Rhythm of the night

by Anthony Seychell

Oh, What a night! It hadn't been particularly busy for a Friday. The usual flights on their well-established routes, the adjacent ACC constantly ringing to request direct routings, the strip-printer nosily clattering away printing strips for the re-routing which nobody uses because we are working in a radar environment. All routine and soon time to go home but before that there was still the dreaded band-boxing. Already my colleague was preparing to close her sector as her shift ended at 0600. I wasn't looking forward to her sector being combined with mine. It contained the XYZ TMA, which included the major XYZ airport and the smaller ABC aerodrome. The shift roster was not in tune with the band-boxing because as soon as the sectors were combined, the XYZ night-time curfew ended. By the time my relief came at around 06.25, there would already be several departures climbing out of the TMA while I would also be doing the pre-sequencing of the arrivals descending into the TMA. Management had decided that there was no need to man the second sector 0600 – 0630; it had something to do with productivity.

Ten minutes into the combined sector, I was already feeling that I was at my limit and close to losing the picture. The sector was extremely busy so I told the Coordinator Assistant to answer all calls from the adjacent ACC and refuse all direct routings. Also I told him to find a way to silence the noisy strip-printer; it was becoming really annoying and a disturbance. Finally my relieving colleague arrived and took over and I could go home.

I never had rings on the screen but I was sure that at the end I came quite close to seeing them and hearing the aural STCA alarm. I thought that before leaving, I should have a word with the supervisor about this overload situation and I considered writing a report about it. Too many of us were ending up feeling overloaded and close to losing the picture after the implementation of the new roster and, soon afterwards, an airspace reorganisation. I wasn't quite sure that I could have handled the rhythm of the night at the end if I had had encountered a contingency situation.

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The Ops Room of our XYZ ACC seems to have been designed to ensure the maximum possible discomfort to the staff and to increase the task/work load as much as possible. Besides the poorly-planned collapsing of sectors and decreased staffing, it was also a noisy place. The single-person operation meant that the ATCO was often distracted from his watch over the traffic. The constant requests from the adjacent ACC for direct routings meant that the telephone was ringing (or buzzing) all the time. The strip printer was a noisy machine and the fact that it was printing unnecessary strips showed that someone had not done a proper study of our changed working methods. Work-as-imagined was totally different to Work-as-done.

People at the sharp end, like ATCOs and ATSEPs, often have to handle situations where better planning and risk appreciation by management could have led to improvements in service delivery without significantly increasing workload. Management should adopt a 'human-centred' approach when designing, implementing or operating a system, or managing a change, i.e. those responsible should consider the people in the system. Such a 'human-centred' approach should follow established human factors and ergonomic principles. Shaver and Braun[1] have defined human factors and ergonomics as *"a scientific discipline whose goal is to optimize the interaction between people and the systems they use to enhance safety, performance, and satisfaction. In simpler terms, it focuses on designing the world to better accommodate the needs of people"*. The Human Factors and Ergonomics Society[2] tells us that human factors and ergonomics are

1 - Human Factors and Ergonomics initiatives make good business sense, Eric F. Shaver and Curt C. Braun, Idaho Business Review, January 5, 2009

2 - https://www.hfes.org//Web/Default.aspx

Rhythm of the night (cont'd)

the study to help ensure that people's interactions with technology will be productive, comfortable and effective. Is the interaction of humans with systems always productive, comfortable and effective?

These descriptions of human factors and ergonomics indicate that the 'human-centred' approach is not just about pleasing the people in the system. It also provides an opportunity to optimise the system, the performance of the human and the tasks that they have to undertake. The 'human-centred' approach ensures that the procedural and technical considerations match human capabilities and this maximises the likelihood of a successful outcome. It also leads to a better understanding of people's activities, e.g. the tasks that they perform, the demands, pressures and limitations that people face and what motivates them.

Another important aspect of the human-centred approach is that it gives people ownership, by involving them in changes and initiatives. A system will be more effective if the people in the system have some say in how it is created, organised and run. The staff members are often the only people that truly know the intricacies (details, complexities) of their task, so involving them in the generation and operation of a system will help to increase support for, trust in and adherence to it.

Many of us ar e nowadays familiar with 'safety assessments', often perceived as some sort of a mysterious rite performed by the safety juju man which leads to the pronouncement that our new system as safe and acceptable for our use. But how often is a safety assessment done for a soft change

such as a roster change, a change in the remuneration/reward structure or even changes in the staff selection processes? As we saw in our initial scenario, the band-boxing occurred when traffic was actually increasing. Was a proper safety assessment of the task load performed? It is obvious that reducing staff and collapsing sectors while the traffic is increasing may not be a very good idea. Often changes are considered individually and no assessment is performed at a system level. But this is critical because the risks affecting task performance can only be understood if the change in the task(s) is considered in context and thereby fully understood.

Going back to our original scenario in the ACC, we have already seen that the Ops Room was a noisy place. Often we contribute a lot to noise ourselves without even noticing. There have been cases where the incoming/outgoing controllers do their briefing handover at the supervisors' desk, the vicinity of which then becomes a sort of a chat-club with each participant contributing that little bit more to the noise level. This might naturally induce the ATCOs, especially those choosing to work without headsets and relying solely on the console speakers, to increase the speaker volume. This then sets off a viscous circle where the others also raise the volume, people speak louder and…

What about the physical design of the room itself? How user-friendly is the equipment? How difficult is it to interact with the console's computer-driven system? Lighting, ventilation, heating, humidity? Traffic and its complexity are actually only a component of an ATCO's workload. It is well known that a badly designed system significantly increases the work and task load. A good human impact analysis can materially contribute to the effective reduction of the work and task load. The human-centred approach to change management brings a number of benefits:

- Proactive identification of the people affected by the change, particularly those in roles that have the potential to impact safety;
- Proactive identification and prevention of human error associated with a change;
- Reduced resistance to change.

Despite all the advances in technology and the introduction of more and more automation, the humans are still the main means of mitigation when our system somehow fails because they act as key defences to help in controlling the risk. Our centre was a busy ACC but the amount of traffic was not the cause for the ATCOs' feeling of overload. A study would have indicated 'classic' system failures – the contribution of staffing as the biggest contributor to the overload situation with the working environment and practices also playing an important part. These human factors problems severely impacted the human performance, significantly reducing the ACC's resilience to failure. Of course, a strong reporting culture is an essential element of safety culture and greatly assists in identifying problems, reducing their effects and seeking long-lasting solutions. In a positive safety culture environment, staff will be encouraged to come forward with not only their concerns but also suggestions/recommendations for their resolution.

Back in my days as an ATCO I felt that there was a song that described our work very well: The Rhythm Of The Night by the Italian group Corona[3]. The first part of its lyrics went:

Rhythm is a dancer,
It's a soul's companion,
People feel it everywhere,
Lift your hands and voices,
Free your mind and join us,
You can feel it in the air,

Although I didn't dance the aircraft, I felt that that there was a certain rhythm in the work and people felt it, especially the ones in the air.

The ATC/ATM world has changed considerably since my ATCO days because ATC is a dynamic business and traffic is almost always increasing. We are making use of more and more automation to handle traffic but traffic is only one factor affecting workload. We need to look more at the humans in the system and adopt a human-centred approach so that we can better understand human abilities and limitations. That will enable us to design systems which optimise the interaction between people and other system elements to enhance safety, performance, and job satisfaction.

I'm convinced that ATCOs all over the world still feel the Rhythm but the task of managers and 'safety practitioners' is to ensure that the ever-increasing number of flights and complexity of traffic do not negatively impact ATCO workload.

3 - http://www.metrolyrics.com/the-rhythm-of-the-night-lyrics-corona.html