SO WHAT DOES IT LOOK LIKE?

by Maciej Szczukowski

It was one of these days when Andrew would give a lot to have a day off rather than watch the raindrops on Tower windows and be on the receiving end of the likely effects of the sudden drop in atmospheric pressure. The sky to the north was darker than usual but he felt relieved after his assistant's call to the met observers. They had told him that due to a change in upper wind direction, the darkest sky of the day would probably miss the airport and move away to the south-east staying well away from his airspace.

At the moment, all departures to the south and west were already climbing to their cruising levels and the arrivals were only just entering the FIR. Sipping his coffee, he tried to relax a bit, watching the pre-inbound list building, with the first arrivals due in 25 minutes. "There is what there is" - he thought. The Duty Officer was doing his before peak-arrival runway check, reporting on the radio that the runway was wet but with no water patches. Happy to hear that, Andrew sorted out the arrival list and flight strips, raised his chair a bit so as to have a better view of the touchdown zone which was 4 kilometres from his position, and waited.

Then the telephone rang.

> ***Approach:*** *"Hi, it's Mike from West Approach, we have CBs on the screen but I am not sure if the picture is accurate How does it look out of the window?"*
>
> ***Andrew*** *(looking through the window): "Yeah, I was worried too, but we've only got a wet runway, no water patches and the guy at 'met' said that it'll be fine.*

Both of them were correct. Yet imprecise. Not on purpose obviously. It was the chaos theory small change – large effects 'butterfly effect' of communication which began the process of gradual loss of situational awareness. Mike knew that his weather radar was not state-of-the-art equipment and many years of experience had taught him that what's on the screen is not always what's in the air. Andrew didn't appreciate that -, he wasn't radar rated and he had never worked in APP.

But he had windows, good eye-sight and a telephone number for the 'met guys'. They were like therapists - willing to listen, then talk, often to calm down controllers' anxieties. They often used words like 'probably', 'not necessarily', 'hopefully', etc. Andrew liked them for this. Actually Andrew's brain liked them for this.

Have you ever spent time at a party, with loads of people around you creating a chaotic noise in which it is difficult to have a conversation? Suddenly, however, you have been able to hear the single word, your name, and some critical remarks about your work, your life or the colour of your socks. Then, though you haven't planned to, you have turned your attention to the critic, haven't you? Well, that is how our brains work. They act based on raw data, but always in a certain context. They select information which seems interesting enough to acquire and leave what is left to the unconscious attention (I learned about this after completing my first 12-hour night shift, having driven home but afterwards unable to recall anything from the journey. The brain favours, filters and adapts the input. The result is that we often get what we want, decide or prefer rather than "raw data". And that is the source of our awareness. In the dialog above, Mike, although he asked for 'precise' information, was looking forward to

a normal sequence of inbounds and may have biased his question by looking for subjective interpretation from Andrew. In return Andrew, who was already tired of the whole shift - a low pressure and overcast-clouds-day, may have biased his perception by basing his knowledge on the 'probably' and 'hopefully' definite message from the 'met guy'. Mike saw things as he wanted to, Andrew distracted himself by an expectation[1]. But that was the situational awareness they had. So far ...

> ***Pilot:*** *"Tower, N999ZX, there's a significant change in wind direction at 2000 feet, and there's windshear and some icing too".*
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> ***Andrew:*** ***"****N999ZX, roger". (Calling Mike) "Mike, I just got a report from N999ZX about a wind change at 2000 feet. And the visibility here has dropped to 3000 meters so I can't see the runway. Can you extend the spacing by a mile to reduce the chance of go arounds?"*
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> ***Mike:*** *"I thought you told me it would be fine. And I have now almost 40 inbounds thanks to those from the north being late after weather avoidance. I need to keep up the tempo. Does it really look that bad through the window?*

Things had changed and the initial situational awareness had begun to deteriorate. This time, however, there was less time to 'alter' the reality. Mention of windshear[2] and 'icing' suggested that the approach speed may change[3]. And of course 'I can't see the runway' is surely not the most convenient situation for a Tower controller, yet it doesn't necessarily connect with visibility. And finally, we have 'can you' and 'you told me' the subtle duel of responsibilities, where the unclear common situational awareness due to local limitations or brain-filtered expectations leads to even more confusing messages or requests. Because what counts, when time and resources are limited, is whether 'it really looks that bad?' ...

The way we communicate, how we use language creates the reality (and our awareness about it). You have surely had the opportunity to watch the news on one TV channel and then be told about a different, parallel reality by another channel. Who was right? Nobody? Everybody? I think it was somewhere in-between. The reason why this happens comes not only from 'what was' but also 'what purpose' did one have to present the news that way. Chronology, presentation, content, form, location - it all builds into a specific, resultant image. Older information has less impact on perception, and hence on awareness, yet it may still remain crucial for others. Only then does 'the' proposal, request or resolution mirror the reality and control it (which, in fact, is the task of air traffic controller)[4]. In the meantime an hour has passed...

> ***Karen:*** *"I'm ready".*
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> ***Andrew:*** *"Pressure is now stable, the West approach is active, You have control of runway 28L and 28R, visibility has dropped, surface wind is stable, some pilots have reported gusts but there has only been one go-around. Strips are sorted.*
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> ***Karen:*** *"OK, my control".*

In this particular case, this common handover-takeover scheme[5], became the next 'layer' of communication-related situation awareness limitation. Though the information that visibility had dropped was a fact, it did not convey critical information on the general weather situation and thus possible future developments. So was the information about wind gusts, accompanied by mention of a go-around helpful? The existence of gusts – a common phenomenon, does not carry any useful information unless accompanied with windshear report or a sudden change in wind velocity at a certain altitude.

So, what would be the take-away message from this made-up, yet quite probable story? I have always admired the power of mnemonic methods. It suits my brain (a common model, for sure) yet allows me to remember a lot with relatively little difficulty. The case of Andrew, Mike and Karen is a story about people asking, being asked and being told. It is a story of people who know what they've got, but don't know what they may have missed because of the nature of their communications. Therefore I would suggest three acronyms, for your everyday work: **ASK, ASKED and TOLD.**

I believe it is worth considering them in your operational work, though at the beginning it may seem tricky. On the other hand, learning can make one a master, right? Speaking of which, what about a 'master attitude' ...

The thought that what Andrew had thought before the inbound peak ('there is what there is") was not a luck-related omen. It was the representation of the simplest definition of situational awareness, the phrase used by Endsley in 1995[6]. The knowledge about 'what there is', in ATC and on board an aircraft, must contain the imminent

1- Read more about human factors in communication at http://www.skybrary.aero/bookshelf/books/852.pdf
2- Find more information about windshear recognition at http://www.skybrary.aero/index.php/Low_Level_Wind_Shear
3- Find more information about approach speed and influencing conditions at http://www.skybrary.aero/bookshelf/books/866.pdf

4- Read more about language and communication at FSF ALAR Briefing Note 2.3 – Pilot-Controller Communication http://www.skybrary.aero/bookshelf/books/852.pdf
5- see: http://www.skybrary.aero/index.php/Handover/Takeover_of_Operational_ATC_Working_Positions/Responses

MACIEJ **SZCZUKOWSKI**

has been an Air Traffic Controller for almost 15 years at Warsaw Okecie Airport, Warsaw, Poland. He has also been an aviation consultant and ground school instructor, working with pilots and cabin crew. He has experience as a private pilot.

element, allow to predict and prepare for options which may happen. Yet in order to succeed we must also be able to relay and receive facts. Clearly, precisely and also briefly. If you control – try it. If you teach – learn it then teach it. To say how things are, not only what they look like.

Andrew packed his suitcase, closed his locker but decided not to put on the jacket, still having the warm feeling he usually had after dealing with an unusual situation during his shift. On the way to the car park, he saw Mike who had also finished his shift. Mike saw him too and they both looked at each other for a moment. They understood, at that very moment, that just one look in the eye can mean more than many words. They realised the value of a short and precise message. For them. Yet driving home they thought about how it may have looked to the pilots. Fortunately, by the time they both reached home, the dark skies were miles beyond their airspace.

On the next day they found out that there had been three more go-arounds. Due to windshear on final ...

PAN Airlines say again... I had an echo after your call sign... I have your data download and it's another textbook landing, although your engine temperatures seem high...

6- Wickens, C.D. (2008). Situation Awareness: Review of Mica Endsley's 1995 Articles on Situation Awareness Theory and Measurement. Human Factors, 50(3).

ASK When you ask	ASKED When you are asked	TOLD When you receive/-d information
ANALYZE	ANALYZE	TIME
What do you actually want to ask about?	What are you asked about exactly?	When were you told?
SHAPE	SHAPE	OWNER
How do you want to ask about it?	How/what can you answer?	Who told you that?
KNOW	KNOW	LEVERAGE
Know if you are ready to receive facts?	Know if you can offer facts?	What/whom did/does this information influence?
	ELABORATE	DESCRIPTION / DETAILS
	Give necessary details (if applicable)	Were there any specific details or description?
	DISCERN	
	Did the person asking receive and understand the message?	