



Royal Air Force **Stories from the Future**

ficint¹ [fik-in't]
(noun)

Fictional Intelligence; useful fiction, a meld
of narrative and nonfiction.

(See also: speculative fiction)

¹ Credit: August Cole and Peter Singer - <https://useful-fiction.com/why/>

ACAS Note

Welcome to the Second Edition of Stories from the Future, bringing possible (or even impossible) futures to life.

This edition builds on the success of the first, deliberately projecting the reader into a range of future worlds and scenarios to help spark challenge, thinking and debate. They imagine how climate may have changed us and what we do; new roles we will undertake; the advent of avatars and artificial intelligence; an increasingly urban and connected world; and the changing nature of how social media may undermine our cause.

To some readers, the pictures these stories paint may seem uncomfortable, dark, off the mark, or too distant in time or place. To others they may feel clear and present, almost as if we are already there. Whatever they mean to you, we hope you will find them engaging, because that is what they are for. Please engage with them and let us know your thoughts. After all, they have been written by only a few, and it is unlikely in the extreme that any one of them will come wholly or partially true.

The actual future will be different, it will be written by us all, and we all have a part to play in making it a positive one. By considering what could happen, we can shape what will.

AVM Simon Edwards, ACAS-Strategy

Introduction

This collection of stories diverges from the edition one release with a focus on selected themes relating to the future operating environment. Rather than focusing on kit, these stories spend more effort imaging potential issues our future force will have to deal with.

We hope the last release generated useful discussion on where we could be going. Whether you liked the story or disliked the ideas, we sincerely hope it generated a reaction and a vision of what work needs to be done today in order to be ready for tomorrow.

Unlike the previous release, slightly darker shades are presented from a greater array of viewpoints. These are fictional stories! These are not projections, policy, or meant to state a truth. The stories should generate an emotional response and discussion...they don't represent what the future has to be.

Questions are provided with each story to help kick start conversations in your team, office, or meetings. These questions attempt to tie the story to a larger picture and offer a range of thoughts from practical through philosophical. All of the questions should cause pause for thinking.



Lungs of the Earth

Will the UK be called--even expected--to play a more active role in defending the environment? This piece raises several ideas from how remote medical care could be delivered to deployed operations, to the value of building partner capacity in a multipolar or multilateral world by developing long term relationships abroad and supporting those relationships with national air power assets. Public support may be just as critical as capacity; this piece even references the Op as a hashtag which was a compelling reason to serve for the story's protagonist.

Alex opened her eyes and realised this was her first time in a hospital bed since the accident all those years ago. The gentle hum of the air conditioning and the soft staccato of her heartrate on the monitor were the only sounds.

'How are you feeling?' It was Omar, the medic.

'Well, I think.' Alex frowned. 'Did we lose anyone?'

Omar waved the question away. 'There'll be time for that later. First things first... you'll be pleased to know the procedure went without a hitch. Have a sip of water.'

Omar pushed the drinking straw to within Alex's reach. 'The surgeon is online... just the usual post-op chat. I hoped it could wait until you came around fully, but she wants to finish work; it's almost five back in the UK.'

Alex nodded and Omar gave the thumbs up to a medicom screen then turned it to where Alex could see it.

The doctor smiled warmly. 'Hello Alex, how are you feeling?'

'So far, so good, Doctor. No pain.'

'Good. It all went well and the read-out I'm getting at this end shows that everything is as it should be, considering I've just taken a bullet out of your prosthetic... sorry, I mean, out of you.'

Alex nodded. 'I'm just glad the medisat link stayed secure so you could see what you were doing.'

'You aren't the first patient to say that, Alex, but not to worry; remote surgery has come a long way in the last couple of years. Now, flex your arm for me.'

Alex did as she was told, and the doctor monitored the data back in the UK.



'All looks well, I've repaired a few bionic linkages around the elbow and gave the neuralink a reboot so don't be surprised if you feel a headache, that's the brain's normal response to the procedure.'

Alex shook her head. 'I feel fine.'

'Your incident made headlines, I see. This Amazon crisis is never off the newsfeeds. Anyway, if you feel anything unusual speak to Omar. He'll take care of you. Keep up the good work.'

The doctor waved and the picture faded. Omar pushed the screen away. 'Lucky thing, eh? She'll be sitting outside a gastropub in a short while. No jungle bugs in her part of London!'

Alex laughed then leaned forward and touched Omar's arm to get his attention. 'Omar. What happened? Did we lose anyone?'

'We lost two indigenous villagers and an interpreter.' His voice was calm. 'Your team and the rest of the villagers are safe. The Guardian callsigns you called in are still there, providing overwatch. You now know as much as I do until you get a proper debrief. Now relax, try to sleep. I'll be back in an hour.'

Omar pushed past the curtain and disappeared into the medical tent's connecting corridor. Alex exhaled deeply and closed her eyes she began to remember the attack on the tribe up to the point she was airlifted by one of the Guardian UAVs configured for the casualty evacuation role. Luckily, her team had been in the right place at the right time. She imagined the horrors that would have unfolded had her request for air support not been made; she thought of the village children. She had cultivated deeply personal relationships within her tribal network and their cause resonated with her. And they needed her. Her mind raced with what she could be doing instead of resting. Time spent in the air-conditioned luxury of the deployed medical facility was time wasted.

Alex had never felt so personally involved in a tour. Most of her colleagues hated FOB Iranduba and could not wait to escape it. The heat, the humidity, the insects, all conspired to sap their morale. But Alex loved the hum of the rainforest at night and was in awe of the power of the broad dark waters of the Amazon which swept close to the FOB.

There was nowhere else she wanted to be. In her mind, the survival of the most biodiverse ecosystem on the planet was worth fighting for and the #LungsoftheEarth campaign was critical in mitigating the effects of global warming.



But despite her confidence in the cause, she could see why some of the tribes wanted to sell off their lands to agriculture and mining interests and have a share of the regional economic prosperity. These people were aware of the wonders of technological development and the societal transformation it brought to the world outside of the rainforest. A chance to improve their lives was now in reach.

Opposing them were those who wanted to protect their ancestral homelands and the sanctity of Amazonian life from loggers and miners. The pressures on the ecosystem and the resultant political tensions meant the region ranked high on the list of 'geopolitical flashpoints'. The flash came when the misinformation campaign launched by the corporate mining lobby set tribe against tribe in a wave of ethnic cleansing.

The failure of South American governments to act had prompted the international community to intervene and Alex's team was there to help start a negotiated peace process. This was everything she had joined the service to do: protect the weak, to help others. She smiled at the memory of her RAF graduation day, her closest friend Jac gently chiding her: 'That's our Alex, going off to save the world.'

Her tablet was by the bed and she reached for it and searched her mail. There it was, the last message from Jac. Alex had always updated Jac on her movements within the service, what campaign she was working on, where she was heading, her next task. She had sensed doubts in Jac's last message, misgivings about the intervention in the Amazon.

Alex closed her eyes to gather her thoughts then started to dictate. 'We had no choice but to intervene, Jac. How could we simply stand by as some of the last indigenous tribes on earth laid down their lives to defend the lungs of our planet's ecosystem? You remember the public outcry. It shook the foundations of our



society, making us, making me, question and reaffirm our place within it. These are our cultural values and, most importantly, our responsibilities as humans.'

What she could not tell her friend was the complexity of the campaign, how a series of strategic staging posts had been established along the Amazon; the lifeline of the operation. From these locations, uncrewed aerial systems flew deep into the contested rainforest; three-ship Guardian formations controlled by a human operator at an RAF base back in the UK via the Carbonite-9 satellite constellation. The arrival of such a formation had saved Alex and her team when they were attacked in a village whilst building relations with its leaders.

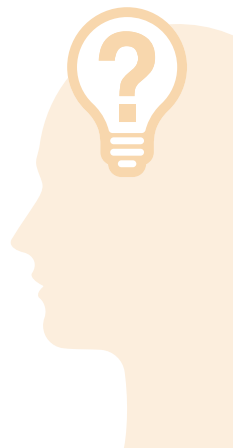
She flexed her arm and grimaced. She had been lucky. If the bullet had caused more damage no amount of remote surgery would have saved it; she would have been on an aircraft to the UK to get it replaced. She was not sure if she should tell Jac she had been injured. Not yet, anyway.

Good old Jac. They had been childhood friends. She had been on the way to Jac's house all those years ago when she had been hit by the car. Crossing the road that day without looking properly had changed her life. Alex knew that losing her arm was the first step in bringing her to where she was now. It had come to define her. The military gave her access to world-leading neurotechnology which felt light years ahead of the latest NHS prosthetic catalogue.

Her thoughts were interrupted by the familiar buzz in her palm. One of the key advantages of prosthetic was the enhanced haptic feedback it offered. Her colleagues often mislaid their haptics, leaving them in pockets or on desks. Alex was attached to hers. Or, rather, it was attached to Alex. She smiled at her own joke and drifted into an exhausted sleep.

Questions

- What are the implications of climate change and carbon neutral initiatives on the roles of the RAF? And the United Kingdom? Does a Fragmented or Multipolar world affect those roles or responsibility?
- Should the RAF use advanced sophisticated self-enhancing technology not available to the general public to attract potential recruits with a return of service? Should access to the most sophisticated prosthetic technology attract a strict return of service?
- If recruitment and national prestige relies on physical presence, how does the RAF portray itself beyond 2030?





The Check Ride

Most of our environmental projects suggest we have some time left to adapt or adjust to what the future may be. But what if those projections are wrong? Or what if there are other factors at play the projections haven't accurately captured? This story lives in that world and explores how life goes on for the RAF within it.

Johnson breathed in the crisp autumn air and tried to relax. The journey from Marham to Wyton along the New Wash was usually one of the pleasures of the commute, but this morning even the gentle roll of the hydrofoil failed to distract from the stresses that the day would bring. The flat fields of Cambridgeshire, peppered with mudflats and streaked with tidal creeks, spread to the southern horizon. Beyond the marked channel, the towers of Ely Cathedral thrust above the surface of the water. The ancient building had become a symbolic reminder of the losses suffered in the Big Melt of 2023. It's loss to the nation had been a gain for the seabird colony that used its medieval towers as a nesting site.

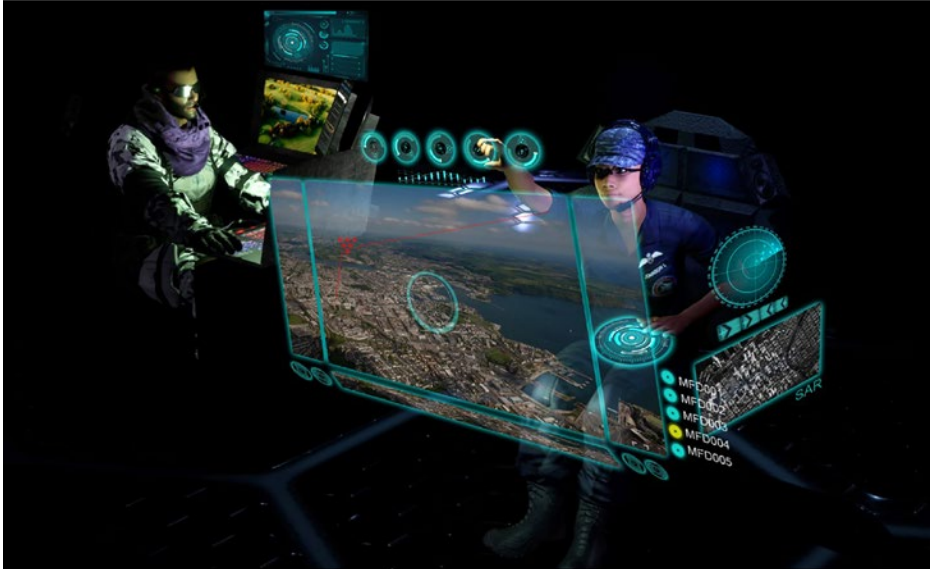
As the ferry approached the passenger stop for RAF Wyton it paused for a krill trawler; one of the few still licensed to scour the controlled permitted fishing grounds of the coast and North Sea. Johnson could not remember the last time seafood had been on the menu at the station dining facility; not so much for the exclusive price but what

contaminated it. Only traditionalists such as her grandparents ate anything caught in the sea and even then after the plastic pollution count on the packaging had been carefully checked. Johnson smiled at the irony of Grandpa and Grandma eating fish while their grandchild snacked on protein bars of insect extract, each pulling a face at the other's culinary choices.

Johnson thought about some last-minute revision and gave up on the idea. 'If I'm not ready now...' This was it; a career in the RAF which had been eight years in the making was culminating in a Check Ride, a test of Specialist Johnson's knowledge.



'I've come a long way since I flunked my university course, much to Mother's disgust,' mused Johnson. It had been an exciting journey, blighted occasionally by parental disapproval at their child's disregard for an online BSc in Database Development. But the intricacies of Blockchain Tech had bored Johnson who had looked skywards instead. A place on the RAF Regiment Scholarship programme had been a career lifeline, resulting in a BEng in UAV Manufacture and Maintenance. It had been an obvious step from Technician to UAV Pilot.



When the Career Management AI stepped in and flagged Johnson's nascent profile strengths, the seed of an idea took root, driving the ambition that only an unsuccessful Check Ride would quash. If today went well Specialist Johnson would move from tactical, armed Force Protection UAVs to Operational RPAS with the Protector Fleet, a step closer to the dream of piloting Space Command's strategic assets. It had not been an easy journey so far; with so many autonomous airframes in the air, it was a competition to push through the ranks as a pilot. The memory was interrupted by a tiny vibration and flicker as a Blip-Brief registered in Johnson's glasses. The test had started.

At the Wyton testing facility, Johnson was directed to an operator terminal and told to take control then begin pre-flight checks until the instructor was ready.

‘Hello SPC Johnson. For this morning’s sortie, you’ll be doing a handover with PROX4562. This will lead us straight into the scenario provided in this morning’s transmitted brief. Feel free to ask any questions as we move through the stages.’

The exercise threw up some of the usual – and unusual – operational, command and engineering issues such a flight might pose. In the scenario, Johnson was commanding 32 autonomous and piloted systems subordinated to a Space Command Space Hawk Block 50, at a height of 200,000 feet. The time passed in a haze of injects, randomly selected by four separate AIs. There were also interactions with simulated agencies such as Intelligence, Surveillance and Reconnaissance, Space Command and the Training Wing of the UK Command Air Operations Centre. Johnson was enjoying the interaction with the AR cockpit as it returned sharp responses from the airframe and after three and a half hours, knowing there was only 30 minutes left, was beginning to feel satisfied by the performance.

In an instant, half of the subordinated capability went offline. From experience Johnson knew the absolute requirement was to understand the neural network the pilot was part of and how to quickly identify and remedy issues within it. Escalating the issue upwards revealed that an EMP had knocked the top-level C2 offline, a Space Weather event had resulted in severely limited options.

Johnson knew there was little time to waste, no time to panic and routed comms through the autonomous Space Hawk to the closest Wedgetail, allowing a threadbare, daisy chained channel to open to the CAOC UK, while simultaneously re-tasking the UAVs into a different formation to maintain coverage. The CAOC

UK AI acknowledged the efforts and was able to follow the activity through the Space Hawk.

Johnson worked the piloted systems to form a staggered formation, recovering 75 per cent of the mission with half of the assets. After a tense 15 minutes which tested Johnson’s cognitive skills, mental agility and sheer aviatorship, the instructor spoke for only the second time in four hours.

‘Thank-you Specialist Johnson, the Check Ride is complete, please prepare for inflight airframe handover to 2nd USAFE at Ramstein Air Base.’

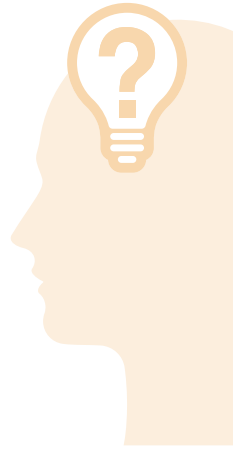
Back on the hydrofoil, looking out over the waters, Johnson smiled in relief. It was over, and the decision was now down to the instructional staff, the AI, the metrics, the aviation medics and the facility OC to decide if the performance had made the grade. Johnson had heard that the decision never took long.

As the hydrofoil approached the stop for RAF Marham a message flashed across Johnson’s glasses: ‘SPC Johnson 341, Pse report to 39 Sqn (PROTECTOR) 250800ZSEP40 for operational conversion training to the PROTECTOR-X aircraft.’

Johnson laughed with relief. ‘Wait till Mother hears about this.’

Questions

- How much should our future environmental response be based on adaptation and mitigation rather than prevention?
- Is there an indivisible nature to air and space power or should the domains be considered separately, and then brought together through agile C2 and multi-domain integration?
- What does space power resilience mean to Dispersal? Hardening? Deception? Mobility? Swift recovery?





Heads Together

Diverse viewpoints make for better decisions, so imagine a world where the whole of society engages with Defence through some form of service and the friends that you make there can convene virtually when you need to discuss a problem, whether they now work in Defence, in industry, in academia – or at all. In this tale, we look at how our people might benefit from this in the future.

'I have a problem. Well, I should say, I'm looking for advice for a student who has a problem.' I was addressing the avatar of a young woman who had materialised in my virtual lounge.

She smiled. 'I wondered why you'd called. It's good to see you again, Carolyn.'

'Yes. Yes, it is.' I gave what I hoped was my best wry smile as I gazed upon a face that I had almost forgotten. 'And it's Carey these days, by the way, not Carolyn.'

She smirked. 'Keeping it androgynous, are we?'

'I prefer to say gender-fluid. Surprised?'

'Not really, no.' She shook her head. 'The signs were there even back in training.' She looked thoughtful. 'It's been a long time.'

'It certainly has.' I paused, reflecting on our shared history and former intimacy. 'Times change. People grow.'

'Indeed,' she nodded. 'When was the last time?'

'Basic flying training, I think.' I cocked my head and surveyed her with a degree of quiet suspicion. 'Don't you remember?'

'Of course, I do. I haven't seen you since that last day in the sim. I thought you'd forgotten me – or outgrown me. Perhaps you're ashamed of me now?'

I needed to change the subject. 'No, not at all. I was...' I tried to gather my thoughts, wanted to phrase it properly.

She gave a knowing smile. 'You said your student has a problem. I presume you need my help?'

'Yes, please.' I made an effort to stay calm. 'Or, at least, I'd like your help. I may not need it after all, once the others arrive. We'll have to see.'

'The others?'

'Yes.' I kept my voice casual. 'Excuse me a minute. I'm just going to duck out and get a brew while we're waiting for them.'

'Don't bother to offer me one, will you.' She grinned that grin.

'I wasn't going to. After all, you didn't, erm, don't drink coffee, do you?'

I took off my immersive goggles and laid them on the worktop, smiling quietly as I replayed the exchange in my head. I opened the cupboard in search of a mug and surveyed the options, passing the hearts and floral motifs, I alighted upon my

big mug. Today demanded coffee – lots of it.

I placed the mug and chose the 'double cappuccino' option from what was available at the Costa hub. It took only a few moments for it to begin appearing. A few drips also appeared on the outside of the mug and I made a mental note to recalibrate the quantum receiver. I

mopped up the excess. The sound of conversation told me that more of my invitees had begun to assemble, so I pulled my goggles back on.

I pride myself on being a catalyst, a broker, sat at the heart of an extensive network of weak ties. These enable me to cross-pollinate ideas and opportunities between my numerous contacts, each of whom have strong ties throughout their respective organisations and often beyond. It is this matrix that allows me to connect those who are in need, who have a problem, with those best placed to develop solutions.

National Reserve Service has been a massive force multiplier in that respect. The fact that everyone must do it and that we are all thrown into a melting pot allows connections which carry through to whatever careers we carve out in later life. Those contemporaries who chose to work have gone on to carve paths in industry, academia or public service. Some are entrepreneurs, others are artisans, many have changed jobs as often as I have, if not more so. Best of all, everyone has an innate appreciation of the military and service life, which they take away and carry with them, whatever paths they subsequently choose.

Today was my turn to discuss a problem and to bring it before the collective. On re-entering the lounge, I saw Rakesh. He was short and a little stouter than our last meeting. His long, dark hair was drawn back into a ponytail and his neatly trimmed beard was slightly grey around the edges. He was talking with a tall, striking middle-aged woman. It was Heather. Her bright green eyes shone and her flaming red hair still cascaded over her shoulders.

'The latest models are extremely encouraging,' said Rakesh as he stroked his beard. 'The new data give us a real chance to predict the onset of crises around the world based on historical patterns going back centuries. It'll massively help with government planning.'

Heather looked interested. 'Is that just conflicts or other crises?'

'Conceivably, anything,' he replied. Rakesh was clearly passionate about his field. 'Conflicts, pandemics, empires, dynasties, stock market crashes, you name it.' He



winked at me before continuing. 'Don't worry, it's plenty smart enough to predict the next big thing in your line of business.'

'How is the world of immersive entertainment?' I said before taking another sip of my coffee.

Heather beamed, her bright eyes twinkling in delight. 'Oh, hullo, Carey. It's good, thanks.'

I smiled back at her. 'I always wondered what you'd end up doing when you left university.'

'We've got some fabulous new developments in the pipeline.' She could not hide her excitement. 'They let you interact with actors in films and drama series, as if you were there. It's all a bit hush-hush until we do the stock market launch next year. Anyway, how are you?'

'Fine, thanks.' My response was automatic.

'Really?'

I was caught off-guard. 'Well...'

She stared at me and, even in virtual form, her gaze bored right to my core. While reticent to bare my soul, I was grateful for her persistence and desire to share any troubles that I might have. 'I've been feeling a bit isolated lately, doing a lot of remote working and not seeing much of my family or friends.'

'I suppose that's one of the good things about these virtual environments,' said Rakesh. 'You don't even need to wear a mask and the graphics are getting more and more lifelike all the time.'

'Yes,' I agreed. 'You can even hug people, if you upgrade to a premium subscription and get a haptic suit.'

'And have a decent connection,' he added, drily. 'The other day I was in a meeting and one of the others kept fading in and out like a ghost. Then, he just froze in mid-sentence. Very distracting. Technology is great, when it works...'

'Yes, but It's still not the same, is it?' purred Heather, her penetrating gaze on me throughout, heavy with understanding and sympathy. Our eyes met and we smiled at one another. 'Would you like to talk about it? Meet in the flesh?'

'Thanks,' I sighed, gratefully. 'That would be lovely. I'm on call, but hopefully it'll be a quiet watch, so we can have a good chat and catch up a little.'

'On call?' she asked, in mild surprise. 'RAF duties or civvy job?'

'Oh, neither. I volunteer as a Mental Health First Aider as well, which may explain why I've had a lot on my plate recently.'

'Sounds very worthy.' She smiled. 'If perhaps a trifle harrowing.'

'It can be,' I said, 'but it really helped me to have someone to talk to when I was in a bad place, mentally, especially during rehab after my procedure. I wanted to give something back and to help other people, just like someone helped me.'

'Is this everyone we're expecting?' asked Rakesh.

I shook my head. 'Not quite. I've invited Windy. I only sent the invitation a short while ago. These jobs keep me busy.'

My first guest looked up. 'Windy? You mean Squadron Leader Miller, our old flying instructor?'

'That's right. He taught us aviatorship in winch-launched gliders, before we were streamed onto that trial of the wholly synthetic course.'

'I haven't seen him for years. How is the old darling?'

Rakesh frowned. 'I thought you told me he was dead.'

'Yes. He, he is dead.' I felt apologetic. It took a moment for that fact to sink in with the assembled company. While they were getting used to the idea another avatar materialised and Windy stood among us, large as life and looking like he did in his prime. The demands of rendering lifelike avatars, especially those drawn from the memories left behind when a person dies, had been a success; he looked just as I remembered him all that time ago.

'Morning all,' he said, airily, before glancing at his aircrew watch and then correcting himself. 'Or rather, afternoon!'

'Hello, sir.' I greeted him with the reverence born of our former instructor-student relationship. 'You're looking well. In fact, I never saw you look so good, even when you were alive.'

'Harsh banter, Carolyn. And you don't need to call me 'sir' anymore. You outrank me now, remember?'

'I did when I was full time,' I replied, 'but not now. I'm a humble junior officer these days. My main job is corporate finance. I just like to keep my hand in, training the next generation. And I go by the name of Carey, rather than Carolyn.'

'Excellent,' he said and raised an eyebrow. 'I can't think of a better role model for our youngsters.'

'Well, not all of them are that young nowadays,' I said. 'We take people of any age, with or without previous service, provided they have the right stuff. You know, in terms of aptitude, knowledge, skills, experience.'

'Ah.' He looked wistful. 'It's not the air force I joined and I've never quite forgiven the AI for replacing me.'

'To be fair,' I reminded him, 'it wasn't that AI replaced you directly, it was just that the succession planner had to re-work all of its predictions after you unexpectedly, erm, left us.'



'Oh, is that the one that uses quantum annealing to constantly plot everyone's preferences and potential to map them to the future needs of the organisation?' Rakesh's eyes sparkled at the merest mention of prescriptive analytics.

'That's the one,' muttered Windy, affecting chagrin. 'I don't trust these machines. I'd much rather have a desk officer managing my career – one who knows me and how I tick.'

'Dear Windy!' I laughed. 'You haven't changed a bit. It's so good to see you.'

'You are very kind,' he said, with a polite bow. 'Now, how may I be of assistance?'

'Well,' I paused, choosing my words carefully. 'It's about one of my students; a youngster and very talented, but a bit on the wild side. No names, no pack drill, not that you would know them in any case, but I'm looking for a bit of advice on how to channel their energies productively and avoid them getting bounced out for one of their silly stunts.'

I looked around the virtual room into the faces of my oldest and most trusted confidantes before continuing, 'Each of you has relevant experience, I think, so I'd like to tap into your collective wisdom, if that's all right?'

'Quite all right,' replied Windy, 'at least it is with me, though I must admit, some of your faces are not familiar.'

'Oh, I do apologise. I should have started with some introductions. This is Heather McCluskey.' I indicated the older woman, who gave a friendly wave. 'She and I did our National Reserve service together but, whereas I signed up full time, Heather started a career in industry. She runs her own digital empire now, don't you, H?'

Heather smiled. 'I'm not sure that 'empire' is quite the word I would choose, but something like that, yes.'

I nodded in the direction of the bearded man. 'Rakesh and I also know each other from the National Reserves.'

'I'm one of those lazy academics,' said Rakesh, 'sponging off the taxpayer and rich parents to fund my research into useless things like predicting the future.'

Windy laughed and the energy it required caused him to flicker slightly. 'Good to meet you both.'

I gestured to my first guest. 'I presume you remember this young lady?'

'Oh, yes.' He looked from me to the avatar of the young woman and smiled. 'How does it feel coming face to face with your younger self?'

'A little disconcerting,' I admitted, 'but Carolyn is here to remind me what I was like when I was in training.' I looked back at Windy. 'And you are here to offer me that same, sage advice that you always did, warts and all.'

'Which brings us neatly back to your problem child,' said Heather. 'Why don't you tell us all about it? After all, you're among friends.'

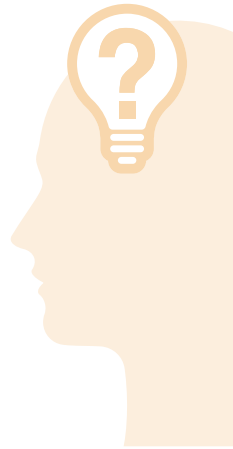
I won't bore you with details or betray any confidences. Suffice to say, my friends and I talked things through and they gave me some fresh ideas on approaching my problem. Rakesh's analytical mind, Windy's pragmatic attitude to self-discipline and Heather's intuitive grasp of human behaviour all led my own thinking in productive directions.

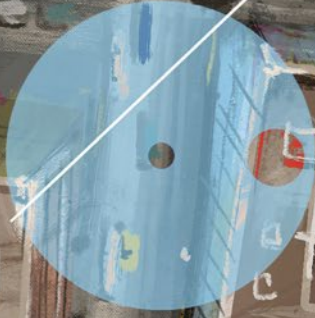
Yet it was my former self who clinched it, reminding me of how I thought and felt and acted when I was in the position of trainee. I had all but forgotten who I was back then and am indebted to Carolyn, the person I once was, for reminding me and for inspiring me to greater empathy.

As for my student, well, they were not asked to leave and do their flying elsewhere. In fact, the last I heard, they were doing rather well for themselves. They still ruffle occasional feathers, but that's no bad thing in a progressive organisation. It wouldn't surprise me if they made a full career of it. Quite a result, all things considered.

Questions

- How would you feel about being perpetuated in virtual form after you had changed jobs, left Defence or even died? Would advice from your virtual self be a liability to your real self?
- How will technology, particularly automation, machine learning and eventually AI, impact the RAF's operating practises?





Strike

The use of Air in the tactical environment for strategic effects may increase, especially in contested or denied environments where the overt use of air may not be possible. This piece examines what air and space can do in such an environment, what the requirements might be, and what policy and tactics may have to be employed.

Bobby steered the mini drone into position. Its profile blended into the background of the blocks of flats and the noise it made was lost in the urban soundscape. Her focus was a fourth-floor window and the drone responded instantly to the combination of haptic feedback from her hand controls and augmented reality glasses. Piloting through such an urban environment was challenging. Add the covert nature of this mission and the margin of error was nil.

Moving the drone closer, the window and the room beyond came into focus. Red curtains partially obscured and blocked any light coming through but made for excellent cover for the drone. Manoeuvring as close as she could, she conducted a quick visual sweep with the drone's multi-spectral cameras. A smart screen dominated the far wall. There was a grey couch in the middle of the room. On the couch was a slouched figure. Her target.

He was a facilitator, a money and message man and thanks to him the Insurgency's capabilities and membership had expanded rapidly. He had orchestrated the cyber-attack on the Central Cryptocurrency Exchange which had cost the UK billions of pounds. He had also planted the rumour about a fee hike for the annual Citizen Vaccination on social media, sparking a mass breakout of civil disobedience against the 'Vax Tax'.

Bobby barely spoke but the microphones in her AR sunglasses were sensitive enough to pick up her voice. 'Control. Target acquired. Control verify.'

'Control. Standby Bobby.'

Control was the Joint Operations Control Centre at RAF Waddington who could see and hear what she saw through her glasses. They were new issue and she was pleased with them; they were the latest generation in HoloLens augmented reality frames which allowed almost instant two-way encrypted narrow band stream, using secure SATCOM via the UK's stealth satellite constellation.

As she waited for control to finish its target identification protocol, she mused that despite all this technology, it still required a warm body to enable operations. She had just taken over the tactical observation of the target from a Gale Force Global, the RAF's high-altitude endurance uncrewed ISR aircraft and was now in the execute phase of the mission.

The days when this sort of mission was conducted through a globally connected internet were long gone. The advent of walled off systems and physical regions to protect personal security meant Distributed Personal Encryption networks, the successor to Virtual Private Networks, had to be approached by 'boots on the ground'. In this case, a clandestine operation using cyber capabilities meant



the boots belonged to Bobby, an RAF Joint Terminal Controller, adept at guiding lethal and non-lethal payloads onto a variety of targets.

She had honed her skills on her previous Op in the dense urban environment of Mexico City, guiding remote precise munitions onto targets against the Soldados de Dios drug cartel, whose conflict with the Mexican government had turned into a full-scale insurgency. Now she was in an equally dense urban environment, hiding in an empty flat in the block opposite her target's.

Her PComm burst into life. 'Bobby. Control. Target confirmed. Begin pre-targeting protocol. Payload is prepared and on standby.'

'Roger. Beginning PTP. Will confirm when ready. Out.'

The payload was a worm virus which she needed to insert into the target's PComm and Bobby needed line of sight for the first phase of the attack. She activated the drone's internal repeater, a computing device that could hack into carrier waves within a 100m radius. It was controlled by Bobby until a link between it and its target has been established. She controlled the repeater via a few options and Bobby used a mix of her AR glasses and an integrated AI assist she affectionally called Suzie. And right now, she needed Suzie to be quick.

'Suzie?' she whispered. An icon flashed across the inside of her glasses and a warm, metallic voice chimed through her earphones.

'Yes, Bobby.'

'Primary target has been identified. Start PTP and engage repeater link with target's PComm.'

'Yes, Bobby. Estimated time to establish link – 20 seconds.'

It wasn't ideal. A lot could happen in 20 seconds, especially in missions such as this. To underline her point, the target had just been joined by another person; a woman. She began an animated conversation with the man on the couch.

This was interesting. If the woman was carrying a PComm, which she probably was, it could disrupt the repeater link.

'Control. Bobby. We have another variable within immediate vicinity of the target. Please advise.'

There was a pause. 'Control. We've identified the variable. Be advised your mission parameters remain the same. Primary target is priority. Copy?'

'Copy all. Out.'

Bobby let out a deep breath. 'Suzie, status on establishing repeater link?'

'Time estimation revision. 40 seconds till link established.'

That was not good, thought Bobby. The more time it took to establish a link, the more dangerous it became as she became 'visible' to anyone undertaking EM surveillance and overwatch. Considering the importance of the target, that was a high probability.

'Suzie. Switch on passive counter surveillance and alert me if we're scanned twice.'

A new data input appeared in the screens in front of her eyes. This would give her an immediate warning of detection. The next 40 seconds seemed to stretch out. Bobby watched the time counter march down and as soon as it hit zero, she contacted Control.

'Control. Bobby. Repeater Link established. Hand over initiated. Copy?'

'Control. Hand over received. Payload deployed... now. Time to complete, 60 seconds.'

'Copy all. Out.' As she shut the commlink, her detection warning indicator flashed. Suzie's voice buzzed. 'Active surveillance detected.'

'Suzie, did they find us?'

'Sudden spike in feedback,' replied Suzie.

'Suzie, uplink with SAT observation and EM monitoring. Scan local frequencies for anything near us.'

'Control, Bobby. Observation point compromised, request emergency extraction and black out action.'

Her heart began to beat faster as she waited for the response. 'Emergency extraction request granted but blackout action denied. Stay on target till upload complete.'

That's understandable, she thought, returning to her surveillance of the target. For the mission to succeed, the upload had to complete. Blackout would have compromised the link and the mission. She checked the upload's progress: 50 per cent.

She activated the silent proximity alarms and cameras that her team had pre-installed in the building she was in. It had recently been 'condemned' by the municipal authorities on the Joint Task Force's request. She put the drone in safe mode and 'made ready' with her personal weapon in case she needed to hot exfil.

70 percent.

She prepared her kit and scrubbed down her working area in case it was checked for DNA and other biometric data.

90 percent.

Suzie's voice came through. 'Bobby. SAT imagery has indicated the entry of a group via the rear entrance. Proximity alarms have been triggered.'

'Thanks, Suzie.'

100 percent.

She checked that the last upload had completed and spun the drone around. It sped into the open window by her and she stuffed it in her rucksack along with her controls and the HoloLens.

'Suzie, what about our intruders?'

'They've reached the second floor.'

She still had time. 'Control. What's the plan?'

'Control. Execute roof extraction plan. A retrieval team is 3 minutes out. Copy?'

'Copy. Out'

She ran out of the flat, along the corridor and up flights of stairs. Fourth floor. Fifth floor. Sixth floor. As she reached the exit to the roof, she could hear voices coming from the stairwell. She went out onto the roof and scanned the sky. In the distance a speck was moving towards her. As it got closer, she could make it out; a Huron helo, a Defiant X[5] class rotary aircraft.

A voice came through on her PComm. 'Sergeant, this is the extraction team. Control has indicated an enemy security team at your location. We're coming in hot. Prepare for rapid exfil!'



'Copy that.'

The roof was flat with small ledge walls running along its edges. She took up position on its centre directly facing the door and held her weapon ready. She peered back towards the Huron. It was much closer.

The voice came through on her PComm. 'Ten seconds out. Prepare for exfil.'

Bobby slung her personal weapon securely onto her back and dropped to a knee when the Huron was close enough to provide protection. As she felt the downwash the voice shouted through her PComm. 'Exfil! Exfil!'

The Huron was hovering a metre off the roof with its side door open. Its nose mounted auto turret was facing the door and a member of the extraction team was at the open side door motioning towards her. She flung her rucksack in and climbed in as the Huron pulled away and headed off towards the JTF compound.

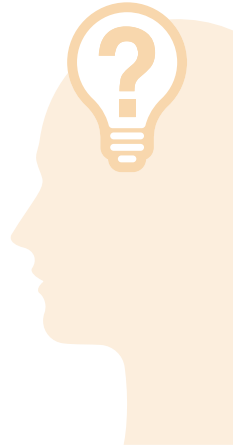
Bobby took a sip of her coffee. It had been three hours since she was extracted and after conducting a quick mission debrief, she was seeing the fruits of her labour. The upload had successfully installed the worm virus onto the facilitator's PComm. Despite the security scare the target and his handlers had not discovered the

breach. Even if they did, it was too late. JTF now had access to all his contacts, his communications and movements.

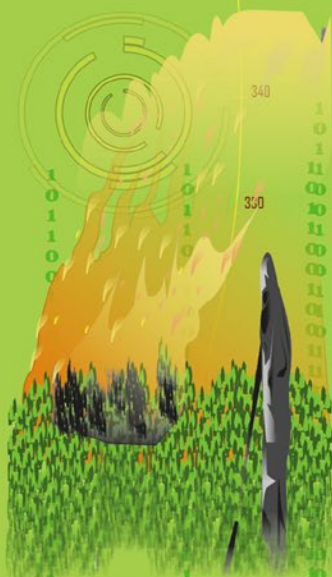
The plan was to use him and the information extracted to undermine the insurgency. There was already a psyop being planned on a few of the contacts, while the details of others were passed on to the host nation for arrest and prosecution. The facilitator was already compromised and was now an intelligence asset, and JTF could now see what non-lethal action he was involved in and plan for countermeasures.

Questions

- What are the future capability requirements for the Air and Space Domains in the 2030-40 timeframe?
- What considerations are there to respond to a cyber or information attack with a kinetic option?
- Will there be a definable front line in 2035? Where will it be? How does the RAF need to evolve to match? Does a multilateral world or a "network of actors" world change response options?
- What are the key crewed, uncrewed and autonomous principles that can be applied to air and space power in a Next Generation Air Force?



#MEDIABLOC



2545



#MediaBloc

Global Strategic Trends highlights four potential worlds based on exhaustive research but rarely do we think how those worlds might develop or what they could mean for the future of defence, society, or our nations survival. This piece takes a look at a fragmented world and accelerates the effect social media could have on us all. This story looks less at the technology and puts a greater focus on social and political themes on what might be a new required trade for defence.



To: BINAB STRATCOMM SM AOS
OPA

From: BINAB STRATCOMM

ACTION: SMIRI EXTERNAL NETCAST

ISSUE: INCREASED EXTERNAL VIEWING OF BINAB MILITARY CONSCRIPTION PORTAL AND EARLY INDICATORS OF NEGATIVITY TOWARDS NATIONALISM AND MILITARY SERVICE.

ACTION: OFFICE OF PUBLIC AFFAIRS AUTHORISE SMIRI EXTERNAL NET CAST FOR ALL ACTIVE EXTERNAL AVATARS ON LIGHT AND DARK SIDE SM PLATFORMS.

OBJECTIVES:

1. DETERMINE REALITY RATING FOR EXTERNAL VIEWING.
2. TRACE AVATARS AND ALGORITHMS USED FOR BINAB ENTRY.
3. COUNTER AND NEUTRALISE ALL MEDIA ECHO.

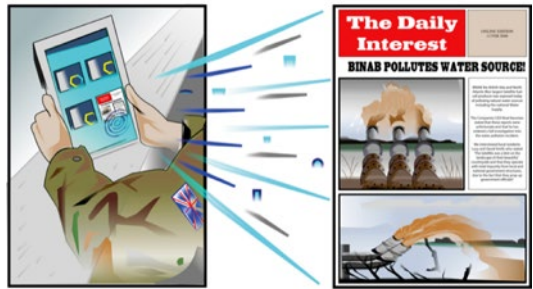
TIMING: SHADOW WINDOW ACTIVE 20400627 1430-2230 NAT

BACKGROUND: OPEN SOURCE LOCATION SENSORS HAVE PICKED UP INCREASED EXTERNAL BLOC ACTIVITY, ALTHOUGH ORIGINS ARE YET TO BE CONFIRMED. ALGORITHMIC SEARCHES AGAINST OPA # METADATA HAVE SHOWN FIRST INDICATORS OF NEGATIVITY ON SM REGARDING CONSCRIPTION, RATIONS, MILITARY ALLOWANCES, BLOCISM, NATIONALISM, MILITARY SERVICE, AND DEFENCE. MOST AVATARS LINKED TO THESE SEARCHES ARE UNFLAGGED AND USUAL FLUSHES ARE BEING COORDINATED THROUGH BCG. CHANGE IN BEHAVIOURS, AND CONSCRIPTION RESISTANCE INDICATORS HAVE NOT YET BEEN ACTIVATED, ALTHOUGH CHECKS HAVE BEEN INCREASED TO EVERY 48 HRS FOLLOWING THE THREAT LEVEL RISE TO 5A.

The world of 2040 has radically changed. Shifting political forces and a state of constant competition prevails between large, aligned blocs of nations - or at least what was a nation. For the past 20 years, limited controls over social media firmly entrenched the "right to access SM" into the culture, but it also firmly established an attack vector for non-aligned blocs looking to advance their safety, security, and industry over that of others.

I don't know if it was de Tocqueville or Tytler who penned, "*A democracy will continue to exist up until the time that voters discover that they can vote themselves generous gifts from the public treasury.*" What is true is that is happening today.

In the last two decades we have voted ourselves almost out of existence. We lost our national military defence capability to increasing pressure from “NIMBYs” driving up the cost of the most basic infrastructure projects to ridiculously expensive levels.



With no credible deterrence capability and obsolete equipment frustrating even basic military assistance to society tasks, the forward-looking defence leadership worked closely with like-minded partners from Scandinavia to form collective blocs for air defence such as our “BINAAF”. And thank goodness they did! Without those blocs and the adopted national service within them, there is no way we would be able to counter the civil unrest exacerbated by climate change, crop failures, natural disasters, and the sophisticated manipulation of our collective psyche by competitor blocs.

Bea, Enzo and Loz live in this world. While their stories are independent, the world they live in is shared as they walk through the realities of 2040 and the fragility of both society and the service within it.

It had been a long night and Bea needed coffee. She had spent hours deciphering and unravelling some fake footage claiming to show a pollution incident. At first the reality filter had told her the video was genuine, but a blue flag had been raised, alerting her to its accuracy. Once she started to delve, she discovered that all the tags stemming from the footage were fake.

The video had shown the largest defence satellite power cell producer in the North Atlantic Bloc polluting a water supply. Thankfully, her Social Media Reality Interrogator had detected algorithms with tiny flaws and the file had been called out as fake then deleted, and in doing so its media echoes had also been neutralised.

The cause of the pollution had been black market plastic being made in the South Med and North Africa Bloc and Bea was pleased with the retaliation. She had handed the risk to the Bloc Cyber Guard whose task it was to diffuse any ripples. Some media coverage would be picked up by Open Source in the morning, but it should be minimal after her efforts. As she reached for a coffee her briefing box updated. Unusually there was a note as well as a verbal.

As Enzo dressed he could hear Gabe fussing in the kitchen.

‘Do you want eggs?’

Enzo looked at his watch. ‘No, can I have toast?’



‘You think we have bread? The mess doesn’t even have bread and hasn’t had for weeks.’

Gabe appeared in the doorway muttering something about officers. Enzo was glad he did not hear it. Gabe was always pointing out the differences between

'comms' and 'cons' at any opportunity and it was too early for the well-rehearsed 'your bloody commission' fight so he just smiled and said, 'Eggs it is then'.

Enzo had bought black market flour, but the home-baking was not going to be ready in time for breakfast and the distinct smell of freshly made bread would raise suspicions down the corridor. Baking would have to wait.

'Can you pass me the tablet?' Enzo could see there were several urgent flags in the briefing box from overnight and he knew from experience they could not wait. The media did not wait until after breakfast, so he called his team into the space and ate his eggs as they dialled in.

The initial open source trawl indicators on the news about the water pollution incident were slightly in favour of the bloc's retaliation reality story. Luckily the major story of the day was nothing to do with satellite power cells or plastic bottles but appeared to be about military election retaliations. This could be another layer of falsities from the South Med bloc, but his team would investigate that.

Some other emerging stories had been flagged by the open source AI: crop failures, export deals, blockades. They were not unusual stories so why the flag? On closer inspection Enzo's team found links to terrorist groups claiming responsibility for crop destruction which had been picked up on chat groups by his interrogators. His team needed to act fast as this kind of information spread like wildfire.

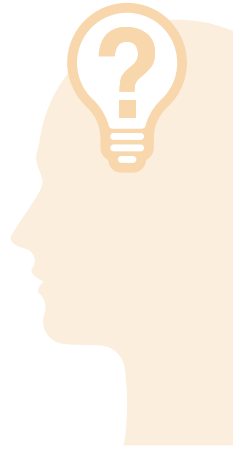
Loz knew his old media connections would bite at the chance of an interview with the North Atlantic Bloc Spokesperson on Conscription. The latest social media witch hunt had caused chaos online and the effects in the open air were starting to be seen in the inner cities: food shortages had caused tensions as grain imports fell. Deployment of BINAAF drones to the ports and the increase in conscripts needed for domestic defence had been linked to feeding other blocs before ours. Defaulters were up to 12% and AWOL rates amongst conscripts had increased 2.7% in the Scandinavian territories this week already.

The Spokesperson on Conscription, AVM Stella Alperstein was well-liked. As a bio-enhanced, decorated regiment officer, mother, and conscript-turned commissioned officer from a humble background she was the perfect person.

She was recognised on social media platforms by the younger demographic and her following was high amongst the target audience. A series of blogs on her recovery from cognitive reconstruction had received excellent ratings while her work with conscript mothers had raised her profile with that demographic. People listened to her, the chance of a positive media echo on this was high. If one false story could cause this much mess, then one real interview could be the balance needed. Conscription could not fail so the people needed to be influenced. The social media campaign was on the up.

Questions

- What are the advantages and disadvantages of reinstating National Service, but with Reserve rather than Regular commitment?
- How should the RAF recruit in 2035 to reach a wider and more diverse audience and account for the impact of disruptive tech, New World New Skills, Upskilling, Rise in Populism and Lack of Trust in society?
- How will alliances play a role in UK air power operations in 2035? How will our adversaries act? Will they present 'traditional' symmetric or asymmetric threats and in what proportion? What will our adversaries' motivations be – political influence; expanded territorial gain for economic, historic, cultural or defensive purposes; access to or protection of resources including water, energy and energy-related substances; ideological/religious goals?



Further Reading

While these stories are completely fictional, they are based on current or emergent themes. These themes have been expanded to create a future world where this is reality--hence "Ficint." Here is a selection of references that helped inspire our authors which you might find equally useful.

Data fusion of Lidar and Thermal Camera for Autonomous driving

<https://www.osapublishing.org/ViewMedia.cfm?r=1&uri=AIO-2019-T2A.5&seq=0>

How AI-Powered Career Pathing Refreshes the Employee Experience

<https://www.forbes.com/sites/forbestechcouncil/2020/01/23/how-ai-powered-career-pathing-refreshes-the-employee-experience/>

Land Conflicts and Destruction in the Brazilian Amazon

<https://lab.org.uk/land-conflicts-and-destruction-in-the-brazilian-amazon/>

Media in Politics: Case Studies on the Political Power of Social Media

<https://www.springer.com/gp/book/9783319046655>

Microsoft wins U.S. Army contract for augmented reality headsets, worth up to \$21.9 billion over 10 years

<https://www.cnn.com/2021/03/31/microsoft-wins-contract-to-make-modified-hololens-for-us-army.html>

No more 'what ifs': Meet your digital twin

<https://www.nesta.org.uk/feature/ten-predictions-2020/no-more-what-ifs-meet-your-digital-twin/>

The power of social media storytelling in destination branding

http://webbut.unitbv.ro/Bulletin/Series%20IV/BULETIN%20I/10_MATEI.pdf

The real time power of Twitter: Crisis management and leadership in an age of social media

<https://www.sciencedirect.com/science/article/abs/pii/S0007681314001554>

UK Military Unveils tiny spy drones that can travel over a mile

<https://futurism.com/the-byte/uk-military-tiny-spy-drones-travel-over-mile>

Contributors and Acknowledgements

This collaboration has been produced by a small group of people from across the RAF family. From civilian to ACM, the creative contribution has been immense.

Stories

Each of the stories has been produced individually or in small teams, reflecting the creator's own projection of what 2040 might look like. The further reading section shows some of the inspiration upon which they have drawn for their story. Thank you to Phil Byrom, Lisa Higham, Vikki MacBrayne, Craig Tavares-McKoy, and Simon Rowbotham, and Emile Syrimis for your efforts.

Artwork

The artwork in this booklet reflects the unique tapestry of efforts from Lee Tomas, Steve Foote, Simon Ross, and Simon Rowbotham.

Editing and Compilation

This booklet was designed and created in-house by the team in Air Staff Strategy Team, RAF Media and Comms and the Air Media Reserve. A special thanks to Andrew De Aragon, Manjeet Ghataora, Tony Durrant, Tony Jones, Richard Monk, Matthew Brown, Nicola Bayley, Claire Martin and Paul Gale for reviewing the technical accuracy of the themes and helping bring the stories to life.

Credits

Shutterstock imagery

Front Cover Image - Michal Staniewski / Shutterstock

Heads Together section - pages 15, 17 and 19 - fizkes/ / Shutterstock

Adobe Creative Cloud

Heads Together section - pages 15, 17 and 19 - Free Photoshop Action.

(The Watercolor Artist action set for Adobe Photoshop brings the two opposites together to produce one harmoniously beautiful result. Designed exclusively for Adobe Create by **Nuwan Panditha** (also known as **BlackNull**), the free action is easy to install and run, and the files it creates are easy to customize.

We encourage you to use the action in both personal and commercial projects—and please tag **@AdobeCreate** so we can admire it!

