant, negative consequence, but possibly an accepted norm by all managers (and other employees)  
 f. Middle managers, because of the pressure of other tasks from senior managers, have no time to meet other employees and do safety observations – an early, welcomed, positive, consequence  
 g. Managers receive no feedback on safety from other employees; receive no safety actions to address or matters to follow up – an early, welcomed, positive, consequences  
 h. Managers are perceived by other employees as not committed to safety – a distant negative consequence, However, failure of middle managers to do observation is possibly an accepted norm |
Table 1.1 (b) Antecedents and consequences – changed behaviour, middle managers frequently carry out safety behavioural observations across a sample of all employees

<table>
<thead>
<tr>
<th>Behaviour change required</th>
<th>Revised antecedents</th>
<th>Revised consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers frequently carry out safety behavioural observations across a sample of all</td>
<td>a. Senior managers establish a schedule of safety observations to be implemented by their line middle-managers</td>
<td>a. Managers cannot avoid any negative safety feedback from the employees – a ‘long-term,’ positive, consequence but a short-term, early and negative consequence</td>
</tr>
<tr>
<td>employees and engage in safety dialogue</td>
<td>b. Senior managers positively monitors the observation schedule for compliance</td>
<td>b. Senior managers give positive feedback to individual managers for implementing the observation schedule – an early, positive consequence</td>
</tr>
<tr>
<td>Note: Antecedents column and consequences can be read separately</td>
<td>c. The schedule is physically displayed in the workplace</td>
<td>c. Managers will be perceived by staff as committed to safety – an early, positive consequence</td>
</tr>
<tr>
<td></td>
<td>d. The requirement for managers to do observations is within their job description</td>
<td>d. Individual managers not seen to be downloading safety responsibilities – an early, positive consequence</td>
</tr>
<tr>
<td></td>
<td>e. Time to do the task is allocated for middle managers by the senior managers</td>
<td>e. Time purposefully made in the manager’s diary to do observations and to meet employees to discuss safety – an early, welcomed, positive consequence</td>
</tr>
<tr>
<td></td>
<td>f. The importance to the business and culture of observations is within the managers training portfolio and the value is frequently espoused by the senior line managers</td>
<td>f. Positive peer comment if observations take place – an early, welcomed, positive consequence</td>
</tr>
<tr>
<td></td>
<td>g. Managers receive interpersonal, soft-skill training.</td>
<td>g. Demonstrates personal achievement through completing the schedule – positive consequence</td>
</tr>
<tr>
<td></td>
<td>h. The completion of the behavioural observational schedule is an aspect of a middle manager’s annual performance review</td>
<td>h. Assist other senior managers/ middle managers / supervisors in identifying safety issues – an early and positive consequence</td>
</tr>
<tr>
<td></td>
<td>i. Feedback from observations with safety issues or concerns is to be documented and discussed at the senior managers’ meetings</td>
<td>j. Completed safety observations, contributes to each middle manager’s annual career review – positive consequence (when completed to the satisfaction of the senior line manager)</td>
</tr>
<tr>
<td></td>
<td>j. To assist the middle managers, a system is in place to deal with any employee safety issues raised with them during the observations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>k. There is some group peer pressure, collective responsibility, to carry though the schedule</td>
<td></td>
</tr>
</tbody>
</table>
In Table 1.1(a) the current consequences of avoiding visiting the plant arise early and are not distant. The consequences of this inaction are welcomed by the middle managers. Because the current antecedents are not enablers and the visit-avoidance consequences are broadly beneficial, both these factors contribute to ensuring that the middle managers stay off the plant; the middle managers avoid doing observations.

Any proposed change in middle managers’ behaviours will bring them uncertainty and the change may possibly be resisted. A senior management accountability is the setting, discussing and agreeing the behavioural antecedents and consequences. Once agreed, effective antecedents will reduce managers’ uncertainty, address resistance motivators and promote behavioural change.

Table 1.1(b) is for the same scenario but presents the senior managers’ agreed antecedents and the consequences to bring behavioural change. That is, a change to where middle managers ‘frequently carrying out safety behavioural observations’. To change behaviours the middle managers need senior management leadership through upholding the antecedents and consequences.

In Table 1.1(b), the senior managers have assessed the original antecedents and consequences of Table 1.1(a), and changed them quite distinctly. Through this revision the middle manager is now enabled to carry out the changed behavioural expectation.

The consequences, Table 1.1(b), for engaging in observations are positive, early and certain. If the middle manager does not fulfil the observations task the consequences have now changed from early, positive and certain to being ‘early, negative, and certain’. This assumes the senior line managers are diligently delivering consequences where appropriate.

Table 1.1(b) could imply that there is an element of pressure from senior managers on middle managers. This will not be the case. The proposed change strategy and the change method will have been agreed such that:

- The importance of safety behavioural observations and safety dialogue will be agreed with middle managers
- Senior managers show leadership, commitment and support to assist the middle managers make the change
• Middle managers and as necessary senior management are given training in soft-skills interactions

• Managers receive safety observations training

• Senior managers ensure defined working time is made available for middle managers to do on plant observations and the task is not down-graded to being ‘an extra’

• Senior managers agree to provide positive feedback for the middle managers early and often

• Corrective mentoring feedback from peers and senior line manager is agreed by middle managers.

With the antecedents and consequences in place the desire to do safety observations should become a valued activity.

If the changed behaviours remain in place and middle managers regularly engage in plant safety observations there will have been a profound culture change. Frequent observations and dialogue will have become a good safety-behavioural norm. It may now appear unusual behaviour if managers are not frequently seen on plant.

In the industrial environment most actions assigned by managers succeed. The antecedent enablers and consequences are in place. There are occasions, however, when the antecedents are not correct or not in place. This can lead to tasks not being fulfilled, poor-quality product, stress on the individual and conflict between the worker and managers.

It is suggested that incorrect antecedents and consequences that are contrary to good safety-beliefs reinforce poor safety-behaviours. Chapter 2 indicates several events where managers agreed to the use of unapproved procedures for operating parts of hazardous processes. Here additional antecedents took precedence over those placed for good safety human performance. These were, for example, production pressures, implementing unapproved procedures and the interference with safety systems that gained the tacit agreement of managers. The consequences to individuals of the resulting poor safety-behaviours were early, positive and welcomed. That is they could deliver high production.
Some of the antecedents directly encouraged behaviours detrimental to the operators’ safety. Challenge to the antecedents was probably not welcomed as this may have interfered with the production schedule. The consequence to a challenger may have been early, negative and not welcomed. In one event the behaviours adopted were fatal for several workers and were within seconds of being fatal in another event.

SAFETY-CULTURE ELEMENTS OVERVIEW

To give an overview of the linkage between the safety-culture elements of safety-beliefs, values, attitudes, artefacts and behaviours a hypothetical example may be helpful.

A senior manager who believes in a primary commitment to safety and regularly espouses this belief is taken as the example. Through observation of the manager’s safety-behaviours and attitude consideration can be given as to demonstrate whether safety is a deep-seated belief.

The senior manager’s behaviours could be:

- Safety matters are always placed on the manager’s meeting agenda; a behavioural action
- Safety is the first item on the agenda and receives as much attention as other business agenda items
- The manager actively engages in the annual formal review of the safety-management system
- The senior manager is regularly engaged in safety audits, safety reviews, behavioural observations and plant walkabouts, discusses directly with his managers, supervisors and workforce the safety issues of tasks in hand.

The manager’s general attitude may be one of:

- Genuine interest and concern for individual’s safety, displayed through the manager’s body-language and comments in discussions
• Carefully applies status and hierarchy to mentor, lead and guide if falling plant safety-standards are observed

• Has a cooperative, inviting and open attitude at meetings promoting safety discussion and challenge

• Accepts with grace and welcomes personal challenges on safety issues or behaviours

• A genuine sense of urgency and action displayed in addressing identified safety hazards

• Ready to apply a questioning attitude towards the status quo on process and personal safety

• A charismatic leader.

These behaviours and attitudes appear to an observer as consistent with the manager’s espoused safety values. The senior manager’s attitudes supported by his human performance probably reflect a true belief in the importance of safety.

There can be alternative, less enlightened scenarios. For example, procedures may be in place to ensure a tested approach is used for hazard identification in design or plant operation. The espoused value is ‘that procedures will always be complied with’. Under real schedule pressures managers may, however, abandon the procedure and make personal judgements with regards to what they believe are significant hazards. This condoned non-compliance will be observed by others. This is a signal to all of an environment with no consequences for procedure violation. This behaviour is misaligned with the belief in ‘safety as a priority’ and the value ‘procedures will always be complied with’. Trust within the organisation is now under threat as ‘what is said’ is not ‘what is done’.

Many examples have arisen, in design, operational tasks and maintenance activities, of condoned procedure violation behaviour (see Chapter 2). If it occurs and conformance discipline is not reasserted by managers or peer pressure, non-compliance can become an accepted cultural norm. Permitted degradation has caused many fatalities, personnel injury with severe financial implications. On occasions there have been billion-dollar losses. The numerous
examples available indicate that irrespective of the integrity and quality of the engineering or procedural protective systems, they are only as effective as the people ‘minding’ them.

For high-hazard facilities, when condoning the by-passing of formalised safety procedures, the management and the workforce are gambling. They abandon any espoused organisational safety values. Time and schedule have taken precedence, with managers now taking the risk that their intuitive knowledge of hazard assessment is as good as the collective team-knowledge originally required to produce the safe working procedure. The manager’s judgement is that the possibility is small of his underestimating the hazard consequences. On many occasion the judgement is correct and this reinforces the belief in the acceptability of non-compliance. However, if the culture is not strong enough to challenge a lack of compliance, today’s breach becomes tomorrow’s accepted working norm.

Research shows that individuals are generally quite poor at estimating risk with a tendency to underestimate. On a hazardous facility if non-compliance persists, serious incidents will occur at an unacceptable frequency.

**The Integrated Safety-Culture Paradigm**

There were caveats placed on the concept of the layered generic model due to the socio-technical complexity of culture. However, the generic nature raises opportunities for how a safety-culture can be observed, ‘measured’ or reviewed. Originating from Edgar Schein’s business culture studies, a strength of the model is in the universality of the elements of beliefs, values, artefacts, attitudes and the shaped behaviours. It is suggested that for most cultures – for example, political, religious, tribal or company – some or all of the elements will be identifiable. These culture elements emerge consistently as essential vehicles to achieve a compelling visions, organisational goals and business success.

It is evident that not all cultures are the same and are observably different even though they have the generic model elements. Culture differences emerge because different social or industrial grouping develop distinctive characteristics and whose attributes demand certain behaviours to fulfil the founding beliefs and deliver business success. The characteristics, inter alia, tend to emerge subliminally from the rationalising of how to effectively achieve goals. They are influenced
by and influence the generic element that act as the visible manifestations of the organisation’s cultural characteristics. The presence of the organisational characteristics and their attributes can be elicited from consideration of an organisation’s generic elements. These elements act as the vehicles to display the characteristics and hence the culture. Starting with shared beliefs, Figure 1.7 indicates the linkage. This concept forms an integrated safety-culture paradigm.

**Figure 1.7  The integrated safety-culture paradigm**
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An organisation, through its characteristics and supporting attributes establishes expectations of conduct which are codified in the visible generic elements. The code is experienced by all through the expected organisational behaviours required to deliver the business-safety success.

The development of organisational characteristics and supporting attributes can be a long and iterative exercise as an organisation assesses various procedural and behavioural strategies to efficiently achieve business goals. Organisational characteristics emerge subliminally from this trial and error eventually coalescing around an effective set. Research suggests that organisations with similar business goals and a similar vision tend towards common culture characteristics. For example, it would be expected that regulatory organisations which have similar belief structures and goals would develop similar common culture characteristics. These would manifest themselves in the generic culture elements. Regulatory bodies tend to have a distinctive common ‘type’ of culture. Similarly, commercially competitive airline companies have common culture...
characteristics as they are driven generally by the same business beliefs and goals. These beliefs are, perhaps, maximising profits, customer care and public safety, and so on. These common beliefs generate common delivery culture characteristics. General experience suggests airlines broadly have the same common culture ‘type’. Again, this will be visible or can be elicited through the generic culture elements model. An airline culture due to its specific cultural characteristics is quite distinctive from a regulatory culture. In both cases the generic model elements will be in place – beliefs, values, artefacts and attitudes – but the delivery of different beliefs for business ‘success’ generates dissimilar culture characteristics. In addition, the resulting, inter alia, organisational staff behaviours displayed will be culturally shaped and different. This will emerge as an integrated safety-culture paradigm Figure 1.7.

Building upon this paradigm, it is suggested that for high-hazard industries managing broadly similar safety risks, there is a common set of safety-culture characteristics. These have been consistently elicited and observed in such industries and are considered to be good practice expectations and predicate good organisational safety-culture. There is broad consensus on the safety-culture characteristics although there may be additions and some variations presented from differing literature sources. Nevertheless, the broadly supported core set are:

- Safety is a clearly recognised value
- Leadership for safety is clear
- Accountability for safety is clear
- Safety is integrated into all activities
- Safety is learning-driven.

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Within a high-hazard organisation a robust safety-culture would have good practice safety characteristics which would be explicit or could be elicited from review of the generic elements; values, artefacts, attitudes and behaviours. The safety characteristics and hence the safety-culture is under the influence of various pressures over time. In a mature safety-culture that delivers for the business safety success, the characteristics will however be stable and as noted the generic elements will remain ‘universal’.
Because of the safety characteristic stability in high-hazard industry, the suggested integrated safety-culture paradigm Figure 1.7 can be used as a platform to review organisational culture. The presence of safety characteristics can be elicited though the interrogations of generic elements values, artefacts, attitudes and behaviours using a review process. If a viable culture exists, each safety characteristic will be represented in all the generic elements. A review will contribute to holistically defining the strengths and gaps in the integrity of the characteristics and supporting attributes. With this analysis the shared organisational safety-beliefs which generate the characteristics can be determined, giving some insight into the status of the safety-culture.

The review concept, safety characteristics, supporting attributes and expected behaviours are considered further in Chapter 3.

**Summary**

A culture generic model was introduced as a layered concept. Beliefs, it is suggested, motivate behaviours, whilst the beliefs themselves remain hidden. They can only be revealed through observation of people’s behaviours. The bridge between the behaviours and the beliefs consists of supporting culture elements and can be summarised as:

- Beliefs
- Espoused Values
- Attitudes
- Artefacts
- Behaviours.

A principle adopted from the generic model is that a safety-culture arises from shared internalised beliefs about the importance of organisational safety. It is suggested that safety-behaviours will reflect these shared safety-beliefs.

The model is introduced as being broadly generic to most cultures. The factors that distinguish cultures are organisational cultural characteristics and supporting attributes that reflect different beliefs, business visions and
organisational goals. It is suggested, however, that organisations with common goals coalesce towards common culture characteristics. For high-hazard industries, it is suggested that a set of common characteristics are consistently observed. These with associated attributes can be elicited from interrogation of the generic model elements: values, artefacts, attitudes and behavioural observations. The common safety-characteristics are good practice expectation and the attributes supporting the characteristics would be expected to deliver good practice staff behaviours. This structure is introduced as the integrated safety-culture paradigm.

Safety-beliefs cannot be measured and may be hidden. To understand beliefs they have to be systematically revealed by, inter alia, observing a variety of behaviours and aligning those with good practice expectations associated with the common characteristics. The safety-culture paradigm is a possible route to review or ‘measure’ safety-beliefs and address the integrity of an organisational safety-culture.

Research and experience shows that senior management shape a strong organisational safety-culture. Senior managers cannot create a culture but can provide the vision, discipline and personal example to promote a good safety-culture. They can subliminally or overtly generate the culture characteristics, supporting attributes and behaviours within the concept of an integrated safety-culture paradigm. All organisations have a safety-culture. Whether the safety-culture effectively delivers business safety success depends upon management leadership.

In hazardous industries, safety is a major business risk that has to be managed and achieving a strong culture has significant business benefits. Starting from a poor culture, the journey may appear an expensive option but the alternative can be severe business damage or, in the long term, no business at all.

For a good safety-culture the whole organisation needs to be committed to shared safety-beliefs, values and support good safety-culture behavioural expectations. Naturally, all employees cannot be engaged. Some will remain sceptical, some will engage then disengage. It would be naïve to suggest ‘all’ will be committed at all times. However, with senior management support, a compelling safety-culture vision and the engagement of the majority, this will be sufficient to enable cultural strength to develop and counter sceptical forces.