

**Interview of former RAF Reaper pilot 'Justin Thompson' (a pseudonym)
by Chris Cole, Drone Wars UK, May 2017.**

CC: Can I start off by asking you to tell us a little bit about your background and how you came to be an RAF Reaper pilot? [Q1]

JT: "I was fortunate to get a sixth form scholarship when I was 15 and a flying scholarship when I was 17, so I started flying as a teenager. I really enjoyed it and so I subsequently decided to join the RAF and do it as a job."

CC: Isn't that pretty unusual.

JT: "No, not necessarily. A lot of people start off that way. Many of us get introduced to flying through a university air squadron but you find that the vast majority of RAF pilots have started, or at least displayed a definite interest, at quite a young age. It's something that you have got to show a real commitment to. It's not open to those who want to just try it in and wonder what it might be like."

CC: In my mind, there's not many people who actually get through the training to do actual flying, is that right or...?

JT: "It depends really. If you have a high failure rate in your training system that means there is something wrong in your selection systems. Over the years it's been refined. A lot of people apply and few get through. My experience through training was that there were very few actual failures which kind of suggests they are selecting the right people. There one or two, here and there, and sometimes certain aspects of people's ability doesn't come to the fore until you hit a particular part of flying training. Some people may struggle with instrument flying. Some people might struggle with low-level flying. Some people might reach a point where their capacity is saturated and they can't learn anymore because they can't go beyond those boundaries. I was fortunate enough to be successful and spent most of my career flying front-line manned aircraft."

CC: Were you in Iraq?

JT: I was involved in most of the overseas expeditionary operations during the time period I served.

CC: And so how did the option to fly Reaper come up?

JT: "I'd done several tours and I was looking for options. I felt that I wanted a different challenge, a change of scenery. The opportunity came up and my command chain thought I was a good fit for it."

CC: When was this?

JT: It was early on in the Reaper programme. We already had a cadre of instructors and line pilots, guys that were sent out there to kick it off. Some of them had been embedded with the Predator programme [the US-UK Joint Predator Task Force] for a few years so there was some corporate knowledge of how to do UAVs in general and they had gone out there and stood up /launched 39 Squadron. It was very much sailing into the blue. It wasn't quite uncharted waters as we had picked up a lot from the way the Americans had been doing it. Predator had been around a long time, so there was already a good set of established principles and procedures to build on and Reaper is just an evolution of Predator really."

- CC:** Did you stay out there or were you deployed for a few months at a time?
- JT:** “No, I went out there with my family and lived out there. They got to see a lot of Vegas, I didn’t get to see any of it as I was pretty much working all the time.”
- CC:** **Can you say a little bit about what a typical Reaper shift is like? There are reports that it can be quite boring, while some say the opposite, that it is pretty stressful. What’s your experience? [Q.2]**
- JT:** “It really, really depends on what is happening.”
- CC:** My understanding is that the RAF crews fly Reapers in three-hour sessions, is that right?
- JT:** “Give or take, yes. The aim is to have a few hours, have a break and then do another few hours. We ran three shifts over 24 hours so a shift was typically eight hours give or take. If the operational conditions dictated you’d be flexible on that but, yes, three hours in the seat, an hour out, and then another three hours was not untypical.”
- CC:** So is that strange? Because obviously, normally when you fly, you take off, fly the sortie and then land, you do the whole thing. Whereas with drones you are just slotting in for a bit of the flight.
- JT:** “It is and it isn’t. It depends on how adaptable you are I suppose. You walk in the GCS [Ground Control Station] and you are effectively somewhere else. Once you are in that seat, once you are flying the aircraft, your mind is very much ‘I am in this aircraft’. Now whether that would translate to someone has never had manned flying experience I don’t know. All I can say is that I adapted fairly quickly.
- “The most difficult thing was the flip-flopping between the mind-set of being on live operations, and then being at home with the family. This is something that has been raised numerous times and it has caused issues for people in a lot of different ways. There were times when you would go home and then take a couple of hours to decompress and wind down. It can be quite stress inducing because you are occasionally seeing some pretty intense stuff.
- “I don’t recognise the notion of detachment that some people claim about UAV pilots. The idea that ‘you are not there so you are not in the action’. I just don’t recognise that from my experience. My mind-set was very much one of being there, and I was able to see so much of what I was looking at, in so much detail that you develop an intimate and in-depth knowledge of what is going on around you. So much more so than the fast jet, for example, that would rock up, stay around for 20 minutes or an hour depending on how much fuel the planes got and then head off again. You mind becomes invested in it.”
- CC:** So if you were coming to the end of your three-hour slot, before a break, were you so involved that you didn’t want to get up, or.....
- JT:** “I found it relatively easy to switch on and off, so to speak, when I walked out and walked in to the GCS. Sometimes, if it had been pretty hard work or an intense shift or session, I’d want to chill for a bit. Or sometimes if I was bored, I’d like to go to the gym for an hour.”
- CC:** Presumably sometimes much of a session would be flying the Reaper from A to B. Is that right?
- JT:** “It depends. There really is no set routine. And there is no set pattern of who you might support. Allocation of air assets was managed centrally. I don’t know any of the specifics of how that’s done as I’ve never served in CAOC [Combined Air Operations Centre] so I

couldn't give you much insight into that. Like any asset you would assess how much use you could get out of it versus how long you might have to spend transiting there. So I'd say the bulk of it was closer in to home base but that didn't preclude on occasions you'd go two or three hours down range. It just depends on where you are needed."

CC: **Do RAF pilots take a turn with the Launch and Recovery Element (LRE)?** [Q.3]

JT: "The LRE was run by the US but we did provide some manpower to support it so it was a shared effort."

CC: Did you do that at some point?

JT: "Yep. Postings varied in length, somewhere between 4 and 6 months. Some of the Americans did it for a year,"

CC: Oh, that's longer than I thought.

JT: "Some US personnel could be deployed for a year but it varied. A few months would be typical."

CC: Do people not look forward to that? Presume it's a fairly boring task, just doing the take-off and landings rather than flying the missions, or was it just seen as part of the job?

JT: "It's just another part of the job really. All of us flying the RAF Reapers came from various fleets that had been involved in operations previously and most of us had seen first person action and most of us had been deployed into theatre so it wasn't anything onerous. There was a different focus. The LRE is there to throw aircraft into the air and get someone else to pick them up, and then at the end of the mission to bring them back in safely when they return. On the mission side, you are obviously more concerned about what you are going to be looking at and what you are out there to do."

CC: **Talking of that, I don't know whether you are able to talk a little bit about the process of launching strikes** [Q.4]

JT: "Well I know this is the MoD's line, but what has been said publicly is absolutely true. All the principles, all the rules that apply to other aircraft apply to Reaper. It's all done in the same way. At the end of the day, the fact that weapons are hanging off an unmanned aircraft is almost irrelevant. The net effect on the battlefield is the same regardless of what platform the thing is delivered from. There is nothing special about the aircraft being unmanned in that respect."

"I know people have valid concerns, and that needs to be addressed. Unfortunately the nature of the capability and the way it's used for military purposes, generally means that a lot of what it does is classified. A lot of people automatically assume that if you ask a question and someone turns around and says 'I can't tell you that, it's classified', it means that there is something surreptitious or nefarious going on, and it's not really the case."

CC: Sure, but I think sometimes when things are politically sensitive or difficult, 'national security' is pulled out as an excuse.

JT: "It could be, I suppose, but I've never experienced that myself so couldn't really comment."

CC: One of the things that I'm interested in is the differences in the process for dynamic versus deliberate or pre-planned strikes. Obviously, if it's what's called a 'troops in contact' situation [where forces are under attack] the process I imagine will be pretty fast?

JT: "Yes."

CC: So you'd get the message 'This is happening, go here'?

JT: "It depends on the situation. If a dynamic situation develops on a scene you are already on ..."

CC: What do you mean 'scene you are on'?

JT: "Sometimes you would be scanning an area, other times you would be looking at a specific 'thing' or compound, or point of interest. Other times you might be supporting a convoy and the speed at which things can go from deadly boring to hair on fire is the blink of an eye. You can spend six or seven hours bored out of your mind sometimes, just flying round in circles looking at stuff: 'Nothing to see here. Nothing to see here. Nothing to see here.' And then something goes down and you have to react very quickly. And no I don't mean dive in start firing stuff off. There are processes to be followed, and those processes are the same that would apply to any platform delivering a kinetic effect, not just Reaper drones

"The real difference with UAVS is persistence. That's the big advantage as it allows you to build up a very detailed picture of what is going on in a particular area. So if you are in a particular area and a need for kinetic action arises, generally speaking you have already got knowledge of the kind of things you would need to know to assist that to happen. That's versus a fast jet that might be called in having been there only five minutes, with limited fuel and with limited information – what it can get from the guys on the ground - Boom, bang and he's off to get some fuel. That's a bit flippant. It's not quite like that, but you see what I mean.

"The big difference is the amount of detail we are able to amass about a particular area, not just on one mission, but over time. If you are providing support in a particular area, you develop a great deal of detailed information, to the point where you can recall certain things from memory because you were looking at this last week and spent two weeks previously looking at it and you know generally what goes on in this particular area. The other thing this persistence gives you is a good sense if something has changed or if something is unusual. You go 'Hang on, that wasn't there last week, someone's moved it. Let's have a look to see what is going on here.'"

CC: **Some would argue that it's very difficult for people like ourselves - brought up here in the UK - to have a really good understanding, remotely, of what is happening on the ground in a completely different setting and culture. In Afghanistan in this case. What would you say to that? [Q.5]**

JT: "It is difficult, and there are of course important cultural aspects that we have to learn. If you are to assess what might be happening out of the ordinary, you have to have some idea of what ordinary looks like.

"Spending so much time looking at a particular area. Spending eight hours a day, six days a week, you do get to build up a very good picture of what normal looks like. You also get, thorough briefings and education about what the cultural norms might be so that you can recognise activity that is not unusual. Whereas if you didn't know the cultural norms, and were looking for suspicious activity and you saw, say, a lot of people gathering, you might come to the wrong conclusion. So it is important to learn as much as you can about places. I think the western militaries have good cultural knowledge of Islamic countries, of the Middle East now because we have been involved in one way or another in operations there for 30 years now..."

CC: Well, hundreds of years...

- JT:** "I meant recently. There was a little bit of a lull after the Second World War, if you discount Suez."
- CC:** **Around the time of strikes, how much are you in contact with others? Analysts, commanders, lawyers etc. Either in your ear or over text channels? [Q.6]**
- JT:** "It depends. The pilot can control it at the end of the day. It's important to recognise and people do, that the GCS is the cockpit of an aircraft and as the pilot in command, your authority in there is absolute."
- CC:** So the final decision about a strike is always the pilots?
- JT:** "Yes, the final authority is always down to the pilot. That's the same in manned aviation. It's inscribed in stone in aviation law that the pilot in command is the final authority and it's certainly the same for Reaper, as far as the UK RAF is concerned. I can't speak as to how other forces and other nations may operate their unmanned fleet. Some army-type models don't use professional air crew, and they may do things differently. They may have longer command chains. They may have extra people in there. They may have decisions coming from a long way away, and the guys in the GCS are just there to do as they are told. I don't agree with that way of operating. I think the closer you can stick to recognised good practice in aviation, the better. At the end of the day, it may be remotely piloted, but it's still a real aircraft, in real airspace, with real weapons on board."
- CC:** So, if you are monitoring, as you say, a particular town or compound, are there other people watching in live? Lawyers or intelligence analysts, for example?
- JT:** "There can be. Who may or may not be watching depends on how interesting the view is. It's well known that UAV video feeds can be distributed to headquarters or wherever else for example. If you want it, there can be a lot of other 'eyes on' and advice given to you. If you want something explained to you, if you want a second opinion on something, if you want something checked you can say "Guys, are you seeing this?" Or "What do you think that is?" And that is really useful. You can also reach out for command advice, for legal advice. The number of people who can get a long screwdriver into your GCS is incredible and it does happen that occasionally you have to say 'Please can you get your long screwdriver out of my GCS'. But generally speaking, it's well managed and people don't interfere unless they think there is a reason to."
- CC:** Some people say that having online advice is helpful but others say that it hands over the decision making to others, it can become a group decision...
- JT:** "It doesn't because, as I say, ultimately it's the pilot's decision. Now I think I can talk about one particular incident. I was preparing for kinetic action and the phone next to me rang and it was LEGAD [Legal advice] saying "Stop what you are doing". Now I can't go into details but after a period of time and a bit of discussion he was eventually happy. Now, I would have been within my authority to ignore him and put the phone down when he told me to stop. Of course it would have been a very unwise thing to do, because if, at the end of the day, a legal adviser turns round and says don't do something, even if you are 100% certain they are wrong it's probably best to listen."
- CC:** But what about the other way around? What if a pilot has qualms but the LEGAD is saying they are perfectly happy? If they are saying go ahead? Are you not persuaded by that?
- JT:** "If I'm not sure, I don't do it. I've been in that situation as well. I was put under intense pressure to strike a target but my own assessment, my own belief was that it was not in

accordance with certain policies and directives, so I decided 'no go' and that decision was final.

CC: **Can you talk about how integrated UK and US Reaper ops are? We know they work pretty closely together, but I'm also interested in what their differences are. Now, I'm not asking you to go into differences on Rules of Engagement or anything. I'm talking about the culture, the training etc. [Q.7]**

JT: "Well, there is a lot we share in common, but yes there are a lot of things we do differently as well. There are subtle differences in the way we operate. On a personnel level, the US has more of a specialisation approach. This man will do this job, this man will do that job etc. We tend to be a bit more multi-skilled. We tend to invest a lot more autonomy in the pilot in command, whereas the US will perhaps rely more on someone external to the GCS."

CC: Were there distinct British GCS? And separate US ones? Or were they integrated?

JT: "Initially the US and UK squadrons shared a building but very quickly we had our own compound at Creech with our own GCS and used them almost exclusively. In terms of the aircraft, we generally stuck to our own. Occasionally we'd borrow one of theirs if we had a maintenance issue. They are all essentially the same anyway."

CC: That was quite surprising when we discovered that.

JT: "Well, we were fully interoperable with them at that time in that we used their manuals and check lists. It's the same aircraft at the end of the day."

CC: I think it's accepted that the British Reaper capability is not sovereign. It's obviously an American aircraft. Can you say what makes it not sovereign?

JT: "Well I would disagree with that. The British operation of Reaper is entirely British. The US are not directly involved in it at all."

CC: My understanding – and senior British military officials have said this on the record - is that the UK Reaper capability is currently reliant on the US.

JT: "I'm not sure I'd agree with that to be honest. In terms of the specific operations I have been involved in it has been the case that we have worked alongside and made use of US facilities. However, there is nothing stopping us doing it completely on our own. At the end of the day if we decide to go and set up our own LRE [Launch and Recovery Element] somewhere, we could go it alone."

CC: So you are saying that, if the UK wanted to, it could use Reaper anywhere, say for example, Libya or Mali?

JT: "Yes. As far as I'm aware there wouldn't be anything to stop us."

CC: I imagined the reason it was not 'sovereign', as officials have put it, was that there was some inherent communications technology, or some hardware, or some software in the GCS that was proprietary, no?"

JT: "No, not as far as I know."

CC: **In terms of the communications there is obviously a link from Creech and Waddington via satellite that controls the aircraft. But then there is the sensor and video feed information. Is that sent via the same link or is there a separate one? [Q.8]**

JT: "I'm not sure there is any division between it. The link is multiplexed into one 'pipe' if you like and it all comes back to the GCS and then it can be sent onwards and elsewhere but that is a matter of choice. It gets sent to various places that wish to make use of it."

CC: Presume it goes to CAOC (Combined Air Operations Centre)?

JT: "Yes."

CC: And to RAF Wyton, is it, in the UK?

JT: "I don't know where it comes to in the UK to be honest."

CC: Well there are multiple and various intelligence centres.

JT: "It could be sent anywhere where we want it to get to."

CC: **As you will be aware, the MoD regularly states that Reaper is primarily for ISR (Intelligence, Surveillance and Reconnaissance) but at the same time, we know from official statistics that Reapers are used to launch a lot of strikes. In Afghanistan where you operated, over several years something like 75% of UK weapons were launched by Reapers. Can you tell us from your experience of flying Reapers how regular or how rare was it to launch strikes? [Q.9]**

JT: "That's very hard to say. It really depends on what was happening. You could have a handful in a day or you could have a couple of weeks with none."

CC: Would it be rare in your experience to go a week or a month without a strike?

JT: "I've had a week when it was non-stop and I have a month when nothing happened. I've had both."

CC: At the moment in Iraq there seems to be one or two British Reaper strikes a month, but at other times there are dozens a month.

JT: "It's a reflection of what is happening on the ground and that's the nature of these kind of operations. Sometimes a lot happens. Sometimes not very much happens. At the end of the day you use the best asset to deliver the effect you want. It just so happens that a lot of the time Reaper happens to be around because it's up in the air a lot longer. 14 hours plus or whatever. Often, with operations being led by known intelligence, you are on the scene where think something might be likely to happen, that's part of it as well.

"Regarding it's an ISR asset, we had this argument early on. The Americans say it's not an ISR asset it's an attack asset. They even named their Reaper squadrons 'attack squadrons' to emphasise the point. And they called the ISR they did 'NTISR', Non-Traditional ISR. They were trying, as much as possible, to push this thing into the fast jet world. We did the opposite. We started off with 'this is an intelligence asset that just happens to be armed and we might want to use it occasionally'. Part of the reason for that is the way military doctrine works. The 'offensive' tasking chain and the 'ISR' tasking chain are separate entities, but it turns out that neither of us were right at the end of the day. This was something entirely new. Armed ISR.

CC: I'm pleased to hear you say that it's something new! That's what we have been arguing for some time.

JT: "Well, it's entirely new in terms of military doctrine. Previously it was 'this is a strike asset' and it goes in that box, and 'this is an ISR asset' and it goes in that box. And there is no neat box to say this is the best way to employ this asset. Over time, I think, the Americans learned that this thing they call a strike asset is actually very good at doing ISR, and we

learned that this thing we say is an ISR asset - we might as well accept the capability for what it is, it's there for a purpose, so let's start using it. And the doctrine evolves as you would expect it to."

CC: **Can we talk about technical problems. Did you ever have a lost link?** [Q.10]

JT: "Yeah, lots. Usually very short-lived and almost always a non-event, but I've only ever known of one serious incident where the thing went home due to a technical failure somewhere."

CC: One crashed of course – must have caused a bit of a panic.

JT: "A bit."

CC: And the Hermes drones crashed a lot of course. Were you folks in Creech involved at all with the British use of Hermes drones or was it separate?

JT: "Completely and utterly separate. It was flown by the army, done in its own way. In terms of lost link, if Reaper loses connection, it will do what it's programmed to do, which most of the time is, wait around for a bit and, if connection is not re-established, fly back to base and wait to get picked up by the line of sight signal - the LRE guys."

CC: Did pilots get attached to particular airframes? Did you have nicknames for them for example?

JT: "No. To be honest, it was difficult to tell them apart. Older aircraft develop their own characteristics over time but the Reapers weren't like that. Partly because I suppose you are insulated from the mechanics of the aircraft a bit but because of modern design - everything operates to the same specs. There was no particular individuality other than the tail number."

CC: Weather, is it a real issue for Reaper?

JT: "It's not specifically an issue because it's unmanned. It's an issue because Reaper is not specifically designed to operate in poor weather. Part of the reason for that is that it's designed for optical surveillance and you can't do that through cloud anyway. So you tend not to fly in cloud. Secondary sensors like radars can look through cloud but for dynamic type stuff they are not particularly useful."

CC: **There is some debate among commentators about the clarity of the image that Reaper pilots see and there have been a few different images released. I think this image is probably a good representation of the best kind of view that pilots get from video. Would you agree?** [Q.11]



JT: "Hmm. Yes, I can validate that, I suppose, that's pretty close."

CC: There's the issue of the 'soda-straw view' of course, the amount that you can see close up is limited...

JT: "I disagree with that. It's not limited at all. You can see whatever you choose to see. You can zoom that camera right out so it's first person view if you want. You've got a nose

cameras as well that also give you independent first person view. While you are on mission, on task, and focused, your main sensor you have got effectively a 'soda straw' view, but you always have options of using nose camera or zooming out on the main sensor to a wide field of view if you want to."

CC: Would it be different at night?

JT: "The primary sensor is the IR (Infrared) one anyway and it works just as well in the night as in the day. In fact it's often difficult to tell the difference between the night and the day."

CC: That was presumably because of the shifts and the time-differences between Creech and Afghanistan?

JT: "Yes, we worked in three different time-zones. The army like to do everything in local time to where they are at the time. Aviation is always done in 'Zulu time' [Universal Co-ordinated Time (UTC) based on Greenwich Mean Time], and then there was obviously local time where we were in Creech, in which you did your shifts, and lived your life. But it's something you just get used to."

CC: You mentioned earlier that when you were flying Reaper there were three shifts?

JT: "Yes, days, nights and mids. They changed around in accordance with the needs of supporting those on the ground. They tried to make things as stable as possible from a personnel management point of view. Even if you are working shifts, as long as they are stable, you can get some pattern of normality. And they tried to do that but the capability was so much in demand."

CC: Yes, and I think that's where the stress for pilots and crew comes in I think. There is talk of PTSD – and I'm sure there is an element of that – but it's the workload, the constant demand...

JT: "It was. In terms of operating the aircraft it was not only the hardest I've ever worked in a cockpit, it was the hardest I've ever worked on a unit as well, because it was incessant operational tasking. Other units I've work on you would have periods of operational tasking, you'd have times when you were busy, and you would have times when you were not so busy. This was constant and never ending."

CC: **So that brings us to personnel and crew numbers. You work in pairs? Pilot and Sensor Operator and then there is a Mission Commander, is that right? [Q.12]**

JT: "Mission Intelligence Coordinator. Mission Intelligence Controller. Mission Commander. They get named various things, depending on who it is. RAF tend to refer to them as Mission Intelligence Co-ordinator and they are the image analysts that are in the back of the GCS who would provide all the SME [Subject Matter Expert] support."

CC: So although they are called Mission Controller or Mission Commander' they are not in charge, it's the pilot in charge?

JT: "Absolutely. And it's important to remember that all the guys and girls posted out there are highly capable."

CC: And presumably you knew each other fairly well and worked closely together.

JT: "Yes, we got to know each other quite well. We were a relatively small, close knit unit."

CC: I think from Freedom of Information I've seen there were about 11 crews at the start and that built up to around about 20 and the number of RAF folks operating Reaper in Creech was around 90. Is that about right?

JT: “Something like that. It ebbs and flows of course as people leave and join. So we were a close knit bunch but not just at work, the families were too, because we were all strangers together in a strange land. So all the wives and kids – and husbands in some cases – were close as well.”

CC: Was it difficult at all for your family – don’t know if you want to talk about that?

JT: “All I’d say is that they loved it. They had a whale of a time.”

CC: **I’d like to turn now to some of the ethical issues. Many people have had their say on these question; politicians, campaigners, defence officials, but the voice of the crew, in the UK at least, has been largely unheard. So it would be really good to hear your thoughts. Firstly, and we have touched on this a bit already, are drones different from other military aircraft? What’s your position? [Q.13]**

JT: “If you are talking about kinetic action, I think essentially they are no different. It’s a platform in the air that has a sensor on board you are using to look at the ground. The picture you seen in a GCS is essentially the same as you would see in a fast jet. The sort of weapons you are delivering are exactly the same sort as you would be delivering from a fast jet. Essentially all of the principles are the same and I don’t see any significant difference.

“A lot of things are significantly better in that you get much more extensive and much more detailed information on the area you are looking at and on any specific targets. That’s not because of any particular capability, it’s just because you can spend a hell of a lot more time looking at it.

“A fast jet pilot would, say, do a four month tour in some place. He’s got four months’ worth of knowledge and then he’ll be gone. He might come back in a year or two, but we are there for three years. Constantly, every day, building up massive amounts of knowledge and a detailed picture of what goes on. We come armed with so much information, and so much information is available to you, not just from your own knowledge, but from sources you can reach out to. You’ve got the text. You’ve got phones. You have got other people you can call on and drag into the GCS. You can get other people to look at the video feed. You can get many opinions and views....”

CC: Exactly. Doesn’t that mean it’s different?

JT: “It means it’s different, but all different in an advantageous way. What it means is that the likelihood of you striking a wrong target or causing collateral damage is, in my view, greatly reduced simply because you have so much more information. That can be a bit of a double-edged sword. It can often mean that a lot more is expected of you. You are expected to be a more accurate. You’re expected to know all of this stuff because you have the time to know it.

“I can honestly say that being in the GCS of Reaper is probably the hardest I’ve ever worked while flying an aircraft. It can be very labour intensive in certain phases of flight, and certainly if there is an emergency on, or you have to change things in a hurry and you are trying to fly and communicate at the same time. On balance if you can get the management of the information available to you right, its hugely advantageous in terms of being able to act more ethically I believe.

“So in answer to the simplistic question: ‘Is it different’? Yes it is, but different in a good way.”

- CC:** That's really interesting and really useful to have the pilot's perspective on that. Another of the debates around armed drones is focused around remoteness and what's been dubbed 'risk free war'. Whether that is, quote, 'fair', unquote or not. And I guess whether drone war is actually 'war' in the traditional sense. Some will say that war is not meant to be fair and I understand what they mean by that. But at the same time there are certainly laws, rules, and conditions that make war 'war'. If you can fight war with impunity, is that war anymore? From your perspective, what do you think of these questions? [Q.14]
- JT:** "Well, would launching ICBMS at another country be war? And that's the ultimate expression of remoteness I guess. You are required to be proportionate under LOAC [Laws of Armed Conflict]. I completely agree, as you said that there is no requirement to be fair, you are not there to be fair..."
- CC:** There are rules of course, as I know you would agree and accept.
- JT:** "Yes, of course. But essentially the bottom line is that you are there to win. There are things that are acceptable and things that are not acceptable and I really do not feel that the use of armed drones breaks any of those in any particular way. If you think about a fast jet that's flying above the known air defence capability, in an area where you have complete air supremacy, you can fly any aircraft almost with impunity and so I don't see any difference to that. It's just common sense to keep yourself out of harm's way if you can. That principle has been learned, for example, by those whose job is war on the seas. It's been a long, long, time since any two ships directly engaged each other at sea."
- CC:** But the risk free idea, as you talked about earlier, that you are at war one minute and then a few hours later you are at home with the kids. That's very different, even from those as you say, launching ICBMS from a submarine. They deploy, they go away, and at some level, are at risk on a submarine. It may be minimal in comparison to the past, but they are at risk. The same with the fast jet, as a former manned pilot you know when you get into a plane there is a level of risk...
- JT:** "You are not at zero risk in a GCS. Theoretically it would be perfectly possible for someone to find out where you are operating from and to arrange some kind of action against you..."
- CC:** So you felt very much at risk?
- JT:** "Yes. You could potentially make yourself a target for, if you like terrorist action that potential does exist. So you wouldn't go around advertising the fact that you were a Reaper pilot working out of X location. That possibility of non-state actors – or even state actors – taking direct action always exists. So you have to think beyond the normal boundaries of what you consider to be warfare. Now that may be stretching the definition of war a little bit in some minds, but it is a possibility that exists I think."
- CC:** **What's the reaction, in your experience, of others in the RAF to Reaper? We've heard stories of people in the US being disparaging about pilots, calling it the 'chair-force'...** [Q.15]
- JT:** "In my experience it doesn't stretch beyond the normal banter that goes on in the services in any way. All of us involved in Reaper had come from manned aircrew backgrounds, we already have the credentials if you like to be a member of the club. We do get 'Why do you wear flying suits in the GCS?' and 'Why are you getting flying pay?' etc. But it's just normal banter. Whether that would be different if you were talking about people who were purely professional remote pilots, who had never done manned aviation I don't know."

CC: It looks like it might be going that way...

JT: "I'm not sure about that. A lot of people suggest it might go that way. A lot of people think it would be a good idea to go that way. And a lot of people have said there is no particular reason it shouldn't go that way. But the reality is a bit different. It depends what you want to do. If you want to have the capability to dynamically react in real time to things that are going happening on the ground and perhaps take kinetic action, you need a very similar skillset to that of a manned pilot. Not in terms of 'stick, rudder, throttle' hands on flying, because a lot of that is taken care of by the system, even though Reaper is very much hands on compared to a lot of these things. But it's at the judgement and application of rules and boundaries level, the airmanship, all of those things, are the same so it's very useful to a manned aviation background. So I see that staying for a while at that level."

CC: One of the pressures on that is the increasing use of armed drones. As you know the UK is doubling the number in its fleet and from what I see, they are finding it very difficult to get enough people to cope with the increasing demand.

JT: "I don't know. I think some of the attraction to do this was going to Vegas. I'm not sure there would have been as much interest if Waddington was the only option! (Laughs).

CC: Have you been there?

JT: "I have, but not recently."

CC: We've strayed a bit back into operations let's get back to the ethical side of things.

JT: "Yes."

CC: **Another big question for us is whether drones are lowering the threshold for the use of force? Whether armed drones make it easier for politicians to go to war if you see what I mean. What do you think about that? [Q.16]**

JT: "I used to think it wasn't a possibility, but thinking about it and discussing it, what I would say now is that I can't say it's not a possibility. All I can say is that I haven't seen any of that happening. One of the reasons is that the rules that apply to the use of Reaper kinetically, is exactly the same as for manned aircraft, so I think there is a 'hard stop' there somewhere.

"But the other thing is that they are bloody expensive. Yes, in terms of military aircraft, if you want to compare them to other military aircraft they may look relatively cheap. But for what they are as aircraft, they are expensive. If you wanted to go out and buy something manned with a similar performance to Reaper that could carry the same weapons load as a Reaper could, you would get it for about a quarter of the price and you wouldn't have any of the technical complexity behind running it either.

"And the other thing is that we don't have all that many of them. Even the Americans don't have that many of them compared to the scale of the demand. And the one thing military planners do not like to do is lose capability. So I don't see them being used in an expendable way. Bear in mind that Predator was originally designed to be cheap and expendable. The problem with that is that originally it was crap. So they turned round and said, actually we quite like this capability and we'd like to make it a bit more survivable, because it's really handy and we don't want to throw the damn things away. So unless there is an absolutely need, there is a reluctance to consider expensive equipment to be expendable."

- CC:** I would argue that the British use of armed drones in Syria, in 2014 and 2015 – well before parliament authorised the use of force there – is evidence that armed drones are lowering the threshold for the use of force. I can't imagine they would have sent manned aircraft, Tornado or Typhoon, in at that time, but they felt they could send in Reaper
- JT:** "I can't comment on that, primarily because I don't have any knowledge about it. All I can tell you is about the general mind-set that applies and my personal feeling is that if there was any realistic chance of them being shot down, they would not have sent them in.
- "Yes, you can turn round and say, at the end of the day, it's easier to replace a piece of equipment than a human, that's true. But these things are in high demand and there is a limit to how fast you can build them. So if you lose one, it's going to be a couple of years before you can get one off the production line. And that is lost capability and when you only have a handful of them to start with, losing one represents a significant chunk of the capability you are losing.
- "Military aircraft are all high value assets. You tend to have very few aircraft compares to lots of soldiers. As horrible as this sounds, if a commander has 10,000 soldiers and 100 are killed, that represents a tiny proportion of his capability. If an air force commander has fifty aircraft and loses ten, that's a significant proportion of his capability gone.
- CC:** Well I would say that's a very military point of view. On a political level, I think it's the other way around.
- JT:** "Yes, I agree. And it's certainly possible that the scenario you describe could come about. All I can say is that I never got any sense of that. What would cause us to send an expensive piece of equipment knowing there was a high likelihood that we weren't going to get it back? There would have to be quite a big pay-off for that."
- CC:** I don't think it would happen if there was a *high* likelihood you wouldn't get it back, but if there was *some* risk to the aircraft – of crashing for example – but they did not want to send in 'boots on the ground'. I don't think they would risk a 'manned' aircraft but would an unmanned.
- JT:** "Well, in my view, and it's a personal opinion here, politicians and those at that level making the decision tend to be concerned about what could come back on them, legally for example. So they tend to think about the consequences of the end results of any action on themselves, before any detrimental consequence on nation and the military. And I think maybe that is a barrier to that theoretical threshold lowering, because that will be a risk personally to them."
- CC:** Well, we'll see.
- JT:** "I never got any sense of that when I was flying Reaper. We were quite careful where we took the aircraft. It wasn't a case of 'let's send a Reaper' because we wouldn't send a manned aircraft, but that may be the specifics of where we were at that time, who knows."
- CC:** **Well, let's come on to the 'PlayStation mentality' idea, which I know you dislike?**
[Q.17]
- JT:** "I hate that phrase. I think those that use that phrase have never actually done this."
- CC:** You will be aware where the notion comes from. The idea that the physical and psychological distance could make an impact on operations.
- JT:** "Well I refute that. I also think that there is an idea that because you are not directly manipulating the control surfaces of an aircraft by being sat in it, that somehow lowers the

skill level required in order to successfully operate one of these things. It may change some specifics in motor skills, but then so does an Airbus. Conceptually, you are wiggling a stick, pushing a peddle, turning a wheel. That gets converted into little 'ones' and 'zeros', sent down a wire to a computer that decides where to put the flying control surfaces and throttles the engines of the aircraft. It's very similar, at least technically, in a modern airliner as in a Reaper. The level of skill required is similar. Piloting has only ever been 10% hand-flying skills, 90% is judgement and airmanship."

CC: What about the 'PlayStation mentality' idea that the remoteness and the distancing makes it easier for pilots to launch weapons?

JT: "There is the potential for you to feel that what you are doing isn't real and there are no direct consequences. But I think that would only occur for someone who had not themselves sat in an aircraft and been shot at.

"For me, what I was seeing on the screen was very real. In addition to that for me it was more than just two-dimensional. My mind very easily perceived a three-dimensional scene that extended out of the side of the image. Whether that was because I was used to sitting in a cockpit and seeing that sort of picture I don't know. Someone whose only background is flight simulators or playing computer games may have a different view. I relate it to sitting in an aircraft and flying it, others may relate it slightly differently. It's difficult to say."

CC: **Another question I'd like to get you take on is the notion that armed drones and remote war is distancing the public from the impact of warfare. Going back to the Second World War, it really was a national effort, the whole nation was at war. But now the public are so less involved... [Q.18]**

JT: "Yes, and they were getting bombs dropped on their heads, so the consequences were very real and in their face. But now it's different. It's curious though, because people can be isolated from the immediate consequences of it and therefore either not understand what it's like, or completely ignore it, or have opinions about it that are extreme or nonsensical. When people are personally unaffected by something you can get a whole range of views. Whereas perhaps one way to unite a country is to throw a load of bombs at it. So, terrorism aside, the western world has lived in a space for a long time without direct threat, which has allowed a lot of diverse opinion.

"Potentially, in this day and age of instant communication, you can get right in there with the action and see war up close. If you go to the right places on the internet you can find videos of all sorts of horrific things going on, but that's a choice."

CC: I don't think people want to see it.

JT: "I've seen one or two videos which I wish I hadn't watched, even though I'm used to combat and had the dubious honour of having to watch combat up very, very close..."

CC: And doing battle damage assessment after launching a strike I guess...

JT: "Exactly and that is not pleasant either. It's better in IR than in day TV, I can tell you that. And yes I felt a good deal of the kind of stress that that would induce in any normal human being. I'm not ashamed to admit I have shed tears from time to time, but I think I coped with it in a fairly healthy way. I was quite good at compartmentalising and I was also quite good at letting it come to the fore when it needed to. I know of people who have suffered quite badly with PTSD. They just couldn't make that disconnect, if you like, between 'this is my normal life' and 'this is my work life'.

"There was a great film which got panned by the critics, 'Good Kill' with Ethan Hawke. If you ignore the extreme caricatures of the people involved - who would never find their way into a combat role in the military - a lot of the film was scarily accurate."

CC: What about 'Eye in the Sky'? What did you think of that?

JT: "Dragged out for dramatic purpose but not entirely inaccurate. Having never sat in the corridors of power I can't comment on the political decision making portrayed and so I couldn't guess how accurate that side of things was. Almost all the film was about decisions being made external to the GCS. I sat the other side of that. As a British Reaper pilot I still had the absolute authority to say 'I'm not doing that', I'm the final arbiter."

CC: **What's your take on the naming issue? Both in terms of the use of 'drone' rather than 'RPAS', but also the change from 'Reaper' to 'Protector'?** [Q.19]

JT: "Well I think we Europeans are a bit over-sensitive on this compared to the Americans (laughs). They like their things to have strong aggressive names and the fact that we have taken something called 'Reaper' and decided to call it 'Protector' when it's essentially exactly the same thing... a rose by any other name. The strong name is about image, we are too but the opposite kind of image. We are trying to pretend it's something that it's not in a sense, like that makes any difference. There is some merit in it of course. The intention is to protect friendlies on the ground and to employ weapons in the pursuit of that. But as we found out its pretty damn good at being 'offensive' as well as 'defensive'."

"Also, we've lost the battle against the 'D-word'! If people ask me what I did, and I said "I'm an 'RPAS' pilot, they say "What, what's one of them?" I got fed up of explaining it so I said 'drone', it's easier."

CC: **I'd like to finish by asking you to talk a little bit about the precision and accuracy of strikes. We do see video of direct hits on aim points but that doesn't happen all the time does it?** [Q.20]

JT: "It's important to know that it's not necessarily about hitting the exact aim point, it's more about did you create the effect that you intended on the target. So for example if a missile or a bomb lands 10 or 20 feet away, but you still kill the target, that's a success. If you go 100 foot long or whatever, then that's clearly a miss. Also if you cock up your weaponeering and place the weapon in the wrong specific place, in other words, it hits where you wanted it to go, but relative to where the target is, it's the wrong place, then effectively that's a miss too, even if you have been accurate."

CC: As you know, we have this narrative at the moment that weapons are so precise these days that they always hit the target unless there is a human induced error.

JT: "That's not an accurate narrative. Any device has a failure rate. What I can say is that they are pretty damn good. As long as you are using them correctly and as long as the weapon is released within defined parameters appropriate to the weapon, they will generally find their way to the target. Now more modern weapons tend to be better than the older ones but what you will have is a known Circular Error Probable [a measure of accuracy in feet or metres] for each weapon."

CC: And that's the thing we are not allowed to know and you do...

JT: “Yes. Unfortunately there is no way around that for very good reasons. You can’t release detailed capability of what your weapons can do. Newer weapons are pretty good. Not just in terms of accuracy, but in terms of reliability as well.”

CC: You are very good in allowing me to ask questions and not being offended or annoyed with my impertinence. So can I ask, when you launched the weapons that you did were you ever surprised by what they did in terms of where they hit?

JT: “Not really. None of mine have ever really caught me out so to speak. I’ve had one that failed to detonate, but that’s it.

CC: So you put the target on the place where you want the weapon to hit and then launch. Does it hit that pretty much all the time? Or does it sometimes, or often, hit a short distance away?

JT: “It depends on the weapon, they are all different. More modern, more agile weapons tend to be much more accurate.

“They almost always get within an acceptable distance. Like any system, however, there will be failures. No machine is 100% perfect. But these are expensive things. A lot of money is put in to making them work right and if they were failing at significant rates, purely from the point of view of economics, questions would be asked. High failure rates would not be tolerated, not least by me as an operator. If I did not have a reasonable amount of confidence my weapon is going to go where I want it to, that would give me doubts about whether really I should be releasing it. Particularly if there is potential for collateral damage.

“In terms of getting them where you want them to go, they are really very reliable. In terms of having the effect you want them to have, that can depend on so many different things. So you might not necessarily kill the target and there can be a whole host of reasons for that other than the reliability or accuracy of the weapon.”

CC: We’ve seen over the years many of the individuals targeted by drones (and I’m talking primarily about the US use of drones for targeted killing here) have walked away from drone strikes. So on the one hand we hear about the incredible precision of drone strikes, yet on the other, time and again, the strike appears not to be so accurate.

JT: “Well, effects are not guaranteed. You could shoot someone ten times and they could still survive. It depends on the individual variables of the circumstances at the time. Even if a weapon is 99% reliable, one in every 100 shots isn’t going to do what you expect it to do. When people hear words like ‘smart bombs’ or ‘intelligent this or intelligence that’ people think they are infallible and you can just throw a weapon at a target and it will disappear.”

CC: That’s what most people understand now is happening in war, most people get their understanding of war from Hollywood.

JT: “It’s also important to point out that none of this is exclusive to remotely piloted aircraft. The same weapons are dropped by manned aircraft and are subject to exactly the same kind of limitations. Let’s face it, no government in their right mind would release videos of weapons that have failed. So you get a false impression of the efficacy of these things. They do have failure rates, they are not high failure rates. There are occasions when everything goes as you want it to, but it doesn’t have the effect on the target that you want. It’s possible to drop a 500lb bomb right next to someone and they survive it. There are lots of variables, there are lots of factors that you just don’t have control of, and that’s why it’s important to think about the people who want to automate certain facets of combat, which I think I is totally and utterly wrong. There are things that you just can’t

account for ahead of time and that's why it's so important to have humans exercising their judgement."

CC: Well, you and I disagree about some things certainly, but we very much agree about that.

JT: "Absolutely. We cannot automate decision making when it comes to taking life. To me that's utterly, utterly wrong. And I don't actually think you can actually do it, technically or legally"

CC: There a lot of companies out there who are trying.

JT: "Well they are, but they are wasting their money"

CC: Unfortunately they are wasting our money...

JT: "Well, most of it is their own money or venture capital and that's already starting to drain away. We'll see where it goes."

CC: Well, thank you so much. It's been a really valuable and interesting discussion and I really appreciate the time that you have given.

JT: "You are welcome. I hope people find it useful and informative."

CC. I'm sure they will, thank you.

For background see: [Former RAF Reaper pilot speaks to Drone Wars](#)

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