Production and safety

by Professor Sidney Dekker

I was reviewing data from a site in Western Australia recently, and found, as you would expect, a correlation between levels of production and safety. Most people would think that the correlation would be negative. This has become all but the canon in the human factors and safety literature. It is about production versus protection.

You cannot have high levels of one and of the other: one is always the sacrifice of the other. If production is higher, safety is lower, and vice versa. The data from the site in Western Australia showed me something different, however. The correlation was not negative. On the contrary. As production was ramped up, safety figures improved! The more they produced, the safer they became. It suggested to me that the relationship between these two is at least a bit more complex than a simple opposition.

It probably also has implications for the connection between safety and cost. As I dug deeper, I found, not surprisingly, that the site had invested more as production went up. Producing more costs more, of course. Even as it generates more revenue. But safety does not have to be the casualty: it can in fact get lifted on the tide of such rising investment as well. You might get better technologies, a renewed focus on training, new equipment.

As cost pressure mounts, controllers may be asked to do more with less. Fewer manned sectors, same number of airplanes, for example. In other words, production pressure goes up. And is safety the casualty then? Intu-

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ition suggests it could well be. Higher workloads, more fatigue, more to keep remember. There is, however, something really interesting about many of the people on the front-line of safety-critical organisations. The characteristics that make them suitable for the job in the first place – their willingness to show self-confidence in taking decisions, even under uncertainty and incomplete information, a mastery and control of complex and changing situations, a decisiveness – these are all characteristics that can make them willing and able to absorb and accommodate higher production pressures as a "normal" part of their operating culture. This may give operational and other managers the impression that cost pressures and production pressures get absorbed smoothly and unproblematically. The cost, in terms of higher workload, in terms of fatigue, in terms the longer time required to come down from the high of pushing tin, and pushing more tin, might be all but invisible to them. Smoothly accommodating production pressures, design problems, equipment malfunctions, cost cuts – this is what professionals do. It is in part what it means to be a professional.

One result, however, is the growth of a culture of production, a can-do culture. A culture that can do more with less, a culture that is not against showing that it can do more with even less. There is a professional pride that people inside the organisation derive from being able to manage a complex system despite the lack of organisational resources and support. A "can-do" culture is shorthand for "Give us a challenge and don't give us the necessary resources, and we can still accomplish it". Over the years, people in the organisation not only become able to prove that they are worthy; that they actually can manage such complexity and pressure despite the lack of resources and technical shortcomings. They also start to derive considerable professional pride from the fact that they are able to do so. And it might be more than just a source of pride. This ability to safely manage production despite cost pressures, can be a way to achieve some uniqueness, to help build esteem in a profession might otherwise be characterised by procedures, standardisation and 'routinisation'.

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External pressure (pressure to generate more capacity, for example) gets internalised. Organisational goal conflicts are internalized and integrated by controllers, by shifts, by teams as a normal feature of their daily work. The organisation has to be safe, be cost conscious and offer high production capacity all at the same time. Shifts, managers and controllers can turn this organisation-level (or even national-level) conflict into their personal and professional problem, into their responsibility. Being able to resolve it locally can be an important source of professional satisfaction. This ability is a sign of competence and expertise; it shows that good operators can outsmart and compensate for higher-level organisational deficiencies and goal conflicts. People are proud of their ability to create safety despite the challenges and organisational limitations.

Perhaps we should try to get away from casting our work in terms of simple opposites – safety versus cost; production versus safety. These oversimplify the richness of our organisations and the capacity of people inside of them to adapt, learn, improvise, change and manage a variety of goals that are simultaneously relevant to the organisation. Rather than pitting safety against cost, or safety against production, we should be interested in the creation of safety *in* production, in the creation of safety under cost pressures. Cost pressures and production pressures will almost always exist. How people and teams and organisations absorb them, adapt around them, and still create safety inside of those constraints is what is interesting.

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