

Risk Management Review



Solvency III



Tad Montross, Chairman and CEO of General Re Corporation

assuming business and as such nurture a culture that has a healthy respect for risk. They are fanatical about getting paid for each and every risk they put on their balance sheet, and they keep track of what they put on the balance sheet so they don't overexpose themselves to one type of risk creating an aggregation problem.

Solvency II is creating a host of implementation challenges for the insurance industry (not the least of which is its price tag), but the greatest challenge may lie ahead. Solvency II may obscure or minimize certain types of risk and leave the industry exposed to a crisis similar to what the banks just experienced.

The banking industry is now moving from Basel II to Basel III. Basel II certainly didn't prevent the failure of the industry during the recent financial crisis. Basel III imposes stricter and more onerous capital changes and requirements, but it is not clear whether risk will be better understood and managed. The banks will have to hold more capital which will result in lower ROEs unless banks move into riskier asset classes to juice their returns. The higher capital charges could thus have a perverse impact.

I think the one thing to be sure of with respect to Solvency II is that in several years we will be debating Solvency III to address the unintended consequences of Solvency II. Let's hope that debate occurs before a crisis similar to what the banks recently brought upon the global economy.

The primary objective of Solvency II is improved risk management, not necessarily more complex systems, processes and models for risk management. Unfortunately most of the emphasis has been on Pillar I, the quantitative modeling, instead of Pillar II, which is the more qualitative approach to risk management.

Well-managed insurance companies share common attributes. They understand that they are in the risk

Content

Solvency III	1
“Nobody Said It Was Easy” – IFRS for Insurance Contracts	4
What Motivates Managers?	7
When It Matters Most	10
Management Gurus: W. Edwards Deming	14
List of Participants 2010	16

Model Mania

Last year I wrote a short piece, “Model Mania”, reflecting on how dependent the insurance industry has become on models during the past three decades. Many concluded that I don’t like models. That is far from the truth. I have promoted the use of models, particularly catastrophe models. But models do not predict the future; they only provide a possible representation of exposure. Model use has promoted better aggregate risk management practices, but they are often misunderstood and can be easily gamed. One of my favorite recent quotes is from Karen Clark who likened using a short-term time horizon assumption in catastrophe modeling to “doing brain surgery with a chainsaw.”¹

The rush to build “internal models”, bespoke client-specific models, to avoid use of the Solvency II, Pillar 1 “standard model” is likely to have unintended consequences since the main objective in the design of these internal models is to demonstrate that less capital is required. It is hard to see how this exercise will lead to greater transparency and better risk management. The banks’ capital models ignored the tails of the distributions, got the correlations wrong and missed liquidity risk altogether. The “internal” models currently being built will likely face similar limitations and/or errors. The neat and tidy output of a model (often in graphical form) is seductive. It looks so official, so precise, so credible. And therein lies a challenge. How can one discern the comprehensive models from the imitators? Does it really make sense to turn risk management over to vendors and consultants? How does one guard against naïve or aggressive assumption setting, inadequate data sets and methodological flaws? While far from perfect, at least with a standard model there is a basis for comparison. With the advent of internal models, comparisons between firms will be meaningless.

Better risk management skills and protocols should be focused on developing a deeper understanding of risks, not building a complex model. While models are part of the solution, they are not a panacea.

I strongly believe that a sustainable risk management competency must be built upon a comprehensive qualitative approach supported by some quantitative analyses, not the other way around.

Culture

The qualitative approach starts with the culture. A risk assuming enterprise must have a culture that respects risk and that is continuously analyzing risk, measuring it conservatively and managing it. The decision-making framework should be founded on a set of core principles that become the backbone for a set of underwriting guidelines and rules.

Risk maps are a terrific tool to catalogue all risks a firm is assuming and to grade each risk. Willing-to-risk limits should be established at the individual transaction and aggregate levels and feedback mechanisms should be developed. Risk-based profit targets should be established for each segment of the portfolio. The loss reserving function should be separate from the pricing function so it can act as a check and balance. Reserve ranges should be developed and sensitivity testing to assumptions performed, particularly inflation assumptions.

Risks that can aggregate across the enterprise should be identified, analyzed and where appropriate modeled. Natural catastrophe is the obvious peril, but terrorism and pandemic should be considered as well.

Asset stress testing should be performed and liquidity scenarios should be analyzed. Asset liability matching analyses should be performed.

The qualitative framework is the backbone of a company’s risk management philosophy. Modeling can complement the qualitative framework but it should not become the main focus, and on the current path it most certainly will. To suggest that companies must demonstrate that these complex models must be used in determining the strategic direction of a firm and that they must further

drive daily operating decision making is, in my mind, dangerous. I say this because there is so much judgment required in the insurance business. The use of models doesn’t eliminate those judgments. It simply moves them from the front-line decision maker to the designers and parameter and assumption setters of the new models.

Issues

So, just how sensitive are Enterprise Risk and Economic Capital models to the parameters and assumptions? It’s hard to say, but here is a starter list of issues that should be considered:

- Value-at-Risk (VaR): The industry has coalesced around the 99.5% VaR on a one-year basis. Shouldn’t a more conservative threshold of 99.8% or 99.9% be considered? Multi-year as well as one-year terms should be tested.

For example, a company measures the risk to capital at the 99.5% VaR level and determines that at that amount, the capital at risk is at a level within its risk appetite. However, would the management team still feel the same about the risk position if it then looked at the 99.9% VaR level and found that the risk position significantly exceeded its tolerance for risk? While we may have less confidence in estimates that far out in the tail, they do give perspective on scale.

- Tail-Value-at-Risk (TVaR): If the tail is the concern, isn’t TVaR a better measure than VaR? Many people misuse VaR. What VaR tells us is that over a given period of time and at a specified probability threshold, the loss is likely to be that amount or greater. TVaR tells us that when the loss exceeds that amount, on average the loss will be a certain size. Simply put, when things are bad, how bad on average will they be?

¹ “Near-Term Models Misjudge Hurricane Losses By Billions?” by Chad Hemenway, National Underwriter’s PropertyCasualty360.com Online News Service, January 18, 2011

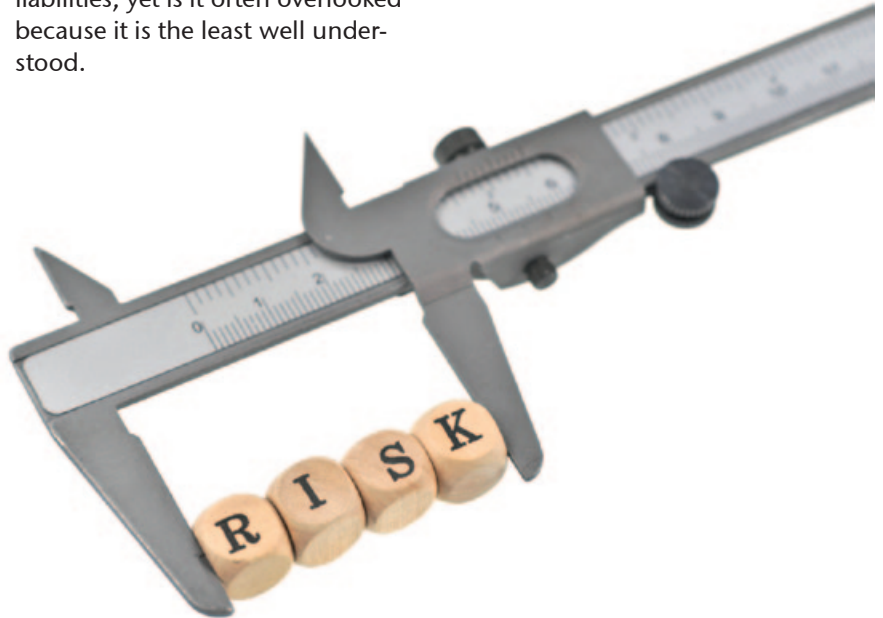
For example, at a 99% threshold a VaR of \$ 100 and TVaR of \$ 200 tells us that there is a 1% chance that a loss will be \$ 100 or greater. When the loss exceeds \$ 100, on average it is likely to be \$ 200.

- **Correlations and Dependencies:** The elegant and simple models for calculating correlations — or how seemingly disparate things are related — either understate risk in the tail or are altogether wrong. Unfortunately, I don't think there are reliable methodologies for valuing these amounts. Giving benefit for diversification is appealing, as it allows companies to hold less capital, but it can also be dangerous as we witnessed in the global financial crisis when correlations went to unity.
- **Economic Scenario Generators (ESGs):** Insurance companies increasingly want to value assets and liabilities far into the future, sometimes 50 years or more. ESGs provide the underlying economic inputs such as interest rates, inflation and foreign exchange factors that enable us to calculate these values. Simply taking the output

of an ESG because it is widely used or “academically approved” and feeding it into an economic capital model is akin to using a catastrophe model's output without determining its relation to our underlying portfolios. When deciding to use an ESG, one needs to understand its impact on the balance sheet. What do the events in the tail represent? The ESG is the one thing that links the assets and liabilities, yet is it often overlooked because it is the least well understood.

This is just a starter list but I hope it underscores the complexity and danger of relying on models one doesn't fully understand.

While my reference to Solvency III was in jest, I do think we, in the industry, may understand risk profiles less well if we become too dependent on very complex models.



“Nobody Said It Was Easy”¹ – IFRS for Insurance Contracts



Michael Morgenstern,
Financial Controller,
Global Finance, Gen Re,
Cologne, Germany

The implementation of Solvency II and the emerging changes in the accounting of insurance contracts through the revision of the IFRS standard for insurance contracts (IFRS 4 phase II) are confronting the industry with major challenges. Owing to the considerable uncertainties and a shortage of resources, many insurance enterprises are currently focusing their efforts on the change in supervisory regulations due to Solvency II.

Given the complexity of the problems that have to be solved, the IASB (International Accounting Standards Board) has announced a further postponement of the IFRS standard for insurance contracts. Under the revised timetable the publication of a new exposure draft may occur in the fourth quarter of this year, if not later, and publication of the final standard some time in 2012. It may therefore be anticipated that the application of the standard will not be mandatory before 2015.

Following the publication of an exposure draft in July 2010 and subsequent expiry of the November deadline for comment letters, the IASB is still evaluating the roughly 250 comment letters. Both the number of comment letters submitted and the global participation of the insurance industry are impressive.

Despite the wide-ranging nature of the feedback, some basic trends are becoming clear:

- A very broad range of views is shown, between general support and complete refusal of the proposed model.
- Probably against the background of Solvency II European companies are essentially open to the IASB's proposals, although they are directing specific criticism at numerous details.
- Conversely, the level of support is lower in countries that are not exposed to fundamental changes in their regulatory environment.
- Despite considerable reservations with respect to its complexity, life insurers take a more positive fundamental view of the proposed IASB model than property/casualty insurers.
- Doubts are expressed as to whether the accounting of life/health and property/casualty insurance contracts can be regulated in a single standard.

Following the expiry of the deadline for comment letters a number of round table discussions were held; these gave interested members of the public an opportunity to explain their positions to the Board at greater length. The Board is currently continuing its deliberations on the individual topics. Along with considering a summary of the comment letters presented to the Board by its staff, the IASB has begun its detailed consultations on specific proposals that came in for particularly intensive criticism.

In detail, the main points of criticism relate to the following aspects:

- High degree of subjectivity associated with the anticipated volatility in results due to the continuous updating of parameters and discount rates.
- The so-called accounting mismatch resulting from unequal treatment of underwriting items and the assets held to back insurance liabilities.
- Margin concept: in particular, the establishment of a composite margin versus separately determined risk and residual margins with different amortisations.
- Understandability and communicability of results in view of the proposed net disclosure of a margin from insurance business in the income statement instead of familiar gross variables such as premiums, commissions and claims.
- Special rules for short-duration insurance contracts.

In the course of this year the Board thus discussed numerous points of criticism, including the discount rate, the margin concept and simplification rules for short-duration contracts. In most instances the deliberations prompted changes relative to the exposure draft but in no way whatsoever did they lead to a discarding of the basic concept.

This approach highlights the intent of the IASB – despite the number and complexity of the issues – to fundamentally revise the provisions governing insurance accounting. Under discussion is not the “whether” but merely the “how”. The expert observer cannot help but wonder whether the “whether” will, after all, present itself again at the end of the discussion about the “how”; most

¹ Coldplay – quoted from the lyrics to the song “Nobody Said It Was Easy”.

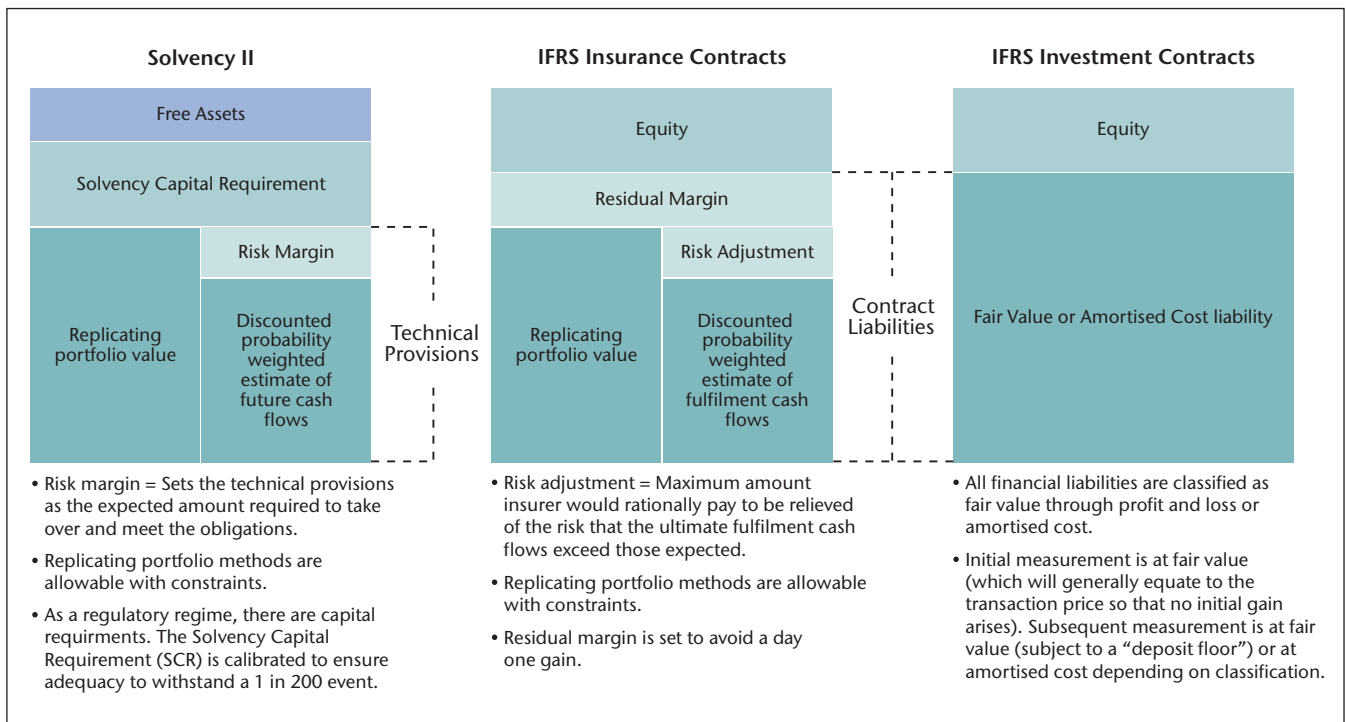


Figure 1 (Source: PricewaterhouseCoopers International Ltd., *Getting to grips with the shake-up*, 2010, page 9, www.pwc.com/insurance)

notably in this regard, the pending departure of some Board members in the summer of this year may impact the project in a way that is hard to foresee. What is more, it is to be hoped that in adopting a new standard the Board will prioritise quality over speed.

“Life punishes those who come too late”²?

The progress of the project naturally raises the question as to when and with what degree of urgency enterprises should dedicate themselves to project work. Bearing in mind the host of unresolved issues, does it already make sense to deploy project groups or is it more advisable to wait until later in the year? Most significantly, the complexity of the ongoing parallel activities in relation to Solvency II, combined with the discussion surrounding deadlines for transition to the new supervisory requirements upon implementation as a consequence of the so-called Omnibus II Directive³, and indeed the likely overlaps when it comes to the necessary resources, throw up a number of questions:

- Can the work on Solvency II and IFRS 4 phase II be carried out in a joint project?
- What resources are needed and are they available?

- What data is required from the past, is it available and, to the extent that it is drawn from different source systems, is it consistent?
- What forward-looking assumptions do the standards necessitate and how are they arrived at, defined and documented?

With its publication of the exposure draft in July 2010 the Board specified its basic ideas about the future accounting standards in sufficient detail. What is more, by refining other standards it has created facts on the ground which – in their interaction – could result in the widely feared accounting mismatch with current value recognition of underwriting items and a hybrid measurement model of acquisition costs and fair values for the measurement of substantial portions of the asset holdings.

In order to analyse the IASB proposals more deeply, however, enterprises will have to engage very closely with the question of data management and the lack of certain data. In this respect, the lack of data is not a deficiency per se, but is in large measure attributable to the fact that the methods elaborated by the IASB in its exposure draft have not yet been tested in practice.

As a further factor, accounting will in future be significantly more influ-

enced by estimates and subjective expectations than is the case today. To this extent, considerable importance attaches to the most efficient possible preparation, management and analysis of forward-looking data. Given that the draft standard also calls for the performance of stress tests for key parameters, enterprises will have to adjust to the fact that such parameters and data need to be made available not only for the purpose of calculating underwriting ratios, but also for the stress tests that are to be published in the notes.

Finally, there are interactions between the exposure draft of IFRS 4 and other standards. While the reform of the accounting standard for financial instruments, IFRS 9, was also a core point of criticism in the comments on IFRS 4, there is at least one other area of tension: IFRS 4 (ED) offers the cost of capital model as one of

² Condensed quote from Mikhail Sergeevich Gorbachev, East Berlin, 7.10.1989. It arose when, according to eyewitnesses, Gorbachev made the following remark in Russian to a crowd that had gathered in East Berlin on the occasion of the 40th anniversary of the German Democratic Republic: “Трудности подстерегают тех, кто не реагирует на жизнь” (“Trudnosti podsteregajut tech, kto ne reagiruet na shisn”) – or in English: “Difficulties await those who do not react to life”.

³ Cf. EUR-lex (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011PC0008:DE:NOT>)

three options for calculating the margins, without specifying this in any further detail. Solvency II makes a similar provision with respect to the technical specifications for calculating underwriting ratios. In this case, then, the insurance enterprise is now confronted with a choice between two interpretations of the same concept, albeit without being able to resolve the conflict of objectives between the different recipients of the models (insurance regulator on the one hand, capital market on the other).

A further consideration is that the provisions of IFRS 8 on segment reporting require an entity to adopt the “management approach” to reporting on the financial performance of its operating segments, even if this diverges from IFRS accounting. Yet these segment results must then be reconciled with the figures reported in accordance with IFRS for the entity as a whole. An entity thus finds itself faced with a triad of management ratios, which are required for different purposes. Cutting through such complex requirements undoubtedly needs time and close attention to detail, not only on the level of project groups but also – and above all – on the level of management.

Resources – Together we stand

If the impending changes are to be implemented, there is a need for project groups assembled on an interdisciplinary basis. The requirements are complex and they necessitate – along with representatives of the specified

disciplines – a broad-based configuration of the project teams:

- Management must attend, in particular, to the definition of relevant ratios for enterprise management. A timely and intensive exploration of the topic is essential in order to take important strategic decisions during the changeover that could have implications for sales, investments in IT, corporate communications and remuneration systems.
- Representatives from the areas of sales and product development are needed because a changeover in accounting standards could also have significant repercussions on new and existing products.
- Early involvement of Internal Auditing and the external independent auditors would appear advisable with an eye to the impacts on control and closing processes as well as the documentation.
- Last but not least, it makes sense to have a close dovetailing of Solvency II and IFRS project activities. On the one hand, the same experts are required in both places, while on the other hand a strong, content-oriented interlinking is advisable in view of the existing similarities (figure 2).

The question also arises as to what extent it is necessary or advisable to turn to consultants. The deployment of consultants may sensibly complement and support a project group. It is, however, unavoidable and indeed wise to deal with the bulk of the tasks using internal resources and to

explore the IASB’s proposals in depth and translate them into a company opinion.

This approach is, however, dependent not only on staffing the project groups with specialists, but also on giving them sufficient latitude to carry out the project work – in other words, partially or entirely freeing them from day-to-day business.

Yet the growing demand for qualified mathematicians, accounting and other specialists contrasts with a very short supply of such personnel. To this extent, enterprises are faced with the dilemma of whether to either build up the necessary know-how internally over the short-term or to “buy” knowledge through the use of consultants. Evidently, there is no patent remedy to solve this problem. Nevertheless, each company will decide for itself what mix of internal and external resources it considers to be appropriate. In this context, it is important not to neglect the fact that implementation of the changes opens up attractive development opportunities for the workforce.

Conclusions

The present paper obviously constitutes only a snapshot that may already be outdated by the time of going to press. Whether the ongoing consultations of the IASB will produce a final agreement is just as uncertain as the question of whether the FASB and IASB will ultimately be able to adopt a joint standard. Should the two major standard setters prove unable to agree on a common standard, many possibilities are conceivable – from a complete relaunching of the project to a divergence between accounting standards within and outside the United States. The latter scenario, in particular, would entail a substantial double burden for internationally operating insurance groups.

In spite of that, it seems advisable to dovetail the project activities for Solvency II and IFRS through close interlinking of the project teams, possibly through a joint project steering committee or regular joint meetings.

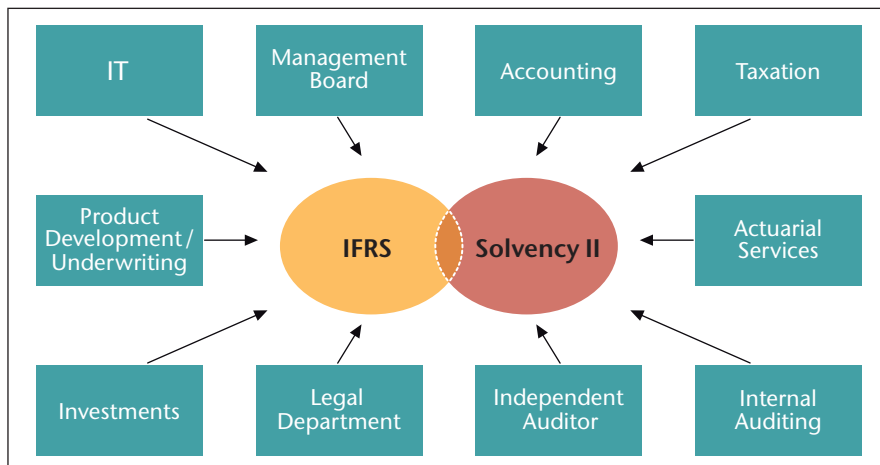


Figure 2

What Motivates Managers?



Adrian Schweizer,
Management Trainer
and Consultant, Zurich,
Switzerland

1. What is involved?

Over the years it has occurred to me in my function as an executive coach that people are not motivated by endless inducements. No, it has become increasingly clear to me that, in matter of fact, there are relatively few important reasons why we do something. And these inducements have something to do with our personal value system:

Is it particularly important to us that as a result of our efforts we reap praise from our associates and supervisors?

Is it particularly important to us that we can help somebody by doing what we do?

Is it important to us that our tasks are particularly varied and fun?

In the first instance it is probably recognition which motivates us, in the second instance probably care and in the third instance probably intensity.

I now believe that there are nine values which motivate us to do something. These are:

Freedom, security, recognition, power, harmony, intensity, integrity, care and curiosity.

Permit me to comment in more detail on these individual motivating factors.

2. Which nine guiding values are there?

Freedom

People whose guiding value is freedom wish to be able to do what they want. They do something once and then they know how it is done and want a fresh challenge. They love being asked how they would solve a certain problem and then wish to be left in peace. When they have solved a problem they wish to present it themselves. Such people are mainly found in freelance professions since they are averse to hierarchies. They restrict their desire for freedom.

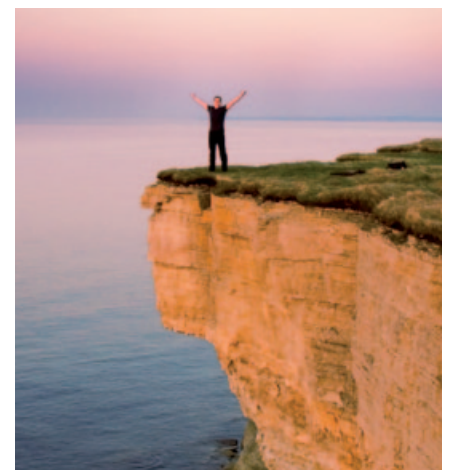
If they are employed at companies despite this aversion they are primarily to be found in field services where they are at liberty to organize their daily routine.

Security

Somehow or other, these people are the opposite of freedom people. They like regular daily routines and they feel at home in hierarchies since hierarchies give them security. They are perfectly satisfied with being able to perform the same tasks every day, the reason being that they like what they know and, in particular, what they already know is not a threat to them. If anything, people whose guiding value is security are found at large companies, and not necessarily in the field service, but rather in the office. They monitor and correct the contributions of the field staff.

Recognition

People whose guiding value is recognition wish to be praised for doing what they do. They are willing to deliver the goods, but they also expect this to be recognized. Recognition people enjoy being in the lime-light and like pitting their wits against others. They enjoy performing difficult tasks and are proud when they have mastered them. It is important that others are also aware of the fact that they have solved a problem in style. People whose guiding principle is recognition can be found everywhere at companies. In view of the fact that they are willing to deliver the goods they also occupy senior management posts.



Power

People whose guiding principle is power have a vision of a better future and wish to implement it. To do so they need people to help them. They care for and protect these people. Power people are particularly found among entrepreneurs or politicians. Contrary to a widespread opinion they are less present at companies. They are usually mistaken for security people who feel threatened by a lack of recognition and then go on the rampage.

Harmony

Harmony people do not like conflicts. They avoid conflicts and want everybody in the team to feel at ease. If there is a dispute in the team they do not seek to resolve it in a radical fashion, but note that there is no point in arguing since everyone is doing fine. One only needs to view everything in a positive light.

Intensity

Intensity people are the opposite of harmony people. They hate nothing more than harmony since harmony is the embodiment of boredom and boredom is what they do not want to and can not tolerate under any circumstances. They therefore play with fire here and there. They provoke, contradict established opinions and thus cause commotion and uproar since where there is commotion and uproar there is certainly no boredom and where there is no boredom there is fun. And it is fun that they want since fun is the opposite of boredom.

Integrity

People whose guiding principle is integrity have decided what they want and do not want in life. They have a clearly defined opinion of what they consider is right and wrong. They wish to do the right thing and also expect this of others. If anything, integrity people occupy middling positions at companies where they have established a team or group in accordance with their wishes and expectations. If they are allowed to perform their tasks in peace in accordance with their wishes and expectations they are very pleasant. If they are disturbed and given too many instructions they can turn very nasty.



Care

People whose guiding principle is care are primarily found in social professions since they attach importance to being able to help. Indeed, helping others is more important to them than helping themselves and they are not happy until the others are satisfied. Perhaps it is difficult to imagine that such people exist. But have not many of our mothers acted in exactly the same fashion? Did they not retire to bed themselves until we children had been well fed and fallen contentedly asleep in bed?

Curiosity

People whose guiding value is curiosity wish to fathom matters. What mainly interests them is what holds the earth's core together. A perfect example of such a person was probably Albert Einstein. Curious people are primarily found in industry, particularly in research and development departments.

3. How do I find out what motivates my members of staff?

The simplest method is still to ask members of staff what motivates them. This question is probably too abstract for most people to understand, for which reason it is more practical to pose direct questions. For example:

"How would you like to organize your tasks so that they give you even greater pleasure and satisfaction?"

Let's find out what members of staff might say:

"It would be a great help to me if I could organize my attendance times at the company more freely. If possible I would like to be in the office at 7.00 a.m. and leave a little earlier."

Here I think that this member of staff is motivated by the freedom value. Too rigid office hours cramp and demotivate him. If he were permitted flexible working time this would certainly motivate him more.

Here are some examples of what other members of staff might say:

Security

"You could be of great assistance to me if you would tell my boss to give me more precise instructions: When exactly and how am I supposed to finish a task? I find it hard to cope with his 'get on with it' style."

Recognition

"If anything, my current post demands too little from me. If you had a task for me involving a higher level of performance I would be very grateful to you."

Power

"I have too little room for manoeuvre as a key account manager here at head office. Could you imagine me heading a regional branch?"

Harmony

"Unfortunately, Mr. Walker who has recently joined us does not fit in with the group. He interferes wherever he can. Could you do something?"

Intensity

"Somehow or other my job has become a routine. It no longer gives me the inspiration or the pleasure I used to have. I have noticed that the field service supervisor post is vacant. Could I have it?"

Integrity

"I have decided to hold an MBS by my thirty-fifth birthday. I have noticed that our company provides grants for such purposes. I have applied for a grant and need two recommendations. Could you write one for me?"

Care

"As you know we are having our second child in four months. Unfortunately, our first child was rather too much for my wife and I have promised to give her more support this time. Would it therefore be possible for me to only work 80% for a year after the birth of our child?"

Curiosity

"Our bookkeeping program is outdated. I would like to research what we would need to do to bring it up to date again. Could I be allocated some time for this?"

4. How can I now motivate my members of staff better?

It is perhaps first interesting to know what you need to do to completely demotivate your members of staff: Do not respect their guiding principles and try to talk them out of their intentions altogether. Thus, if they ask if it would be possible to organize their working time more freely talk them out of it altogether:

"We are a security-conscious company which primarily lives from everyone pulling in the same direction. If someone comes at 7.00 a.m. and someone else at 9.00 a.m. it would upset our entire daily routine. And just imagine the havoc it would cause to our security systems. No, that is completely out of the question."

Thus, this is the ultimate demotivation strategy! You can therefore best motivate your members of staff by complying with their wishes. But what do you do if you simply cannot do so, if it is just not possible? You then first make sure that you have understood their primary motive correctly and ask whether or not there are any other ways of complying with this motive:

L: "If I have understood you correctly it is very important to you that you can organize your working time as freely as possible. Is that correct?"

M: "That is correct."

L: "Your wish to be able to organize your working time more flexibly is very understandable and has already been expressed to me by other members of staff. I have discussed this wish with my colleagues and, unfortunately, I must inform you that it is not possible on security grounds for anyone to be in the office at 7.00 a.m. Would 8.00 a.m. suffice?"

M: "No, that would only be thirty minutes earlier than I am here already!"

L: "That's a pity. What other possibilities are there for you to perform your tasks more flexibly?"

M: "Would it be possible for me to have a home office day?"

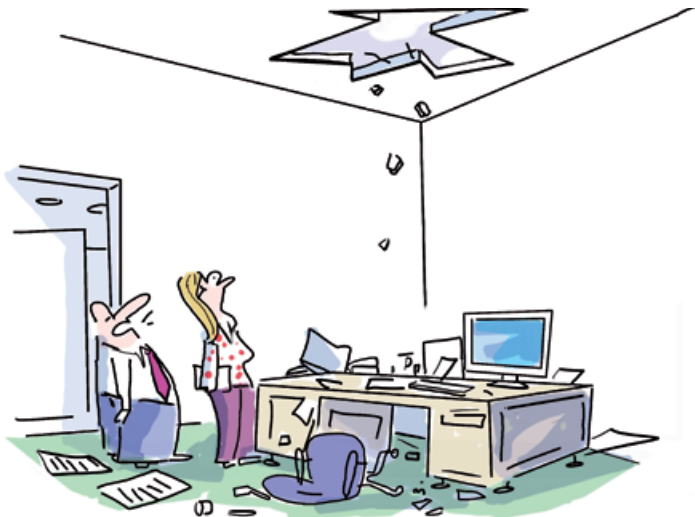
L: "I don't know at the moment, that is not standard practice at the company, but I will ask whether or not it is possible in principle. If it is possible I will gladly put in a word for you!"

M: "Thank you!"

Thus, it is not necessarily important that you comply with a wish exactly as it is expressed, but with the motive, the impetus or the interest behind it. In other words, the desire for freedom, security, recognition, power, harmony, intensity, integrity, care, or curiosity. If you achieve that your members of staff will be even more motivated than is currently the case.

Not convinced?

Then try it!



It's a clear case of over-motivation!

When It Matters Most

Leadership Communication in Critical Situations



Ulrich Geuther, Business Coach, Trainer and Consultant, Lisbon, Portugal

When do members of staff most need leadership? What role does communication play in this regard?

In his article on leadership in critical situations leadership trainer and coach Ulrich Geuther outlines the importance of leadership communication in those situations in which success and failure diverge and only the “communication” leadership competence is of any further assistance.

In this regard, as examples he primarily selects communication situations from the cockpits of commercial aircraft in order to clearly demonstrate the consequences of unsuccessful leadership communication.

On 25 January 1990 an aircraft of the Columbian airline Avianca crashed 25 km from its destination of New York Airport¹. Of the 158 people on board 85 survived due to the fact that no explosion occurred during the crash. The aircraft did not have one more drop of fuel on board.

An analysis of the communication between the pilots and the tower reveals that the Avianca copilot did not succeed in making it clear that they were running out of fuel.

After Kennedy Airport tower had instructed for the aircraft to circle the east coast for 89 minutes due to bad weather and numerous delays flight 502 was finally granted permission to land. However, strong and unpredictably changeable winds prevented the landing at the last moment. In order to prevent the aircraft from losing altitude the pilot revved the engines and thus exhausted the last fuel reserves. The aircraft crashed shortly afterwards.

During the dramatic final half hour the captain, physically and mentally exhausted by the preceding 1½ hours of flight manoeuvres, launched despairing verbal attacks against his copilot. “Didn’t you tell them we have an emergency?” he asked on repeated occasions.

However, at no time did the copilot, who was responsible for communication with the tower, mention the word “emergency” to the New York flight controllers, who are well known for their gruff style of communication.



However, the analysis of the voice recorder reveals one circumstance in particular:

A leaden silence reigned in the cockpit for several minutes as if the pilots were resigned to their fate.

The catastrophe of flight 502, which has entered the annals of aircraft crashes resulting from human error, strongly reminds me of the situation of the CEO of a pharmaceutical company who hired me as a coach when the enterprise was staring into the abyss and practically insolvent. He urgently needed help since he – physically and mentally exhausted – was no longer able to rescue his company from the crisis.

The most important features of the crisis meetings between the directors and the heads of departments which had been convened too late and then were never-ending were vehement mutual attacks and then helpless silence. Leadership was no longer in evidence due to the fact that effective communication was absent. Only radical changes in leadership communication made eventually the turnaround possible.

Leadership communication is the key tool at the disposal of managers for ensuring that, in critical situations, everyone remains in the picture and refrains from ceasing to search for solutions, with the result that managers succeed in keeping the company on course in perilous and turbulent situations.

Let us take a somewhat closer look at the special situations and features of successful leadership communication. Three points emerge as areas for action:

1. Say what’s what.
2. Define roles precisely.
3. Do not lose sight of the overall goal.

¹ For excellent descriptions of this and the subsequent aviation occurrences see Malcom Gladwell: Outliers, 2008 and P.K. Brandl: Crash Kommunikation, 2010

1. Say what you mean and mean what you say

This rule of communication sounds banal. Nevertheless, for successful communication it is far and away the most important – and that in both directions: from manager to members of staff and from members of staff to manager.

Candidly and clearly stating what is what does not constitute a positive behavioral trait in all cultures. In cultures featuring a large power distance² in which seniority and authority demand explicit respect it is frequently the case that plain-speaking to someone who occupies a higher hierarchical position is deliberately avoided.

However, in critical situations it is essential to state what is what in explicit terms. This applies to both pilots and managers. What distinguishes the conditions in a cockpit from the situation at companies is largely the time perspective. Rarely is it a matter of minutes or seconds at companies.

However, the logic and dynamics of catastrophic developments are virtually identical:

- Changes of perspective no longer occur.
- No one on the management team dares voice objections.
- The decision-maker becomes increasingly isolated, loses track of the situation and ceases using the available resources.
- Communication in the team consists mainly in veiled and open attacks and everyone heads for disaster with their eyes open.

The example of flight 801 of Korean Airlines (now Korean Air and one of the safest airlines in the world) has become notorious. On 5 August 1997 this jumbo jet carrying 258 passengers approached its destination of Guam (a Pacific island belonging to the United States) and prepared to land. Despite bad weather and poor visibility the exhausted captain wanted to undertake a visual approach and landing. The copilot and the flight engineer responsible for weather information warned him against doing so.

Copilot: "Don't you think it rains more, here in this area?"

What he probably wanted to say was: "The weather here is even worse than before. No way to make a visual approach."

The flight engineer encouraged him and said: "Captain, the weather radar has helped us a lot". What he probably meant to say was: "Without radar, no chance."

A few minutes later the aircraft, three miles from the airport, flew into a hillside and was smashed to pieces. Until the end the captain had hoped that the runway would appear before him.

The captain, who had opted for a visual approach at an early point in time, was not explicitly confronted with other points of view. He only received suggestions, and while it is certainly the case that they can be interpreted as hints in the relevant culture, in an extreme situation in which the primary player has already explicitly opted for an objective mitigated speech no longer has an effect.

We know from perception psychology research and practice that in such situations people systematically block out information which is at odds with their own fixed objectives.

If a crew or team members have not learned to make their perspectives heard and intervene if necessary in order to prevent a catastrophe the actions of the entire team remain restricted to the captain's perspective.

Thus, a deliberately established communication system featuring clearly defined standards and rules is required to counteract this and encourage team members to voice objections. Such a system exists in those sectors in which it is necessary to put a rapid end to courses of action which are identified or presumed to be false. It is called crew resource management (see box) and is deployed in, for example, the aviation industry, at hospitals and in the fire service.

Thus, for instance, in operation teams at hospitals all the team members are authorized to immediately stop

an operation on a patient via a pre-defined formula. If, for instance, a nurse exclaims: "I need some clarity!" (because she thinks that the patient is in the process of having the wrong leg amputated) the surgeon interrupts the operation immediately and the entire team clarifies the situation.

A level system exists in the cockpit (see box) which enables the pilot non flying to voice his concerns. And if these concerns are not heard he is authorized and required to take control of the aircraft.

Communication in critical situations: Crew resource management (CRM)

Crew resource management trains the members of a team in clear and assertive communication with the objective of enabling all team members to abort a hazardous operation in critical situations. Crew resource management is grounded on standardized statements which express at various levels that a team member is concerned about the course of events. The following example demonstrates the application of CRM in a cockpit.

The captain is the pilot flying (PF) and the copilot is the pilot non flying (PNF).

1. Captain, I'm concerned with...
2. Captain, I'm uncomfortable with...
3. Captain, I think the situation is unsafe...
4. Captain, my control...

If, as the PF, the captain has not reacted after the third level the copilot takes over by stating "My control" or "I'm in control". And he is not only authorized, but obliged, to do so.

² Geert Hofstede first coined the term power distance. His Power Distance Index (PDI) indicates to which extent a particular culture values and respects authority. See, for example: Geert Hofstede: Culture's Consequences - Comparing Values, Behaviors, Institutions and Organizations across Nations, 2001

It is now one of the most important leadership tasks to ensure that independently thinking and assertive individuals are assembled in a management team and not yes men or “clones” of the boss who are unable to lend a new perspective to the assessment of a critical situation.

However, exploiting all the relevant skills of team members in order to exhaust a team’s overall solution potential during day-to-day operations, and particularly in critical situations, primarily depends on the communicative abilities of the manager.

The communicative techniques for this are universally known: listen, ask questions and encourage.

2. Define your role clearly

Managers perform a wide variety of roles every day, e.g. as company spokesman, chief negotiator or an expert for a certain sector.

We have been familiar with the difference between the role of a leader and that of a manager since the management versus leadership discussion at the end of the 20th century³.

One role allocation of great interest for understanding leadership takes place in cockpits where, the hierarchy notwithstanding, a distinction is made between the pilot flying (PF) and the pilot non flying (PNF). As the



term indicates the PF flies the aircraft while the PNF communicates with the relevant tower (air traffic control) or performs the standard operational procedures (SPOs) by using a checklist to inspect the aircraft’s systems with the PF in a fixed sequence.

Who is the ideal player in which role? Or, put differently: when is an aircraft safer – when the copilot is flying it or the captain himself? There is a great deal to indicate that we all fly more safely if the copilot is the pilot flying. What are the reasons for this?

One important reason has already been explained in the previous section: it is far easier for the captain to assume control from the first officer in dangerous situations than vice-versa.

However, a second reason, which will be analysed in greater detail in the following section, also plays a key safety role in aircraft and at companies: the captain, the CEO, the leader assumes the function of the person who acquires and retains an overview of the situation. The officers can fly and run an aircraft, sail and run a ship and manage and run a company. The captain concentrates on his most important task of determining the course and ensuring that the destination is reached safely.

3. The goal-means distinction: recognize what is really important!

What happens if managers pursue sub-goals as their own favourite goals to the bitter end is revealed by numerous examples from a wide variety of sectors.

In the automobile industry the spectacularly failed intention of Daimler to found a global company in conjunction with Chrysler and the attempt on the part of Volkswagen to launch a top of the range model are impressive. Both goals were the favourite goals of those in overall charge: Jürgen Schrempp at Daimler and Ferdinand Piëch at Volkswagen. And nobody was able to stop them (see 1.).

The outcome is common knowledge: it was not until 2008 that Daimler

was able to withdraw from the merger, which had cost the German company losses running into billions.

And the Volkswagen Phaeton is still not selling, this despite huge efforts and massive investment (e.g. the "Transparent Factory" in Dresden).

Tragic examples of a fixation with goals which continue to be pursued despite the fact that this course of action increasingly jeopardizes the overall goal can also be found in the airline industry.

On 29 December 1976 an Eastern Airlines Lockheed L 1011-1 Tristar crashed into the Everglades in Florida killing 107 people.

The reconstruction of the disaster revealed the unbelievable: the entire crew (flight captain, first officer and flight engineer) spent a fruitless ten minutes attempting to repair a lamp. It was a signal lamp that indicates whether or not the nose wheel has been lowered. In the process they all failed to hear a warning signal indicating that the prescribed flight altitude had changed and numerous altitude alarm warning signals. One of the pilots accidentally collided with the steering column, thus unintentionally deactivating the autopilot facility. The aircraft veered off course and continually lost altitude. When the copilot finally noticed that the altitude was not right it was already too late.

You think that that could not happen to you at your company?

Then please recall your most recent management meeting. How was it when, once again, everyone became obsessed with their favourite goals and, subsequently, with detailed questions?

In the case of my coachee, the CEO of a pharmaceutical company in Portugal, whom I mentioned at the beginning of this article, his favourite goal was an extremely expensive administrative building just outside Lisbon. For months on end he devot-

³ See, for example: Zeleznik, 1977; Kotter, 1990 and 1995

ed his entire attention to the building in order to make it reality against huge resistance. And in the process he failed to notice how the economic and financial crisis was causing him to continually “lose altitude” until, finally, he was on the brink of crashing.

A radical redefinition of tasks and roles at the company was needed to rescue it. Although he did not find it easy, in the end he did manage to leave the responsibility for the company’s sub sectors where they belonged, namely, in the hands of the departmental heads. He was thus able to focus wholly on moderating the overall processes, the strategic decisions and the important negotiations with the banks.

The changes were assisted by the following measures which were developed during the course of the coaching commission:

- Establishment of a communication system which was predicated upon the basic rule that all the management team members are entitled and obliged to voice misgivings in explicit terms. This facilitated the candid exchange of different views. It soon proved possible to generate a plurality of options as to how the company could overcome its financial crisis.
- Extension to the scope of the decision-making authority of the heads of department. Systematic empowerment ensured that the transfer of responsibility did not remain an empty shell. All heads of department continually reviewed their departmental goals from the standpoint of the company’s overall goal.
- The CEO undertook to share his own misgivings, fears and all strategically relevant decisions with the management team. With this voluntary undertaking the CEO left his self-imposed isolation and regularly obtained feedback from his fellow directors and the heads of departments. In consequence, not only were the management team members excellently informed, a basis of trust gradually formed which was also able to withstand threatening and troublesome situations.



Summary

It has become clear that in critical situations leadership is needed which is grounded on effective leadership communication.

The cornerstones of this leadership are open communication, clear awareness of one’s own leadership role and responsibility and a goal orientation which never loses sight of the overall goal.

Communicative measures ensure that the full extent of the resources of all the team members is invariably utilized. In critical situations leaders demonstrate presence and take the final decision (captain’s decision). However, this only functions if all those involved fulfil their tasks and afford consideration to all the important viewpoints beforehand and possible options have been elaborated in advance. A self-confident and assertive management team is necessary for this purpose.

Today, in increasingly complex, dynamic and non-transparent situations, installing all this and maintaining it by means of solution-oriented communication constitutes one of the most important leadership tasks.

The fact that this leadership task can also be performed non-verbally is demonstrated by a final example of an incident which occurred in an aircraft.

It is said of Nelson Mandela⁴ that on his election campaigns he used to travel in a small propeller driven aircraft. On the return flight from an election rally in the country the two engined aircraft encountered severe turbulence and one of the engines failed. Fear spread through the aircraft, also gripping the pilot. The pilot and copilot took it in turns to leave the cockpit and look to Nelson Mandela for help.

He was sat rooted to his chair reading a newspaper and smiling calmly.

The pilots eventually managed to bring the aircraft under control and land safely. Members of Nelson Mandela’s staff collected him from the aircraft after it had landed and asked him if he had had a pleasant flight. Nelson Mandela’s face turned ashen and barely able to stand, he declared that the violent turbulence during the flight had made him more frightened than he had ever been in his entire life.

However, he continued by stating that he had regarded it as his duty to refrain from showing his fear in order to avoid unsettling the pilots even more. He had also wanted his conduct to signal that he had the fullest confidence in their abilities.

Leadership communication at its best – and when it matters most.

⁴ Richard Stengel: Mandela’s Way, 2009

Management Gurus

W. Edwards Deming: Management and Leadership for Quality



Dr Marianne Kutzner,
Head of Gen Re Business School,
Cologne, Germany

Deming (1900–1993) was a pioneer of quality principles and the first who emphasized the core role of management and leadership for quality production. Deming believed that management is responsible for more than 80% of quality problems. He is not only deemed a renowned management guru but also the original quality guru.

“The basic problem anywhere is quality. What is quality? A product or a service possesses quality if it helps somebody and enjoys a good and sustainable market. Trade depends on quality.”¹

Career

Born 1900 in Sioux City, Iowa, Bachelor’s degree in Electrical Engineering from the University of Wyoming; Master’s from the University of Colorado, Ph.D. in Mathematical Physics from Yale University, from 1939 on US Census Bureau, 1947 advisor for the census in Japan, since 1951 annual Deming prize, 1960 the “Second Order of the Sacred Treasure” by Emperor Hirohito, 1980 breakthrough in the States with the TV interview “If Japan can, why can’t we?”, consultant for US industry, 1983 National Medal of Technology by US President Reagan, lecturer and consultant until his death in 1993.



Deming’s late recognition in the States

Deming’s life and career was extraordinary. In brief some milestones about it; Deming was working for the US Census Bureau when he was invited to Japan in the 40s/50s. He advised Japanese managers in statistical methods for quality production. With Deming’s help Japanese industry turned poor performance into global success. Japanese Emperor Hirohito honored him with the “Second Order of the Sacred Treasure” and the Japanese named an annually awarded prize after him. At this time his ability was not recognized in his home country. Almost 30 years after his recognition in Japan, US industry took up his consultancy skills and he was awarded the “National Medal of Technology” by US President Reagan. Deming was in his eighties when he developed his famous four-day-seminar which he conducted until he died at the age of 93. Nowadays his books are read in every business school.

Deming’s philosophy

Deming’s work offers a sophisticated and comprehensive perspective on quality management. Despite being a mathematical physicist by training, he does not confine quality management to pure statistical measurement of production or service. For him quality management includes statistical control and the human aspect. His work integrates science-based application and humanistic philosophy within one theory. Proponents of quality management theories often narrow quality management to quality bureaucracy when they rely on measurement and statistics alone. Deming’s management theory is based on systems theory and creates a holistic view of organizations as a network of interdependent and interacting components working together. Quality management affects all components of a system. By applying his theory properly Deming is con-

vinced that companies can increase quality and profit and reduce costs.

The prosperity of the organization depends on the qualification of managers and leaders to keep the system components in the right balance. Their most important task is to optimize the whole system. Consistent quality in products and service is only achievable through a management attitude that is focused on efficiency, innovation and continuous improvement. Deming is convinced that good products and service lead to employment, prosperity and peace. To fulfill this task managers and leaders need to have an outside view – or a supervisory position – on organizations. Deming calls this position “A System of Profound Knowledge”.

A System of Profound Knowledge

“A System of Profound Knowledge”² is the core of Deming’s quality management theory. It sounds simple, yet it is difficult to realize in practice. It needs self initiative in study and reflection on what one’s doing. It represents transformation as the common status of an organization and as its underlying paradigm. The four key elements are:

- **Appreciation for a system and cooperation** includes the knowledge of what a system is and an understanding of the interdependence between the system components which creates a need for communication and cooperation. A high interdependence level affords a higher need for the people involved to work together. A system consists of interrelated components of people and processes which share a common goal. The quality leader is in charge of understanding the interaction and interdependence between them.

¹ Deming 1993, p 2

² “A System of Profound Knowledge” is described in: Deming, W.E. (1993), The New Economics

Deming's Fourteen Points ³	Western Thought ⁴
1. Create constancy of purpose for improvement of product and service.	Produce as many products as possible at the quality level which will sell. Caveat emptor.
2. Adopt the new philosophy.	People will accept what is put before them. The British say "throw it out and see if the dogs will eat it".
3. Cease dependence on mass inspection.	Inspect quality in ('in' what?) – cull out the rejects and rework them. Install significant field warranty work stations.
4. End the practice of awarding business on price tag alone.	Always bid and award on low price. Keep the vendors guessing and scared.
5. Constantly and forever improve the systems of production and service.	Find an acceptable level and maintain it. If it is not broken – don't fix it.
6. Institute modern methods of training on the job.	Use typical OJT. Allow the last hired to train the new employee. Do not stop production for training.
7. Institute modern supervision and leadership.	Use positional authority. Lead by "doing what I say and not what I do".
8. Drive out fear.	Use fear to create an attitude of anxiety. People will work harder if they know they might be punished for failure to perform.
9. Break down barriers between departments.	Institute bureaucracy and instill an organizational wall between departments. Build as much of an empire as possible. It will improve your chances of being promoted. Make sure no other department can do your job.
10. Eliminate numerical goals for the work force.	Place slogans about quality, safety and increased productivity around the workplace. The employees will get the message that we mean business.
11. Eliminate work standards and numerical quotas.	Drive all employees with quotas. Impose regional and area quotas on salespeople. MBO means to take last years results and add a fixed percentage.
12. Remove barriers to pride of workmanship.	Isolate the job functions so no one person or group of people can impact the product. Take functional specialization to the point of needing a group of specialist to each task.
13. Institute a vigorous program of education and training for everyone.	Train an employee once and then forget it. Literacy is not necessary. They can follow verbal instructions.
14. Create a structure in top management that will push every day on the above 13 points	Leave well enough alone.

"System of Profound Knowledge" underlies Deming's famous fourteen principles of quality management and is the theoretical basis for their application.

Fourteen principles for quality management

The fourteen principles or points are guidelines for management to transform organizations into a permanent status of quality and improvement. They are the "red thread" of Deming's advice on quality management. The principles look simple but in practice they are a real challenge for management and leadership. The points were first published in his book "Out of the Crisis" where he describes them comprehensively. In the table they are presented in comparison with the parallel traditional western thinking of the time.

This was a brief introduction to his work and should serve as a recommendation to explore and study his writings in more depth. They are timeless and instructive for management and leadership issues.

"Customers that are unhappy and some that are merely satisfied switch. Profit comes from repeat customers – those that boast about the product or service."

Deming, W.E. (2005), Out of the Crisis, p 178

- **Knowledge and understanding of variation** includes the knowledge that variation is a part of life (nothing repeats itself precisely), that processes show common and special cause variation. It requires the knowledge of statistical methods to measure variation in production and service. Continuous quality improvement is suited to reducing the range of variation. This reduction of variation in production and service is a central message of Deming's work.
- **Theory of knowledge** implies that system improvement depends on a continuous study of the organization. The progress of improvement consists of developing and learning new knowledge about the system. The theory of knowledge includes how new knowledge comes up within an organization and the role of managers and leaders in estab-

lishing a theory, applying the new knowledge, predicting future outcome and risking mistakes.

- **Knowledge and understanding of psychology and human behavior** includes the knowledge of how to optimize everyone's abilities through an appropriate learning environment. It implies the understanding of how people are motivated and work together. Deming is convinced that people are born with innate intrinsic motivation. He encourages management to stop demotivating people but preserve their intrinsic motivation, their readiness to cooperate, their joy of learning and their pride of workmanship.

These four areas should be seen together as they are dependent on each other and are the responsibility of managers and leaders. The

Recommended reading

Deming, W.E. (2005), Out of the Crisis (reprint). Delhi: East-West Press, first published in Cambridge: MIT Press, 1982

Deming, W.E. (1993), The New Economics for Industry, Government & Education (2nd edition), Cambridge: MIT Press

Neave, H.R. (2000), The Deming Dimension: Management for a better future. Inaugural Professorial Lecture: Nottingham Trent University

³ Deming, W.E. (2005), Out of the Crisis, p 24ff

⁴ Winston, B.E. (1997), Total Quality Management. A textbook used in Regent University's School of Business, VA, p 47

List of Participants 2010

Hassan Abdul Bari
Assistant General Manager/
Head of Medical Division
Saudi Arabian Cooperative
Insurance Co., Saudi Arabia

Edgar Augusto Castro Barrero
Director of Property
Liberty Seguros S.A., Colombia

Matheus Coscelli Chammas
Corporate Solutions
Property Underwriting Specialist
Itaú Seguros, Brazil

Ancuța Dumitrescu
Head of Risk Management Department
BCR Asigurari de Viata SA Vienna Insur-
ance Group, Romania

Marcelo Escobar García
Division Manager
Rímac Seguros, Peru

Sergey Faizov
Head of Strategy Development Department
Renaissance Life & Pensions, Russia

Carmelo Galante
Regional Director Latin America
General Reinsurance AG, Germany

Dr Philipp Hillenbrand
Chief Marketing & Business
Development Officer
ARGOS AEGON, Mexico

Eric Hosin
President
Guardian Life Limited, Jamaica

Ahmed Imira
Corporate Operations Manager
NSGB Life Insurance, Egypt

Niyaz Ismayilov
Underwriting & Reinsurance Manager
Pasha Insurance, Azerbaijan

Natalija Jefimova
Member of the Board, CFO
Baltijas Apdrošināšanas Nams AAS, Latvia

Jiang Yi Feng
Assistant General Manager HR Department
China Pacific Life Insurance Co. Ltd.,
China



Elisabeth (E. M. L.) Juillard
Senior Account Manager Reinsurance
ASR Nederland, The Netherlands

Kaupo Kaareste
Head of Claims
Salva Kahjukäsitluse OÜ, Estonia

William S C Kuo
Assistant Vice President
Fubon Insurance Co., Ltd., Taiwan

Oleksiy Muzychko
Chairman of the Management Board
PJSC Insurance Company
Universalna, Ukraine

Simon Oliver
Commercial Portfolio Manager
RSA Insurance, United Kingdom

Shaun Parsley
Head of Retirement
Partnership, United Kingdom

César Rivera Wilson
Central Manager
Pacífico Vida, Peru

Pablo Rubio Ponce
Sub General Manager
Seguros Crefisa S.A., Honduras

Andrey Shein
Head of Reinsurance Department
Rosgosstrakh, Russia

Jolanta Šimkienė
Head of Sales and Marketing Division
JC "Industrijos Garantās", Lithuania

Peter Spiteri
Executive Head
Middlesea Insurance plc, Malta

Beata Stępień
Director of Reinsurance & IIP Dept.
TUiR Allianz Polska S.A., Poland

Ricardo Tinajero Bravo
Actuary and Risk Director
HDI Seguros, S.A. de C.V., Mexico

Dr Martin Vitek
Head of Reinsurance Division
Allianz pojišť'ovna, a. s., Czech Republic

Zhou Gang
General Manager of Strategic
Planning Department
China Life Insurance Company
Limited, China



Publisher

General Reinsurance AG
Theodor-Heuss-Ring 11
50668 Cologne
Germany

Edited by

Dr Marianne Kutzner (Managing Editor),
Andres Webersinke, Markus Burbach
Tel. +49 221 9738 678
Fax +49 221 9738 824
marianne.kutzner@genre.com
www.genre.com/business-school

Production

gläser projekte GmbH, Cologne

Cover picture left: © DimkaNT – Fotolia.com
Cover picture right: © Diseñador – Fotolia.com
Page 3: © iStockphoto.com/wakila
Page 7: © Yurok Aleksandrovich – Fotolia.com
Page 8: © twixx – Fotolia.com
Page 10: © Carlos Santa Maria – Fotolia.com
Page 12: © apfelweile – Fotolia.com
Page 13: © endostock – Fotolia.com
Page 14: © The W. Edwards Deming Institute

© General Reinsurance AG 2011

The published articles are copyrighted. Those which are written by specified authors do not necessarily constitute the opinion of the publisher or the editorial staff. All the information which is contained here has been very carefully researched and compiled to the best of our knowledge. Nevertheless, no responsibility is accepted for accuracy, completeness or up-to-dateness. In particular, this information does not constitute legal advice and cannot serve as a substitute for such advice.