Advanced safety technology and programmes, as particularly relevant to platinum mining in South Africa today.

THE four waves of safety

The First Wave of Safety was one of safety engineering; the Second Wave to do with policies and procedures. The accepted understanding in the industry is that up to 95 per cent of accidents and incidents are due to human factors, so the First and Second Waves had only limited success. The Third Wave, of course, is Behaviour-Based Safety (BBS), which strongly focused on human behaviour as something that can be altered in order to improve safety. I will spend some time discussing the pros and limitations of BBS and then describe how I have taken it further into what I call ‘The 4th Wave: Culture Based Behavioural Safety’, which I believe is much more effective and appropriate for the safety and transformation issues we are dealing with in mining, and platinum mining in particular, today.

The case for safety today

The old saying ‘There is nothing that concentrates the mind so much as knowing you’re going to die in the morning’ – I think attributed to Socrates just before his death penalty was carried out – is especially relevant to the mining industry today. Safety – previously something that generally was paid lip service to – is now much more widely seen as being essential to the success of mining today. We know that the level of Section 54 stoppages, especially in the
Rustenburg area, has had a major impact on production and profitability in recent times. Mark Cutifani of AngloGold now even heads up a CEO Fatality Study Group. The awareness is that, while there has been some success in bringing down the fatality rate and improving the LTIFR on many mines, the ‘magic bullet’ has not yet been found. What I intend to argue in this paper is that we have not as yet implemented a holistic bigger picture approach to safety, leading to a lack of successful safe production in South Africa – which, because of its unique history and legacy issues, requires a unique approach.

The research case

Professor Petri Schutte in his important research into hundreds of mines in South Africa found a clear correspondence between employees’ perceptions of lack of management caring about their welfare and happiness, and their willingness to work safely and productively. Management’s supervisory style negatively affects their job attitude. Almost half (44 per cent) of the workforce could not clearly relate their own work purpose to the mine’s goals, and most saw safety as a responsibility of the safety/risk department. Du Pont research shows that only 32 per cent of workers properly follow safety SOPs. While Schutte’s research was amongst the first in South Africa to clearly relate the level of job satisfaction and relationships to safety outcomes, my work and research on various mines has come to a similar conclusion.

• For example, information that emerged from a climate survey that we were called in to undertake at a platinum mine which in the previous year had lost R1.2 billion due to industrial unrest (from full strikes to go-slow or refusals to go underground) and Section 54 stoppages, showed a stark message: there was a clear divergence in perceptions between Category B (semi-skilled staff), Category A (skilled staff), and management as to how many incidents were reported. While Category B claimed that only 1-3 out of 10 incidents were reported, Category A claimed that the number was actually 10 out of 10. Management saw this figure as being 7/10. These figures corresponded significantly to the ratings of general job satisfaction of the different categories. On a rating scale of 0 to 10, where 0 is ‘this is hell, I hate coming to work’, and 10 is ‘this is heaven, I love coming to work’, Category B rated their general levels of satisfaction at 1/10. Category A were much happier at average 7.3/10, and managers rated themselves at 6.5/10. Even more significantly, when asked to rate workers’ levels of satisfaction, Category A saw it as being at 6 /10 compared to the actual 1/10, and managers expected it to be at 4.4 out of 10. These huge differences in perceptions about shop floor experience, which mostly reflect a major gap between blacks and whites, are a clear reflection of legacy issues in South Africa, and unless they are addressed, any safety programmes and campaigns are doomed to failure. Most BBS processes fail to take this into account. Let me add some graphs emerging from this particular climate survey that make this quite clear.
Figure 1. Relative scores on favouritism and equality for different work ranks

Figure 2. Relative scores on communication for different ranks
Figure 3. Relative scores on trust for different ranks

Figure 4. Relative scores on safety for different ranks
As can be seen, there are major differences in perceptions between blacks and whites about the existence of racism and favouritism (Figure 1), the levels of positive communication (Figure 2), and the general levels of trust (Figure 3) in management and supervisors, at the mine in question. This again corresponds significantly to perceptions of safety (Figure 4) and the seriousness with which it is dealt. While these results emerged from a mine that had serious problems in terms of stoppages due to industrial unrest and accidents, the patterns shown are consistent with our surveys done on many other mines. From the shop floor point of view, some of the biggest issues that emerge that impact on safety and production reaffirmed the beliefs that for the mine, production is seen to come before safety, and that the management and supervisors do not engage with the workforce. International safety consultancy SAFEmap’s research has shown that the biggest increase in safety comes from an improvement in the belief that ‘this company really cares about us’. Jim Collins, in Good to Great, shows that emotional commitment is absolutely essential to improving performance at all levels. Jeffrey Pfeffer in his important book The Human Equation demonstrates that the biggest single increase in production (and I would argue therefore in safety) comes from increased participation. For every increased one standard deviation in participation, production increases by 16 per cent!

What is very clear from the aforesaid research, however, is that on most mines, whatever the intentions of management, workers still are unhappy, feeling to be an unacknowledged part of a workplace culture that does not seem to engage, involve, or care about them. There can be little emotional commitment in such circumstances. In other words, they are ripe for recruitment by new unions that tap into high levels of frustration and disenchantment.

The bigger picture of safety

When facilitating safety or transformation processes, I usually start the workshop with an exercise called the Pen Code. It usually takes some time for participants to discover that the answer is not in the changing patterns of pens, but in my fingers on the side of the table. In other words, people focus on the pens and not on the bigger picture of the whole table. This is a powerful exercise that demonstrates the need in any organization to focus on the bigger picture. When it comes to safety, there are often significant role players left out of the equation. Unless they are taken into account, there is no ways of building a viable safety culture, as any problematic factor will impact strongly on any safety programme’s success. The role players include management and middle management, the unions, workers, the community, and the DMR.

Management

While I have seen a definite movement towards recognition that safety issues have a major impact on both production and the bottom line, often there is a lack of capacity to move from just a ‘Culture of Competence’ to a ‘Culture of Caring’. While there is an emphasis on visible felt leadership (VFL), if the relationship between management and workers is poor, then the visits serve no function but to create a sense of intimidation and interference amongst both workers
and supervisors. Certainly, the more positive the involvement, the better the results. Of course, there is in many mines a disconnect and blaming culture between mining and engineering, which also needs to be dealt with. Unfortunately, culturally many white managers have little real understanding of black African culture. How many of you have, for example, heard about the Spirit Stick Tree, essential for laying to rest the souls of rural Zulu people (a not insignificant percentage of the mining workforce) killed in accidents? A twig (from the buffalo thorn tree or blinkblaar wag-n-bietjie boom, genus *Zizyphus mucronata*) is taken from the area of the homestead of the deceased. A relative travels to where the fatality took place, and ‘captures the spirit of the deceased’. They need to continually talk to the spirit and tell them what is happening and where they are going in the vehicle on the way back to the home. If in a taxi, a full fare is paid and an empty space left for the stick. When back at the home a relative dreams of the deceased, the ritual is done and the spirit is seen to be laid to rest. If this, or some other cleansing ritual is not done, employees will find it difficult to work with focus and commitment in that section where the fatality occurred, and there may be a strong likelihood that further accidents will occur. So, managers need to be culturally sensitive and aware in all kinds of ways in order to build necessary relationships that facilitate workplace satisfaction.

**Middle management**

This is the area where traditionally a major part of the success of BBS programs is seen to lie. Research by Stan Savitz of STEP revealed that 73 per cent of unsafe behaviours are condoned at this level. However, from my 12 years of experience in the mining industry, mostly in the last years in platinum, it has become clear to me that middle management and especially supervisors are amongst the most disempowered of all. While being expected to deliver production, they are caught between the demands of delivery and safety. This is the main area of interface between workers and the company, and unfortunately many middle managers are perceived (from my climate surveys) by the workers as being both racist and dictatorial. In other words the level of delivery of both safety and production is the most problematic. EQ quotient at this level is low and in need of serious development. In fact, a study by Pesuric and Byham (1996) showed that good emotional intelligence training for supervisors, including listening skills and how to empower workers, reduced LTIs by up to 50 per cent, had a major impact on the reduction of grievances, and significantly improved productive capacity and profitability. So the strength of people skills at middle management level has the potential to either vastly improve or derail safety efforts.

**The unions**

These are hardly mentioned in most safety presentations, but are extremely important. In several companies, I have seen safety issues as a battleground for union management conflict. At times, the union has even been known to call in the DMR for safety inspections, which have led to Section 54s. Of course, with the battle for membership between the NUM and AMCU, even greater dangers lie ahead. I have read about several CEOs complaining about the impact the rise of AMCU has had, but seen very little effort to build the essential relationships between management and the different unions that this calls for. In addition, at Section 54
presentations, the unions sometimes take diametrically opposite positions to that of management. Unions are often not impressed with BBS, seeing it as ‘a tool to blame the workers’. In other words, strong relationships between management and all the unions have to be built for any safety process to be successful. (Note that this paper was written before the tragic events at Lonmin, and thus has some prophetic resonance.)

Workers

As we have seen from the research, workers in many mines are frustrated and unhappy. I need to mention that I have come across a clear generation gap, where older workers appear to be more satisfied, but the younger generation – with higher education levels and greater aspirations – is far from prepared to take a back seat. As we have seen, trust of management is low and perceptions of racism and favouritism are often high. As part of a transformation process in a major bank that I was involved in as a facilitator some years ago, we had to stay in ordinary people's homes in Soweto and the next day catch the train to central Johannesburg. In the carriages, I was struck by how all the way along, people sang and danced with great spirit, amidst some preaching. This was the energy and spirit that helped keep their spirits alive during what was for them the dark days of Apartheid. Out of the train singing and dancing, along the corridor singing and dancing, up the long stairs towards the main part of Park Station singing and dancing, but as soon as they hit that main part by the clock tower, the business world, the singing and dancing ceased. People leave their cultural being, their energy, and their passion behind when they go to work. So in the mining industry we have a choice: either to utilize this great energy for campaigns for safety and production, to build a participative workplace culture, or for it to be turned against the mine in the form of toi-toi-ing and stoppages. I was called in last year at Pilanesberg Platinum Mine (PPM) after a major strike and burning of machinery worth R210 million. It is amazing how with strong facilitation and powerful programmes this anger could be turned around. While many BBS processes are only taken down to supervisory and sometimes team leader level, unless work is done at shop floor level to win hearts and minds of workers, safety processes will be resisted and thus have limited success.

The community

Unhappy workers, especially on platinum mines on the western and eastern Limbs of the Bushveld Complex, lead to and are part of unhappy communities around the mines. Several mines have been unable to produce due to disruptions from local communities, some of whom have perhaps unrealistic expectations of jobs and benefits that the mines can produce for them. In fact, in some mines dangers to physical and mental health come not just from work risks, but also from the dangers of unrest in the vicinity of mines, with burning tyres and stone-throwing. The community has to be engaged with in order to ensure full production and safety. Many mines have little capacity to do that.
The DMR

As we know, especially in the Rustenburg area, the DMR has appeared to have a ‘close them down, Sally’ approach. While external supervision at times may have been necessary to ensure compliance with the law, at times I even have heard of dissatisfied ex-employees going back into the mine that they left and imposing Section 54 stoppages where none were needed. Of course, start-up processes and the increased pressure this puts on production, lead to even greater safety risks. While there has been positive interaction with the Minister at national level recently by CEOs, at regional and mine level there has been little attempt to engage with the DMR and Inspectorate. This is a shortsighted approach.

These expectations of the communities have manifested in calls for nationalisation and increased taxation to benefit the local communities. It could be argued that this involves another level of role-player at the political level, but this is occurring at a macro-level and cannot necessarily be addressed by the mines themselves at local level.

Discussion

I have sought to demonstrate here that there are problems at the levels of almost all the important stakeholders in the mining environment. Most safety processes omit interaction with at least the categories of the unions, the community, and the DMR. We cannot build strong safety cultures where significant elements that impact strongly on safety and production are not involved. Furthermore, often these interest groups are in conflict and competition with each other, and there is no common vision or goal. Einstein said in his famous quote that ‘Insanity is doing what you have always done in the same way and expecting different results’. A different approach is needed. While many BBS approaches these days go beyond the early simplistic focus on behaviour (based on the very limited and largely discredited behaviourist theories of B.F. Skinner who, while understanding that there is a ‘black box’ inside humans that constitutes motivations, attitudes, beliefs, and culture, postulated that we can control only the externally visible i.e. behaviour. Fortunately or unfortunately the real world is different to this), towards an approach that understands the importance of corporate culture, they mostly do not go far enough.

I have been pleased to see that the recent MineSafe conference spent some time on the issue of building a safety culture and transformation. I presented in June at Lonmin, where a big current emphasis on safety has led to the establishment of groups to make recommendations for interventions in the areas of safety culture, leadership, building an enabling environment, and safety standards. There is thus an understanding that something more, something else, needs to be done, but at the moment I suspect many mines are casting around for solutions that will truly work. And truly work in the South African context, which is totally different from anywhere else in the world because of our legacy issues. What is clear, though, is that in order for any safety programmes to be successful, the legacy issues from the past need to be addressed. There can be no alignment and full support for safety programmes where there is no pre-existing alignment and synergy. It has always puzzled me, by the way, why most of the
consultant companies in the safety sphere are of foreign origin and/or run by engineers, who are often not fully trained in and conversant with people and behavioural and cultural issues!

The dilemma

1. While many companies claim ‘people are our greatest asset’, the current economic crisis in Europe means there is strong pressure to focus increasingly on production and more and more on retrenchments to ensure economic viability. This makes relationships even more difficult

2. This sometimes is used as an excuse to do nothing: ‘We cannot afford to undertake expensive safety and/or transformation processes’. This is very dangerous. Some time ago I did a safety audit for a major mine, which shall remain nameless. In the report feedback we mentioned that this was an accident waiting to happen, and that there was a strong and urgent need for a programme to build a new safety culture. We were told all this was already known, and we were not furthering engaged. Two months later a major incident occurred that took the lives of many employees

3. Recent advances in safety engineering hold real promise for reducing risk. However, as we know, up to 95 per cent of incidents and accidents in the mining sector are people-related.

4. The paradox is that we cannot improve safety with interventions that focus on safety separately from, or in competition, with production. We have to focus rather on safe production in the context of a positive and happy work culture

4. While BBS interventions have had at times good success in reducing at least LTIFR rates, it seems that further improvement is limited

5. Some of the problems encountered in BBS interventions include: when observations become a paper exercise, when there is no sustainability, when they are not linked to the overall goals and strategy, when they are implemented in the system in a vacuum where poor relationships exist, when the focus is on changing behaviour while the culture supports risk-taking, where the organizational focus is on production first and safety comes second, or where management and supervisory level are incapable of leading behaviour change

6. Any safety or BBS programme will thus fail unless it builds the corporate culture that bridges the divides of the past!

‘The 4th Wave’: culture-based behavioural safety (CBBS)

While much has recently been written about transformational safety leadership, and the Bradley Curve as used by SASOL is designed to transform organizational culture from reactive through dependent through independent to interdependent, Point 6 above - the need to bridge the legacy issues - is still highly relevant. The work of M. Scott Peck in his book The Different Drum is extremely important and serves as the beginning point and basis for CBBS. His model of
building community demonstrates that most organizations are in what he calls pseudo-community. At this point we may smile at each other and look as if we are getting on, but beneath the veneer lies a huge amount of baggage. This baggage may entail racial issues, gender issues, management/union or management/worker problems, or even conflicts between people at the same level. In other words, historical or legacy issues that impact on our capacity to truly work together and share a common vision. The next phase he describes is chaos, where conflicts get out of control, or external pressures such as for transformation or from new unions or from the DMR stress the system. This is usually where organizations undertake teambuilding or change or safety interventions, which unfortunately mostly do not have sustainable, deep, or long-lasting impact. The interventions in fact often served to reinforce pseudo-community. The problem is that the third phase of ‘emptying’ has been skipped. Emptying implies putting on the table what we are carrying, opening our bags and revealing to ourselves and others the baggage, the legacy of the past we are still carrying. This need not be a traumatic or difficult exercise, but it does need skilled facilitation. This is the only way through, based on over 27 years of experience, to developing what Scott Peck calls ‘True or Real Community’. This is the only place where a culture of caring, safety, and high-performance can exist, and where the chasms of perceptual and experiential differences described earlier in the paper can be overcome.

In Lance Bloch & Associates’ South African-grown model of culture-based behavioural safety, the focus is thus on changing corporate culture towards the above ideal, while using people’s culture as a way of winning hearts and minds. This would involve African-centred approaches such as singing, dancing, and storytelling. The work is towards building relationships and ensuring employee engagement with full participation and ownership at all levels, improving communication, and caring. While time does not allow a full elaboration of how CBBS works and the extremely powerful changes and improvements it has been shown to bring about, let me outline an example of how such an intervention would work. Of course, there is no template – by its very nature the CBBS would emerge organically in consultation, from the specific needs of the mine in question. The results, though, at times have been dramatic. For example in one of our first safety interventions, the mine had record numbers of reportable injury-free days: 163 days without even a plaster!

A typical culture-based behavioural safety programme

**Culture and climate survey (if necessary)**

To understand where the company is in terms of culture, safety, production, and relationships, and issues that impact thereon.
Management-union(s) relationship building workshops (2½ - 3 days)

This would deal with the underlying misperceptions and misunderstandings and build a strong team with a common vision and common goals of improved safe production for the betterment of all stakeholders. In addition to creating buy-in and support for the overall culture change process, the specific need and direction for the intervention would be given by this leadership team. The workshops consist of powerful exercises and discussions intended to create bigger-picture thinking towards the needs of the company as a whole. Of course, as mentioned, legacy issues including unresolved issues are dealt with in a newly mature way in a safe environment. While the start should be with senior management, contractors, and union branch leadership, this would then be taken down to shaft leaders in a similar way. The change that can come about at this level can be dramatic: for example on a Tuesday in April this year the GM at Everest Platinum was under physical attack from some workers led by AMCU shop stewards. After such a workshop from Friday till Sunday that week, I understand that the union and management together submitted a document to the Board elucidating how in partnership they would save the mine from closure. Two groups that previously had hardly spoken to each other now had a common vision and purpose. Unfortunately I had been brought in far too late, and the economic crisis, together with too-high monthly losses, led to the Board closing the mine down. At Delmas Coal, the HR manager described what we had achieved in three days as a ‘miracle’, following several years of conflictual interaction. The overall culture change intervention led to a major improvement within four months, from 80 per cent of target to 120 per cent and positive reductions in injuries. Of course, meaningful Visible Felt Leadership (VFL) would continue to be part of the leadership role in future, with coaching skills having been honed here too.

At this stage or later, the decision may be made to engage the local community, either through initial workshops with community leaders or through arranged meetings with the communities themselves. With the unions on board, this becomes easier. The same would go for the DMR, with relationship-building exercises designed to build a common vision and approach.

Leading in safe production and EQ: workshops for other managers and middle managers (2-3 days)

These workshops align middle managers with the strategic plan and approach to culture change, teaching them how to successfully work with and motivate their subordinates without shouting and screaming, in a way that creates win-win solutions: through enabling and understanding their workers and improving their own emotional intelligence skills. They would be trained to become successful coaches for safe production. Of course, if there were already a BBS programme in place, the two interventions would be integrated in the best possible way. Culture-based behavioural safety can enhance any BBS process, and does not take its place necessarily.
Building safe workplace communities: workshops for teams with their supervisors (2 ½ -3 days)

These workshops enable employees to ‘empty’ their frustrations and build a true sense of team empowerment. As mentioned, singing, dancing, and storytelling are amongst the African-centred mediums used to win hearts and minds at this level. (An example will be played in the presentation itself, with the words given below in Figure 5). The teams create their own safety song, to be sung when the energy and focus is needed. They would determine for themselves the most important hazards and risks within their own specific teamwork environment, and together work out ways to ensure that these are fully taken into account at all times. One of the conclusions of Professor Schutte’s research was that there is a necessity for a set of behavioural rules, including safety rules, accepted through involvement – and this is part of that process. The team becomes self-directed and self-motivated, creating a values based environment (in which ‘zero harm’ is one of the values and not a separate entity), in which the team itself holds its members accountable to living both the behaviours that emerge from the values and improved safety and production. Discipline is thus maintained within the team, and the role of the supervisor becomes more one of coaching and facilitating the successful team process. From Pfeffer’s research on participation, it is clear that the higher the level of participation the greater safe production, and our results too have demonstrated this. For example, a shaft team at Kroondal Platinum which increased its production from 83 per cent to 120 per cent within 6 weeks after the workshop, with no incidents for months thereafter. Or a shaft led by Production Manager Tony Joubert which improved call from around 90 to 95 per cent to around 140 per cent, using the culture-based processes we have described – together with superior, people-centred leadership from Tony Joubert.

Figure 5. Winning company safety song

The Safety Messengers
4 Steps to Safety
Company Song

TO BE SUNG:
Our Safety comes 1st, our Safety comes 1st
Our Safety comes 1st, our Safety comes 1st
Let us all comply, let us all comply.
Let us all comply, let us all comply.

TO BE SPOKEN:
Is this a dangerous situation?
Are there tools or equipment that are dangerous?
Are the people doing anything dangerous?
What am I going to do about it ... NOW?
Remember, Safety is our own responsibility!
Asibonisane, asibonisane!

TO BE SUNG:
Our Safety comes 1st, our Safety comes 1st
Our Safety comes 1st, our Safety comes 1st
Let us all comply, let us all comply.
Let us all comply, let us all comply.
Training of safety champions/change agents (3 days)

Members of this safety alliance would be selected from all mine levels, based on their enthusiasm for the process. They would be trained in, amongst others, observation and feedback, and coaching skills. While these will have been trained to a certain degree at all levels, the skills learned here would be much more advanced. This team would spend time doing safety and team culture observations, and would give feedback to senior management for further strategic input and direction. This alliance would meet on a weekly or fortnightly basis to discuss results.

Launch of the values/Code of Conduct/cardinal rules/song competition

Once all have attended the workshops, the values/Code of Conduct/cardinal rules, which have been developed from the bottom up, will be launched for the whole company. As these are now ‘our’ rules, they rarely become points of contention between, for example, management and unions. In fact, in the initial workshops, we usually negotiate an agreement that anybody breaking the cardinal rules would be out of the company, unsupported by anybody, as they have put lives at risk. This will go together with a safety song competition. For example, at Douglas Coal, we had 27 entries, mostly from the shop floor, and often in conjunction with the supervisors. Between management and unions (AMCU, NUM, and UASA) and ourselves we then selected the best song, awarded the winning team, and learnt the song in plenary. This is sung before people go underground, at their waiting places, and when energy is low. A mine-wide ‘crossing the line’ ceremony helps to ensure wide-scale commitment to the intervention. This launch generally energizes the whole mine.

The Imbizo process (ensuring sustainability)

The natural work teams meet on a monthly basis to ensure that the values and expected behaviours that emerge from these are lived, and to gently hold each other accountable if they are not. Facilitators from HR, the safety department, and the safety alliance, who have been trained, would facilitate these 1 to 2-hourly processes. These, together with the song, participative theatre, and group discussions about safe production, would help build sustainability. The Imbizo process should continue on a monthly basis as long as the mine is in operation.

I've given just a brief outline of what a culture-based behavioural safety intervention can entail. The main point is to build a new safe production culture that bridges divides of the past and builds a common vision and approach that improves safety and production and creates a workplace enthused with Ubuntu. This is most definitely possible, with desire and commitment from all!

I have shown the shortcomings of previous models, the dangers of not addressing the gaps and unresolved problems at different levels and between levels, and what a new model as exemplified by Lance Bloch & Associates’ Culture-Based Behavioural Safety (CBBS) needs to
take into account. I trust it has been of use and can contribute towards what is, after all, nation-building work.

**Bibliography**


Lance Bloch, *Clinical Psychologist*, Lance Bloch & Associates

Clinical Psychologist Lance Bloch, named JCI "Outstanding Young Person of the World" in 1996 for helping reconcile previously warring armies, is recognized as one of the foremost consultants in South Africa in the areas of building workplace community, diversity, leadership development, personal development and coaching, change management and transformation, and the originator of the '4th Wave': Culture-Based Behavioural Safety'. In addition, both corporates and government, from shop floor to top management, rate him highly for his innovative experiential training and assessment methodology. He has been a keynote speaker at Servant Leadership conferences in the USA, the UK, and South Africa.