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Dear readers

Welcome to the second issue of JPR Focus in 2022.

Risk is lurking in every corner. At least, that is the case if you believe insurance agents, doctors, politicians, media, weather specialists, salespeople of all kinds.
Is it real? Is it true? Is it just mercantilism or excessive safety thinking? What should one make of it? How does one deal with it?

The answer, as so often, is: Both as well as. A differentiated view is necessary. However, rules of assessment can be defined. This is what we will try to show in this article.

I wish you a pleasant read.

Kind regards
Yours Jean-Pierre Rickli

The Risk

1. Introduction

Our society is very safety-oriented. The reasons for this attitude are diverse. One of the basic factors is our perception of the world as increasingly complex and therefore dangerous. As we have more and more detailed knowledge, many more parameters are also to be taken into account and thus their interrelationships become more and more confusing. This creates a great deal of insecurity.

In addition, there is a certain market saturation. People's main needs have been met. And new ones have to be created. But man is very passive. He will only change his habits under pressure; fear has proven itself time and again in evolutionary history to be very efficient for this. As a result, physical things have become the factor that provides safety.

Our society is not only changing at a rapid pace, but also fundamentally. Changes also involve dangers. But do risks equate to dangers?
Yes and no, it depends. That is what we want to look at in this report.

2. What actually is a risk?

Let's first see what the dictionary says about it.
"A risk is the probability that an unpleasant event will occur."

A short definition that leaves a lot of room for interpretation.
First there is this abstract thing called "probability", where everyone thinks to know what it is, but practically no one really does. Then the term "unpleasant" is also something of an insidious thing. Practically everyone will give a different meaning to this word. In addition, the word "event" is also rather undefined and would have to be neatly defined each time.

Somewhat clearer and less captious is the view commonly used in technology. There are various representations, but they are all based on the same principle. This view attempts to describe the three unknown or insufficiently defined elements of the definition more closely or to narrow them down.

The "unpleasant" refers exclusively to a physical injury from insignificant to death. Thus, there is a clear standard that applies to all.

The probability of occurrence of an event is estimated qualitatively in four levels between "low" and "high". When specific statistics are used, the statistical frequency is assigned to one of these four categories.

Such a matrix is created for each hazard or hazard type. At first glance, this may seem like a big effort. It is. Nevertheless, this effort is necessary if one wants to avoid generalised assessments and want to define target-oriented measures to reduce the risk and also implement them.

Some matrices contain a so-called measure number, others use different shades of colour to indicate the desirability or necessity of risk-reducing measures. In the matrix example below, the measure numbers have the following meaning:

- 1-2: No risk mitigation necessary or desired if justifiable
- 3: Risk mitigation strongly recommended
- 4: Risk mitigation necessary
- 5 to 7: Risk mitigation mandatory

An example of such an assessment matrix (Nohl matrix) is given in Figure 1.

		Light Injuries or Illnesses	Medium Injuries or Illnesses	Heavy Injuries or Illnesses	Eventually death, catastrophe
Probability	Very low	1	2	3	4
	Low	2	3	4	5
	Medium	3	4	5	6
	High	4	5	6	7
		Possible severity of damage			

Figure 1: Example of an assessment matrix

As you can see, the often-made simple statement of a high risk usually only refers to the probability. Usually nothing is said about the severity of the possible effects. Only when it is defined, does one know whether the risk is small, just acceptable or totally unacceptable without severe corrective or mitigation measures.

3. The Event

There we are already at the core of the problem.
How should the event be defined?
Quite simple, actually. The only problem is that the boundary conditions must also be clear, which they rarely are. The reason for this is that no product on the market comes from just one source and each also has different users. Thus, different parties are automatically responsible for the same hazard and also differently. But everyone talks about the same hazard. Here are a few examples for a better understanding:

- A medical doctor talks about the risk of getting an injection, which, according to him, is practically zero. If you follow his explanations, you find that he is only talking about his act, his craft. The risk of the injected agent is not his concern. That has been verified by others. As a doctor, he just has to see that he injects the right drug. The patient is probably more concerned about the second than about the craft. But everyone talks about the danger of an injection in the same way.
- A knife can be dangerous. It can even become a murder weapon. But the handle manufacturer has no problem with that. He only has to make sure that the handle fits well in the hand and does not injure it with sharp edges. The blade supplier also sees no problem or danger with the knife. He only supplies the blank and no one can be injured with it as long as it is properly deburred. He is fully in control of this and has a lot of experience with it. Grinding is not his job, but that of the manufacturer who assembles the handle and blade. The manufacturer says: "We are completely proficient in this work and are internationally certified." The knife, once finished and inspected, is then sent to the packing department where it is packed in the specially developed safety packaging complete with product description, maintenance and safety instructions and other legal requirements. Thus, it now becomes a kitchen knife, bread knife, carving knife, etc. and receives its intended purpose. This way it can make its journey to the buyer without endangering anyone. There, depending on the type of knife, small cuts or the like may occur. However, statistically speaking, these are quite acceptable. Serious injuries or even death presuppose a gross disregard of the

intended use and of the instructions and are therefore, although possible at any time, not considered relevant in the risk assessment.

Such a description can be created for practically any product. Interestingly, in any field of work, the product is considered safe and the risk of serious injury or even death is virtually eliminated. Nevertheless, the end product, if used inappropriately, can even lead to death; paper is patient.

The problem here is that the end danger, as with the knife, does not always remain obvious. On the one hand, the technical improvements help that, thanks to the higher comfort, the danger is no longer perceived. On the other hand, the propaganda of the marketing departments helps us to believe that zero risk or full safety exists. Thus, we are lulled into a feeling of absolute safety and can put ourselves in the greatest danger without realising it.

This lack of clarity is reinforced by everyday advertising propaganda. Everything that can happen has become a risk. Fear makes it easier to sell products and services. This makes (almost) everything a "high risk" either because it occurs frequently although it is trivial or serious, but can be ruled out. The risk of death when flying only exists for those who fly. Those who do not fly only bear the risk of an aircraft or parts of it falling on their head.

Rain has also become a risk, even after a long period of drought. One would rather think that rain would be an opportunity. However, first you have to know what kind of rain it is. A nice country rain would be an opportunity, a few drops totally irrelevant and a heavy storm tends to be a risk.

Thus, it becomes clear: a risk statement without clear and unambiguous designation of the event and without indication of the probability and severity is pure propaganda; even if it comes from scientific circles. In the latter case, one may perhaps also question the competence.

It also requires that one critically examines such statements. There is certainly a certain challenge for everyone.

4. The possible severity of damage

We have just seen that the event can be judged very differently; as undesirable to even highly desirable. In addition, its severity is also perceived very differently. The degree to which one is affected plays a major role.

Let's take the example of a storm warning to illustrate this.

- Such warnings are issued by the meteorological institutes, very often on behalf of the authorities. For the institutes and their staff, the aim is to make the entire population - private individuals, authorities, companies, safety organisations - aware of the possible danger, so that everyone can take the appropriate protective measures to avoid human and animal casualties as well as major damage to property. However, the unpleasant event for them is not the storm, but an inappropriate estimate of the storm hazard. If the hazard is assessed too low, the protective measures could be insufficient and people could be unnecessarily endangered or major property damage could occur. If, however, the hazard is assessed excessively high, then unnecessary costs are incurred and, worse, the hazard might not be taken seriously the next time, which in turn could lead to unnecessary damages.

- For the protection organisations - fire brigade, civil defence, police, paramedics, etc. - their task is to react appropriately in the event of a storm warning and to initiate appropriate preparations. Their unpleasant event is that they overreact or react inadequately and do not initiate adequate preparatory measures. The risk of injury in the course of their work has nothing to do with the storm, but with their profession and is dealt with accordingly.
- With companies, event organisers and all businesses with outdoor customer care, we come to the first groups that can be directly hit by a storm and experience unpleasant events directly from it. For most companies with mainly indoor activities, the main concern is to avoid major property damage. In this way, external drives can be prohibited, the entry and exit of goods can be interrupted or machines and vehicles standing outside can be brought into halls or doors and windows can be closed. For all companies with outdoor activities, the prevention of injuries, minor to severe, or even fatalities, is also an issue. It may be necessary to interrupt operations and bring everyone into shelter.
- We now come to the individuals. These are the ones who can really be directly hit by the storm and have to fear for their belongings, their health or their lives: their unpleasant events. They have to take protective measures themselves or take up the offer from the aforementioned organisations. But the decision to do so is fully theirs. They are fully in charge and responsible.

You can see it. Even if they all state the same objective, namely to reduce the danger to people and to avoid major damage to property, their own unpleasant events and also their severity are sometimes judged quite differently. In addition, the advertising or propaganda of the first three organisations mentioned tempts individuals to believe this content. They then try to transfer their responsibility to others and neglect the personal protective measures. Thus, this spiral continues, because no one wants to admit to having cheated the others or to having been cheated by the others. Only the frustration grows on all sides.

5. The Probability

Probability is usually expressed as a percentage. This is actually just a special fraction calculation. What is often forgotten is that such a calculation consists of two parts. These are the numerator and the denominator. There, too, there is a lot of room for appearance and reality.

The numerator is supposed to represent the alleged reality. It gives the number of unwanted events related to a reference number, the denominator. The larger, the more fear-inducing it should be. There is usually nothing wrong with this number. It can be well substantiated.

With the denominator, things look quite different. The uncertainty lies in the definition of what the reference or the hundred per cent is. Sometimes it is very broad and imprecise, sometimes very limiting. That is decided by the person presenting the statistics. This again shows the problem that comes with any statistic. The imprecision can omit both a statement about severity - for example 40% of all accidents happen in the home - or about certain possibly relevant characteristics of the reference group. That such inaccuracies are not always accidental is shown by the sensitivity and irritability of the people who present such statistics, when clarity is requested.

Thus, it is important for a clean assessment of personal risks to get clarity about the reference. It makes a difference when it comes to accidents in the household to know what kind of accidents

and how serious they usually are. Then, one can assess whether one is exposed to such dangers at all and possibly take simple precautionary measures.

Caution is also needed with the peculiarities of the reference groups. Groups can sometimes be formed around irrelevant characteristics, by mistake or by intent. Sometimes categories are formed that are either too widely or too narrowly defined. In all cases, it is useful to question whether or not one belongs to these groupings. If not, then the risk - event, severity, probability - is of no importance.

6. Communication

As we have seen, communicating risks is not an easy business. It is true that the responsibility for the content and the correct reception lies with the sender, as with any communication. Nevertheless, as said, the actual risk assessment is a personal matter. The sender can only provide the assessment elements, but not the assessment itself. This must be carried out by the receiver. He is fully responsible for this.

For this to happen cleanly, the word risk must disappear from the language of the sender. Because, as soon as the sender speaks of risk or risks, he or she takes over his/her assessment, which does not belong to the communication. Unless he or she clearly speaks of his or her own assessment and leaves the field open for another consideration. Otherwise, it is clearly patronage; or worse, manipulation.

The sender of the communication should clearly describe the undesired events so that the severity of the consequences and their probability can be reasonably estimated. Last but not least, information should be provided that allows the events to be assigned to a specific group.

Most meteorological storm warnings fulfil these specifications and are thus exemplary. Unfortunately, this is by far not always the case.

However, this is not necessarily the case with many weather apps. The "rain risk" is often given as a percentage. But since no information is given about the intensity of the rain, this value is actually only a probability and not yet a risk. This risk indication becomes completely meaningless if the app has recognised that it is raining and continues to display a probability of less than 100% for the time unit in question. If it rains, the probability is 100% and has already becoming a certainty and also no longer a risk.

One encounters similar examples everywhere. If you meet a professional and draw his or her attention to the contradictions in the content, the answer is often: you shouldn't take it so literally, it's just marketing language. Thus, the matter is unmasked: effect-seeking, empty talk, manipulation, propaganda.

As we can see, a lot is expected of the sender. However, the receiver of the communication must also do something. He or she must analyse the information received, process it and apply it to his or her own situation, circumstances or environment. Only in this way can a personal risk assessment be made for oneself or for one's own machines, equipment or else.

Here we see a huge discrepancy with the usual perception today. There is a need for action on all sides

7. Summary

The word risk is a concept with complex content that is all too often ignored or neglected. It only takes on meaning when an unpleasant event is precisely defined, together with the probability of its occurrence or with clear information that allows its probability of occurrence to be estimated.

Talking only about risk without clear information about the nature of the event, its severity and frequency, including a clear statement about the reference in percentages, is sales talk, manipulation and propaganda.

Only the person directly affected by the event can really assess the risk they are exposed to. Everyone else may have the same goal and may want to help, but they take a different risk because for them the unpleasant event is different.

If the probability figure comes from model calculations, look at these results very critically. Keep in mind the saying about such calculations: "The real world is everything that doesn't fit the model." Models are useful, but must not be confused with reality.

If a hazardous situation is reported correctly, the risk assessment remains with the recipient of the message in any case, because it is impossible for the sender to take into account all the characteristics of the recipients. This requires a personal assessment by the recipient. Unfortunately, there is no getting around this. In doing so, one will find that:

- Risks for some can be opportunities for others.
- All events in the future are uncertain and thus either involve risks or offer opportunities.
- There is only certainty if something has happened. Then you have a probability of 100%. Then too, you know whether it was worth worrying about and whether the measures were right.

I hope these explanations will help you to realise that the vast majority of risks can be easily managed. So, you can turn to the really important situations and also look at them with a calm eye. Maybe the world will not seem so perilous to you? Maybe it will even be full of chances and opportunities for happiness? Who knows?

Yours Jean-Pierre Rickli

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