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A P I E C E

O F M E T A L

INVESTIGATOR:

I have a piece of metal in my hand. It doesn't look like much, but lives depend on it.

The metal I have in my hand is to be fitted into its predesigned place within the superstructure of an aircraft. It's part of the mechanism controlling the movement of the rudder in flight. It's only a small piece of metal, but if it wasn't there, believe me, you'd know about it. Briefly.

Then the aircraft will fly to its first allotted destination. Let's say, for the sake of argument, Prague. But it won't come back. After landing, and if necessary, refuelling at Prague, it will follow its chain of destinations around Europe. Bratislava. Riga. Rome. Paris. Birmingham. In doing this, it will be working in concert with every other plane in the fleet, operating to a pattern that has been specifically designed to maximise the efficient usage of equipment.

PARTS OF

THIRD ANGEL'S

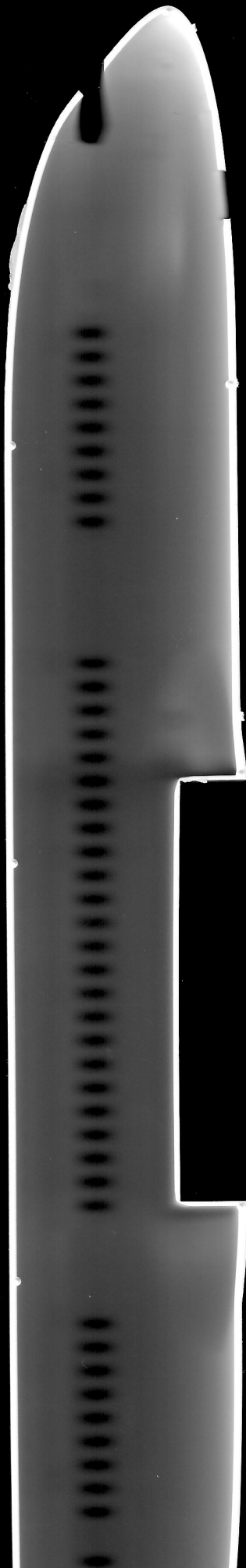
PARTS FOR

MACHINES THAT

DO THINGS

ALEXANDER KELLY

CHRIS THORPE





ALEX

CHRIS

I remember that we just talked a lot to start with. We made a long list of things that the show was about.

I remember I used to be terrified of flying. And then I read a book about air-crash investigation. And it cured me. I remember the terror switched to awe at the complexity of the planes and the global systems that operated them.

I wasn't afraid of flying - but I think this process made me slightly more wary of it. Whilst I learned that the process of air-crash investigation meant that it was practically impossible for the same accident to happen twice, I also became aware that a tiny, apparently insignificant fault or oversight could have huge - disastrous - repercussions.

I think the way to interact with these complex systems - to make them feel safe enough to be usable - might be the same way I found to write about them. Find out enough to fool yourself you're, not an expert exactly, but that you know enough about what's going on.

That sound after take-off? It's the flaps retracting to cruising setting. The flicker of the lights before take-off is the switching from one power source to another. I'm maybe no more or less likely to die, but I know some of these things won't kill me.

Yes, that's really interesting, I think. Those weird noises and sensations are only unusual because you are not (yet) familiar with the technology transporting you - you don't hear/see them on the bus or train.

There was one particular case that really stayed with us. A windscreen-fastening screw was replaced with one that was a tenth (?) of a millimetre too narrow, leading to that section of the windscreen getting blown out mid-flight.

It wasn't the biggest disaster - or even a disaster at all, by the way these things are measured - but it exemplified the way decisions, and states of mind, and procedural anomalies ripple through complex systems. And even then, the number of these anomalies, or decisions, or moments of bad luck or sheer circumstance, that need to line up for a damaging outcome to take place.

We invented an equivalent scale incident, then we spent some time planning out all of the different people who might be involved in an air-crash - through experiencing it or witnessing it, or being more tangentially involved - or culpable. Looking back it strikes me that this has parallels (intentionally or not) with the process of investigation - mapping out all of the possible factors that fed into the specific incident - and then tracking the repercussions.

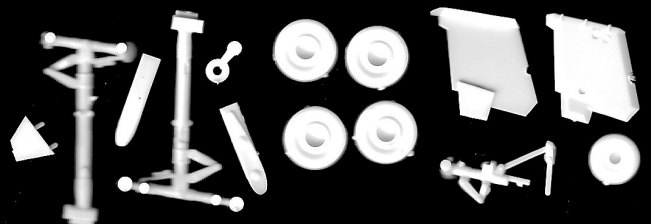
And then another thing those multiple perspectives parallel is the angles from which systems of air travel - of any complex global system - intersect with individual lives: personal, economic, social, analytical, emotional, direct, tangential, historic, immediate...

We had them all mapped out on massive sheets of paper on the wall of the making room. And at some point in that first week, you started to write those different voices. We would read them out to each other and then talk about them. They were written and saved as separate documents, without us planning a specific order.

I mean not to retrospectively put a convenient gloss on it, but the way we made that show makes me think of those hangars where they take every tiniest bit of the wreckage and reconstruct the plane out of it. It was kind of that process, except we'd made our own wreckage and we were drawing the blueprints of the object as we went along. We knew the thing we were re/constructing was a show, but there was no original version of it (that had smashed into the ground, or landed on water, or suddenly and violently depressurised) to work towards. And we could always make new wreckage to fill any holes that appeared.

After a week in our studio in Sheffield, we did a couple of work-in-progress showings with BAC, in Edinburgh and London. Each time we presented a different selection and order, picking a different route through our constructed debris.

All the while I guess we were asking that question that tries to prevent a piece - especially a research-based one, becoming what I call (although I don't think I did at the time) 'wiki-theatre' - something with the primary transmission of 'here's some fascinating shit we found out that you might not know'. We were trying to leave the space in our reconstruction for people to bring their own pieces. To do a bit of the job of post-accident analysis themselves.



F O R W A N T O F A B U L B


ENGINEER:

and then the bulb is in its socket and the radio is going off and they think it's a broken arm so could I come down and take a look because I'm the one in charge I'm the one responsible and my finger is still extended towards the switch that will test the bulb but I don't flick it because I am thinking about what to do

and in that moment I turn slightly so the switch the socket and the bulb are all out of my field of vision for a second but a second is all it takes at 3am for your mind to let go of an idea especially when it's the first night of a week of nights the problem you're solving is so minor

minor except that it could and will cause death and injury in combination with many other minor decisions and errors and situations adding up to make a lethal cocktail of time in a chain that stretches back to when the airplane itself was only its constituent parts not yet put together and further back still to when those parts were manufactured and before that to when those parts were still just ore and oil

and all those years funnel down to a single speck of time in a single microscopic co-ordinate which is one of my fingers poised over one of how many billion buttons on this one planet alone and the pattern of neurons changing subtly in my brain as I turn away distracted and not pressing this one specific button at this one specific time is sentencing two specific people one whom I have met and the other whom I have not to death



ASSISTANT INVESTIGATOR:
The handheld radio at his belt barks the news that one of his shift members has fallen from a raised platform and may have broken his arm. He swears and leaves the aircraft, the live bulb lying unnoticed in his overall pocket. He has put the dead bulb back in place.

CVR TRANSCRIPT

'HOT-1' is the Captain's Mic
'HOT-2' the First Officer's Mic
'CAM-1' the Cockpit Area Mic
'ATC' is Air Traffic Control

ATC 286, confirm you're aware,
crosswind coming from the East, er,
about twenty knots.

HOT-2 We are aware. Confirm runway two.
286.

ATC 286 runway two confirm. When you're
lined up heading two five oh you
may commence your approach.

HOT-2 Will do tower. 286.
How are we doing for altitude?

HOT-1 Ten and falling.

HOT-2 Just a little to the left there.
Runway two.

HOT-1 I see it.

HOT-2 Flaps?

CAM-1 [Sound of decreasing engine power]

HOT-1 Just give it a bit more throttle.
OK. Set flaps for landing.

CAM-1 [Sound of flaps setting switch]
[Sound of flap extension]

HOT-2 Set.

HOT-1 Ailerons.

CAM-1 [Sound of aileron setting switch]
[Sound of aileron adjustment]

HOT-2 Set.

HOT-1 Glide slope initiated.

HOT-2 Initiated.
Sink rate's good.
Range to threshold one thousand.

HOT-1 Gear down?

HOT-2 Check, gear's down.

HOT-1 Nice and easy.
Love this airport.

HOT-2 You can see your house from
here, can't you?

CAM-1 [Sound of laughter]

HOT-1 I wish.

HOT-2 Two hundred.

HOT-1 Spoilers?

HOT-2 Spoilers, ah, ready.
One hundred.
Fifty.
Twenty.

HOT-1 Prepare reverse thrust.

HOT-2 Prepared.

CAM-1 [Sound of rear landing gear
touching down]

HOT-2 Rear gear's on the deck.

HOT-1 OK. Prepare to deploy.

CAM-1 [Sound of nose landing gear
touching down]

HOT-2 Nose gear down.

HOT-1 Deploy thrust and spoilers.

HOT-2 Deployed.

CAM-1 [Sound of spoiler deployment]
[Sound of reverse thrust
initiation]

HOT-2 And we're down.

CAM-1 [Loud bang]

HOT-2 Oh my-

CAM-1 [Sound of impact]
[Loud crunch]
[Loud scraping noise continues for
12 seconds until secondary impact]

HOT-1 Emergency braking.
The fucking gear's collapsed.

HOT-2 Jesus
Tower, this is 286 we are declaring
an emergency.
Nose gear is out.

HOT-1 [Unintelligible] - off the
runway.

HOT-2 We are off the runway.
Request all emergency assistance.

ATC Copy 286 I hear you. Emergency
declared.

HOT-1 No control.

HOT-2 The shed -

HOT-1 We're going to hit it.
Going to hit it.

HOT-2 Oh no.
Oh shit.

CAM-1 [Sound of secondary impact]
[Sound of cockpit window breaking]

HOT-1 [Screams]

ATC Emergency units are with you 286.

HOT-2 Oh fuck.
Oh fuck John we made it.

CAM-1 [Sound of sirens]

HOT-2 John?
John?
John?

-RECORDING ENDS-

We often talk about this as the 'frame' of the show. What gives it an identity, what makes it, well, a show, rather than a collection of research facts? One of the things we latched on to early on - in that first writing week, in fact - was the 'Airfix', model-kit airplanes. When you started writing I went to a model shop and bought a couple, and built one on the table next to you, with a camera mounted overhead.

Which I guess physicalised the metaphor in a really useful way. It took the reconstructive element and said - yeah - we know this is what we're doing - so we're going to *actually* do it, over here, where you can see it. So it can be in the room, acknowledged, and we can let the other stuff speak alongside the reconstruction without questions about how deliberate or not it is getting in the way.

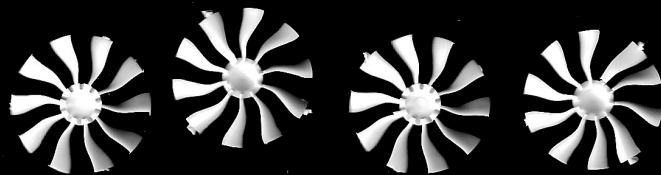
[As an aside, we discovered that models of passenger planes are much less popular - and therefore harder to buy - than fighter planes.]

We enjoyed the change in scale that video gave us straight away - the possibility of projecting an image of a model plane landing gear so that it would be 'life size' in the room with us.

There *is* something really enjoyable about that. And not to get too meta, it connects with the theatre of the whole experience as well. Taking a tiny representation of a section of reality and for a while, in a small room, making it the size of reality itself.

I think this is a recurring theme - or motif? - in our work. How do we (people) picture things (stories, information) in our heads, particularly things that are beyond our day-to-day experience? Things that require specialist or scientific knowledge? Things of a scale we're not used to dealing with? And then how do we (theatre makers) represent those ways that we (people) picture things, on stage.

Absolutely. But also - and I think this links this show and *What I Heard About The World* - what are the multiple human and performative perspectives we can investigate these stories and this information from? Who can show us this and how can they/we tell it in a way that reflects the complexity and processes of the systems and material, without reducing the piece to an emblematic story with a single (narrative) point of view?



In this case, it emerged through the devising and rehearsal process, that the performers were people who constructed model airplanes, and reconstructed the events around air-crashes - assembling the evidence, building the narrative from multiple viewpoints. We had originally imagined an industrial scale space of concrete and metal platforms. As we ended up making the show on a much smaller budget than we had hoped, we focussed in on the human impact of the stories, the scale of the tasks, and the environment we found them in.

We printed each voice onto its own sheet, on its own clipboard, creating a physical library. The performers' job was to construct the model planes, and (re)construct the case under investigation.

Did we have a conversation about 'acting' then? I think we needed to decide who the performers were in relation to the material, at the moment they were sharing the material. Appointed witnesses? Researchers? The people suggested by whatever text they were reading? I don't remember this being a piece with anything approaching conventional 'acting' in it - but then considering it was a collaboration between us, I'd be surprised if it did... but I might have that wrong.

There was an ongoing discussion about this during rehearsals. How much were the 're-enactors' us (the performers), and how much did they invest in the various characters that they picked up? The clipboards became a shorthand for 'we're playing, or reporting, a character now'.

There were improvised sections, too, as 'ourselves'. The 'all the technology I use on the way home' speech was my actual journey home, and Jerry, Gillian and I played the 'Guess the Air-crash From One Detail' game for real each night.

So that clears that up. And it makes sense. There's a set of rules there that aren't necessarily explained but very readily apparent. And of course the links to other work we made. The games are played for real. The repurposed autobiography. One thing I can't remember doing through - I don't think we ever tried to play on the audience's fears. Did we? I hope we didn't.



FAITH IN FUEL

INVESTIGATOR:

...faith that the fuel, for example, is actually in the aircraft. Faith that sufficient fuel is in the aircraft to get it to its destination. Faith that the sensors designed to convey the fuel level info to the cockpit instruments are functioning correctly. Faith that someone on the flight deck will notice if they're not. Faith that the fuel is free of impurities that might interfere with its efficient combustion within the engine. Faith that the fuel will combust within the engine and nowhere else. Faith that the pipes transporting the fuel between tank and engine will not rub together and eventually cause a leak. Faith in the structural integrity of the fuel tanks. Faith in the structural integrity of the insulation of the electrical wiring passing around the fuel tanks. Faith that in a moment of madness the flight crew won't decide to dump the aircraft's load of fuel and ditch it in the sea.

I could go on.

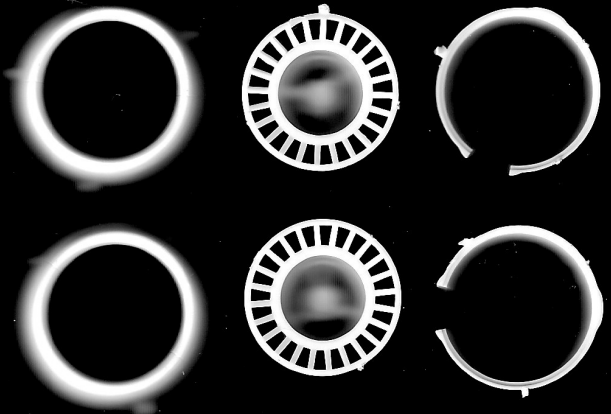
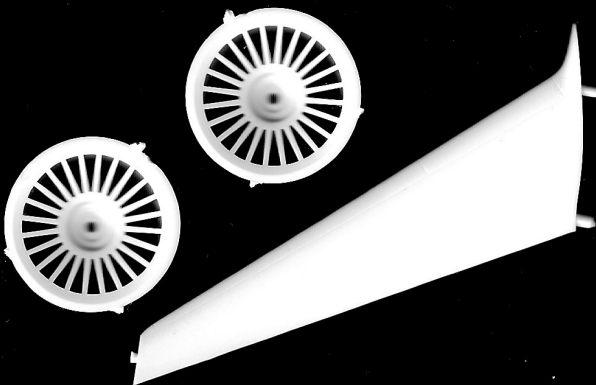
Do you know what kind of faith this situation comes down to?

ASSISTANT INVESTIGATOR:

Faith that someone in the middle of the night shift can still replace a dead bulb with a fresh one?

INVESTIGATOR:

Exactly.



PICTURES OF PLANES

ASSISTANT INVESTIGATOR:

I found this website. Pictures of planes. Nothing unusual in that. Except that every plane in every photograph had crashed in the years after it was taken...

The person taking the photographs didn't know it was going to happen. That isn't what I'm saying. They're just photographs of planes taken by the kind of people who like to take photographs of planes. They only became significant later.

[But...] These planes were already carrying the seeds of their own destruction in these photos.

Somewhere within these planes, the bond has been weakened. It's not a crack yet. But something in the very early stages, invisible to the human eye, is starting to think about coming apart.

I think about the time I heard my boyfriend answer a question in a certain way. I didn't love him any less, but I knew from the tone of his voice in those few seconds, that in five years we'd be splitting up.

That's the stage the these planes are in these photographs. The cracks are there, undetectable, but there.