MH370: Motive, Means and Opportunity

Full Research Briefing Script

Opening

Good evening.

What I want to do today is take you somewhere slightly different in the investigation of MH370.

I don't intend to spend this presentation repeating the history that most serious MH370 researchers already know. I want to concentrate on what I believe our recent investigation has added to that history.

I want to show you a sequence of discoveries involving geopolitics, money, advanced military technology, semiconductor expertise, cyber espionage, experimental surveillance aircraft, Boeing, Phantom Works, remote-control patents and the actual aircraft 9M-MRO.

And I want to explain why those discoveries have led me towards a particular working hypothesis.

My strongest hypothesis at the moment is that we should investigate much more seriously whether the extraordinary flight of MH370 after it disappeared from normal civilian surveillance involved some form of external intervention in the aircraft's control — potentially remote control, potentially an externally initiated automated flight mode, or potentially technology derived from systems already developed for remotely or autonomously operated aircraft.

I have arrived here by asking three conventional investigative questions: motive, means and opportunity.

And I want to begin with motive.

The working hypothesis

My present working hypothesis is that MH370 deserves to be investigated as a possible intelligence, strategic-technology or asset-denial event in which external intervention in the aircraft's control is now a much more likely and completely technically credible mechanism.

Freescale potentially contributes to the motive question.

The US-China strategic confrontation supplies geopolitical context.

The American ISR programmes establish an extraordinary contemporary surveillance and autonomous-aircraft environment.

Cubic establishes an earlier engineering architecture for comprehensive remote aircraft override.

Boeing's two 2007 applications establish Boeing's own sophisticated work on automated, remotely supervised and zero-onboard-operator aircraft.

David Whelan provides a documented bridge into DARPA, Boeing Integrated Defense Systems and Phantom Works.

The Shanghai 2012 repair supplies an aircraft-specific access window that can be tested through engineering records.

The 4 March $1 million payment to Boeing transaction supplies a financial lead whose precise task-order purpose can not be completely determined.

The 9 March cyberattack demonstrates that sensitive information concerning MH370 became the target of a sophisticated collection effort almost immediately after the disappearance.

And the surveillance and radar evidence creates questions about what happened to the raw data and why the US military and intelligence have even until today held back some of that data down to national intelligence and security

These strands do not all have to connect.

The purpose of the investigation is to discover which ones do.

Motive: the strategic environment

MH370 disappeared on 8 March 2014. That date matters because something important was happening in Asia.

The relationship between China and the United States was entering an increasingly intense period of strategic competition. The Obama administration had made its rebalance towards Asia a central element of American foreign and defence policy. China was expanding its military capability, and the East and South China Seas were becoming arenas in which the two powers were testing one another's intentions.

On 23 November 2013, China announced an Air Defence Identification Zone over a large section of the East China Sea. The United States responded within days by flying two B-52 bombers through the newly declared zone without complying with China's identification requirements.

Then, in February 2014, only weeks before MH370, senior American officials were publicly expressing concern about increasing tensions and threats to maritime security in the East and South China Seas. John Kerry was in Beijing in the middle of February.

Three weeks later, MH370 disappeared.

This was not a war between China and America. It was a strategic contest involving military power, surveillance, communications, navigation, aerospace, semiconductors, intelligence and the ability to dominate the information environment.

And into that environment flew MH370.

Freescale: twenty technical specialists

There were twenty employees of Freescale Semiconductor aboard MH370.

Twelve were Malaysian. Eight were Chinese.

Contemporary reporting based on Freescale described them as engineers, manufacturing personnel and other technical specialists associated with the company's operations in Kuala Lumpur and Tianjin. Freescale itself described them as people with considerable experience and technical backgrounds.

That matters because Freescale was not simply a manufacturer of ordinary consumer chips.

By 2013 it occupied an important position across embedded processing, communications, RF technology, sensing and aerospace applications. Its portfolio included sophisticated processors, accelerometers, magnetic sensors, inertial and gyroscopic sensing, sensor fusion, RF power devices and technologies relevant to radar, avionics and autonomous systems.

In June 2013, nine months before MH370, Freescale was publicly making a significant commitment to the United States aerospace and defence RF market, including gallium-nitride, gallium-arsenide and LDMOS RF technologies.

These semiconductor technologies increasingly sit underneath modern military capability: radar, electronic warfare, communications, sensor fusion, autonomous navigation, phased arrays, target acquisition, UAVs and high-performance processing.

At the Paris Air Show in June 2013, Freescale was also discussing the rapidly increasing processing requirements of advanced avionics and unmanned aircraft. Companies participating in the wider multicore avionics ecosystem included BAE Systems, Boeing, EADS, Honeywell, Rockwell Collins, Thales and Elbit.

There are additional claims surrounding the Freescale passengers — including accounts concerning training in China, speculation about defection, and suggestions that particular individuals possessed unusually sensitive knowledge. Those are areas I am still trying to document at individual level.

The question I am pursuing is more precise: what were the twenty employees' individual technical functions, what projects had they worked on, what exactly were they travelling to China to do, and what strategic value, if any, did their collective knowledge possess?

That is one possible route into motive.

Follow the money

The next thing I followed was money.

I like numbers because programmes can change names, technology can migrate and personnel can move between organisations, but expenditure leaves records.

When we reconstructed American defence expenditure in the years immediately preceding MH370, we found a significant concentration of activity around persistent surveillance, long-endurance unmanned aircraft, sensor fusion and advanced intelligence, surveillance and reconnaissance.

One programme was MAGIC — Medium Altitude Global ISR and Communications.

The objective was extraordinary: approximately 120 hours of endurance, effectively five days, with a nominal sensor payload of around 1,000 pounds.

The documentation discusses modular electro-optical and infrared sensors, signals intelligence, wide-area surveillance, communications relay and autonomous operation.

And we can follow the funding.

There was $5 million in the early OSD programme. There was another $5 million in FY2011 research funding together with a $10 million Air Force contribution. There was a $19 million Congressional addition in FY2012. In FY2013, approximately $50 million was associated specifically with MAGIC within a larger $59.893 million Congressional addition.

Those numbers matter because they establish that this was not a speculative drawing-board idea. Substantial public money was being committed to developing extreme-endurance unmanned ISR capability.

Orion and BIG SAFARI

The aircraft ultimately selected for MAGIC was Aurora Flight Sciences' Orion.

Orion connects several strands of this investigation: extreme endurance, unmanned operation, advanced sensor payloads, the United States Air Force and an organisation called BIG SAFARI — the 645th Aeronautical Systems Group.

BIG SAFARI is not an ordinary aircraft procurement organisation. Historically, it has specialised in rapid acquisition and modification of unusual intelligence, surveillance and reconnaissance capabilities, particularly when conventional procurement is too slow for an operational requirement.

Orion's first flight took place at China Lake on 24 August 2013 — six and a half months before MH370. The first flight lasted approximately three and a half hours and reached around 8,000 feet.

We know that first flight did not carry the intended operational mission system. But subsequent testing continued.

Later Air Force documentation defines the Block 0 flight-test period as running from August 2013 to March 2015 and states that the programme included integration of a nominal sensor payload.

That leaves an important incremental gap.

We know Orion existed and was flying before MH370. We know BIG SAFARI was involved. We know sensor configurations were being considered and that a nominal sensor was integrated at some point during Block 0.

What we do not yet possess are the individual flight cards and aircraft configurations for the critical flights between the first flight and the later endurance demonstrations — particularly the flights before 8 March 2014.

That means we cannot yet say exactly what sensors Orion carried on every pre-MH370 test flight.

That is a question the records should be able to answer.

The wider surveillance architecture

Orion did not exist in isolation.

At almost exactly the same time, the United States was investing in an extraordinary family of persistent-surveillance programmes: Blue Devil, Gorgon Stare, ARGUS-IS, WAND, Advanced Aerospace Sensors and wide-angle continuously staring technologies.

The names are less important than what the emerging system was capable of doing.

This was a move away from the traditional idea of a reconnaissance aircraft pointing one camera at one target.

The objective was to watch enormous areas, retain imagery, identify multiple moving objects, combine imagery with signals, geolocate transmitters, analyse networks and increasingly automate exploitation of all that information.

Our investigation has found some important bridges between programmes.

A primary DARPA funding record from FY2010 places ARGUS-IS and WAND work under the same BAE Systems and Air Force Research Laboratory Sensors Directorate contract vehicle.

ARGUS was associated with extraordinary wide-area imagery. WAND — Wide Area Network Detection — was concerned with detecting, characterising and identifying networks using imagery and other sensor information.

Then there is Blue Devil.

Blue Devil II was an ambitious attempt to integrate multiple intelligence sensors and onboard processing on a persistent airborne platform. The airship programme was terminated in 2012.

But the technology did not simply disappear.

A Department of Defense Inspector General investigation records that many Blue Devil components retained residual value and were absorbed into other programmes across the Air Force.

That is a significant incremental finding.

It means a cancelled programme does not necessarily represent the end of a capability. Hardware can migrate. Sensors can migrate. Algorithms, processing architectures, contractors and engineers can migrate.

So we are now trying to establish precisely which Blue Devil components went to which subsequent Air Force programmes.

By 2013 and 2014, Congress was also explicitly interested in preserving Blue Devil capabilities and combining wide-area surveillance with precision signals geolocation.

Gorgon Stare was already operational from specially equipped MQ-9 aircraft in Afghanistan, providing wide-area motion imagery rather than simply conventional narrow-field video. Its second increment incorporated ARGUS-IS technology.

I am interested in all of this because it changes the technological context of March 2014.

The relevant question becomes: if an unidentified Boeing 777 crossed a strategically sensitive part of Southeast Asia and continued flying for hours, what did the world's most sophisticated surveillance architectures actually know about it?

The 9 March cyberattack

Then there is an extraordinary event which occurred almost immediately after MH370 disappeared.

The cyberattack.

On 9 March 2014 — one day after MH370 disappeared — a malicious document was reportedly distributed to senior Malaysian officials. It purported to contain information that the missing aircraft had been found.

It actually contained malware.

Approximately thirty computers associated with senior personnel at Malaysia Airlines, the Department of Civil Aviation and the National Security Council were reportedly compromised.

According to CyberSecurity Malaysia's chief executive, confidential information associated with the MH370 investigation was obtained. Reports described meeting material, official documents and sensitive investigative information being exfiltrated.

The stolen material was reportedly transmitted towards an IP address located in China.

The timing is what I find remarkable.

MH370 disappears on the 8th.

On the 9th, somebody is already conducting a targeted cyber operation against organisations at the centre of the investigation.

This was not somebody exploiting public curiosity several months later. It appears to have been an intelligence-gathering operation initiated almost immediately.

And the Malaysian cyber authorities described the malware as sophisticated enough initially to evade the antivirus systems in use.

So somebody wanted information about what Malaysia knew, and wanted it extremely quickly.

That discovery matters independently of any theory about the aircraft itself.

Radar and the information chain

I will keep radar relatively brief because most MH370 researchers know this evidence extremely well.

There is, however, one provenance question our investigation has identified which I think deserves resolution.

Australian documentation identifies particular Malaysian radar datasets. One important Malaysian military primary-radar dataset supplied to the Australian investigation ends at approximately 18:03 UTC.

Yet the Malaysian military narrative contains intermittent later returns extending ultimately to approximately 18:22.

My question is simply: what data product supplied those later positions?

Was it another radar, another digital track, a processed military display or a subsequent reconstruction?

I want the provenance.

And the cyberattack has made me frame the wider question differently.

Modern surveillance is a chain: aircraft transponder, secondary surveillance, primary radar, ADS-B, communications, data links, ground networks, identification systems, sensor fusion and operator displays.

So rather than asking the crude question, 'Can somebody hack radar?', I think the technically useful question is which elements of that information chain could be denied, manipulated, spoofed, corrupted or deprived of information.

That is an electronic-warfare and cyber problem, not merely a radar problem.

Remote control before MH370: Cubic

This brings me to the technical centre of the investigation.

Could an aircraft like MH370 have been controlled externally?

For years that possibility has often been discussed as though it were science fiction.

The patent record says otherwise.

On 9 October 2001, Douglas G. Nelson filed an application assigned to Cubic Defense Systems.

It became US Patent 6,641,087 on 4 November 2003.

The architecture describes comprehensive remote control of an aircraft.

A remote station can communicate with the aircraft. Satellite communications can be used. Cockpit control can be overridden. Commands can interface with existing autopilot and flight-control systems.

And the contemplated control extends to rudder, elevator, engine power, flaps, landing gear, brakes, reverse thrust, spoilers and nose-wheel steering.

The patent also discusses remotely transmitting flight-recorder and cockpit information.

That was more than ten years before MH370.

So comprehensive external control of a civil-type aircraft was already formal aerospace intellectual property long before March 2014.

But Cubic was only the beginning.

Boeing: the crucial patent pair

The discovery which has changed the direction of my investigation more than almost anything else concerns Boeing itself.

MH370 was a Boeing 777.

And Boeing had its own history of work on automated and remotely supervised aircraft.

The Malaysian investigation eventually considered Boeing's earlier so-called uninterruptible-autopilot patent.

But our investigation has now identified something substantially more extensive.

On 17 October 2007, Boeing filed two related patent applications on the same day.

Their application numbers were 11/874037 and 11/874082.

They had the same three inventors:

David A. Whelan.

Richard D. Jones.

Lynne L. Wenberg.

One became US Patent 8,255,098 — Variably Manned Aircraft.

The other became US Patent 8,527,118 — Automated Safe Flight Vehicle.

I think these patents need to be read together, because they describe complementary parts of a much larger concept.

The Variably Manned Aircraft patent describes an aircraft designed around changing levels of human involvement.

Two onboard operators.

One onboard operator.

And ultimately zero onboard operators.

It describes bidirectional wireless communications with a remotely located operator.

It expressly contemplates satellite signals as part of the communications architecture.

It describes circumstances in which ground control can exercise full remote control.

And this is not simply somebody steering an experimental drone around an airfield.

The patent discusses automated takeoff, cruise, approach, landing, braking and taxi.

Most strikingly, it contemplates passenger and cargo operations without a qualified flight crew onboard.

The application was filed in October 2007.

The patent was granted on 28 August 2012.

Now look at its companion.

The Automated Safe Flight Vehicle patent describes a highly automated flight-control architecture capable of conducting flight while maintaining envelope protection and responding to contingencies.

It includes high-level operator commands and ground-based operator control communicated wirelessly.

And within that patent Boeing expressly says that one embodiment may be a Boeing '700-series commercial airliner' suitably equipped with the disclosed flight-control system.

That language is extraordinarily important.

Boeing was not restricting the concept to a purpose-built military UAV.

Its own patent expressly contemplated its commercial-airliner family.

A Boeing 777 is a 700-series commercial airliner.

The words 'suitably equipped' are technically critical, because they imply the disclosed architecture would require the appropriate equipment and integration. That leads directly to the engineering question: what equipment?

But there is another sentence in the patent background that may prove even more important.

Boeing says that manufacturers had already developed and demonstrated some of the enabling technologies.

Developed.

And demonstrated.

Those words were in an application filed in 2007.

So what demonstrations was Boeing referring to?

Which aircraft?

Which organisation?

Which programme?

Which government customer?

Which test range?

Were they simulations, hardware-in-the-loop demonstrations, surrogate-aircraft tests or actual flight demonstrations?

Those are now major documentary targets.

Who were the Boeing inventors?

Then we investigated the inventors.

One name immediately stood out: David A. Whelan.

Whelan was not simply an engineer buried somewhere inside Boeing Commercial Airplanes.

He was a senior figure in Boeing's defence research establishment.

He served as Chief Scientist of Boeing Integrated Defense Systems and held senior responsibility within Phantom Works — Boeing's advanced research and development organisation.

Before Boeing, he had been Director of DARPA's Tactical Technology Office.

His documented background included advanced defence technology and autonomous vehicles.

That creates a direct advanced-defence research provenance for one of the three named inventors.

It does not tell us that a 777 was modified.

But it radically changes the investigative question.

What Boeing programme generated this intellectual property?

Patents do not appear from nowhere.

Engineers work on a problem.

Research is funded.

Invention disclosures are created.

Patent lawyers become involved.

Applications are filed.

And when the patent itself says enabling technologies had already been demonstrated, there should be a documentary trail behind those words.

We are therefore tracing Whelan's Phantom Works and Integrated Defense Systems work, and separately trying to establish the exact Boeing organisational roles of Richard Jones and Lynne Wenberg in the 2005-to-2009 period.

If these patents emerged from a named Boeing, DARPA, Air Force, NASA or other government programme, identifying that programme could be extremely important.

The 2012 Shanghai window

Now place that Boeing chronology beside the history of the actual aircraft.

On 9 August 2012, 9M-MRO suffered significant right-wingtip damage at Shanghai Pudong after colliding with a China Eastern Airbus A340.

The aircraft was taken out of normal service while the damage was surveyed and repaired.

On 15 August, Boeing produced an Aircraft Survey Report.

On 3 September, the Malaysian DCA issued its Statement of Compliance.

Boeing AOG repair activity subsequently took place during September, with the repair completed in early October before the aircraft returned to service.

Now remember the other date.

Boeing's Variably Manned Aircraft patent was granted on 28 August 2012 — during the same month in which 9M-MRO was immobilised in Shanghai.

The coincidence itself is not the answer.

It identifies a window worth reconstructing.

If I am testing an external-control installation hypothesis, then a period during which the actual aircraft was grounded abroad undergoing Boeing-engineered repair is an obvious physical-access period to examine.

I want the entire work package.

Every engineering order.

Every access panel opened.

Every LRU removed or installed.

Every wiring change.

Every software load.

Every functional test.

Every part number.

Every technician and supervising engineer where records survive.

And every weight-and-balance alteration.

We already know the published modification history records the wingtip repair and other conventional modifications. The unresolved question is whether the complete engineering package contains anything else.

An installation hypothesis ultimately has to collide with aircraft-specific engineering evidence.

September 2013 and the Malaysian Boeing inquiry

Then comes another critical date.

3 September 2013.

Boeing's Automated Safe Flight Vehicle patent is granted.

Approximately six months later, MH370 disappears.

The Malaysian investigation subsequently did ask Boeing about remote-control technology.

Its final report discusses Boeing's earlier uninterruptible-autopilot patent and records Boeing as saying it had not implemented that patented system or any other technology to remotely pilot a commercial aircraft.

According to the report, Boeing knew of no Boeing commercial aircraft incorporating such technology and said the technology had never been installed on an aircraft.

The Malaysian investigators also reviewed the modification history of 9M-MRO and reported finding no such installation.

That exchange is enormously important.

Which is precisely why I want the underlying correspondence rather than merely the summary paragraph.

What exactly did Malaysia ask Boeing?

Who at Boeing answered?

Which Boeing divisions were consulted?

Was the inquiry answered solely by Boeing Commercial Airplanes?

Was Integrated Defense Systems consulted?

Was Phantom Works consulted?

Did the internal search encompass Whelan, Jones and Wenberg's two 2007 applications?

What records did Boeing search?

And what precisely was meant by 'implemented'?

That original correspondence is now one of the most important missing documents on the Boeing branch.

What would a 777 actually require?

This then becomes an engineering problem rather than a theoretical one.

A Boeing 777 already possessed sophisticated digital flight controls, autopilot and flight-director systems, flight-management computers, inertial-reference systems, integrated avionics and satellite communications.

But that does not mean a production 777 automatically possessed the additional architecture described by the remote and variably manned patents.

So the question becomes very precise.

What would have to be added to a production 777 to make such an architecture work?

Could substantial parts be implemented through software?

Would additional communications hardware be necessary?

Would cockpit commands have to be electrically or logically isolated?

What interfaces into the AFDS or AIMS architecture would be required?

Would independent power be necessary?

Could existing SATCOM act merely as the communications bearer while separate equipment supplied command authority?

Where would such equipment physically reside?

What wiring changes would it require?

What maintenance or configuration records would reveal it?

These are answerable engineering questions.

And they are much more useful than simply asking whether an airliner could theoretically be remotely flown.

The 4 March 2014 Boeing payment

Then there is another number.

$955,853.54.

On 4 March 2014 — four days before MH370 disappeared — a United States federal procurement record shows that obligation from Naval Air Systems Command to Boeing in St Louis.

We traced the parent contract.

It was associated with Boeing engineering, programme-management and logistical support for foreign-operated F/A-18 aircraft.

Malaysia was one of the countries supported through that contract family.

That gives the transaction an established conventional military-aircraft context.

But it leaves one very specific question unresolved.

The 4 March transaction was delivery order 0005.

Who was delivery order 0005 actually for?

Which Foreign Military Sales case did it belong to?

What did the $955,853.54 purchase?

The date tells me to investigate the record.

The task-order documentation will tell us whether the timing has any significance beyond coincidence.

That is how I want to use financial data throughout this investigation: not as proof by proximity, but as a route into contracts, statements of work, programme offices and engineering activity.

8 March 2014

Now bring the chronology to the night itself.

At approximately 00:41 Malaysian time on 8 March 2014, MH370 departed Kuala Lumpur for Beijing.

The flight initially appeared routine.

Then the communications picture changed.

The final routine ACARS transmission had occurred.

The transponder subsequently ceased transmitting.

The aircraft disappeared from conventional secondary surveillance as the identifiable commercial flight MH370.

There was no mayday.

Yet the aircraft apparently continued flying for hours.

It turned back.

It crossed the Malay Peninsula.

It travelled towards the Strait of Malacca.

It continued away from the Malaysian coastline.

And eventually the reconstruction becomes heavily dependent upon Inmarsat satellite handshake metadata.

Now ask the question from the perspective of everything I have just described.

Why should we treat the proposition that every significant post-disappearance manoeuvre must have been commanded by a person sitting inside the cockpit as the only technical hypothesis worth investigating?

That is the assumption I am challenging.

The working hypothesis

My present working hypothesis is that MH370 deserves to be investigated as a possible intelligence, strategic-technology or asset-denial event in which external intervention in the aircraft's control is one technically credible mechanism.

Freescale potentially contributes to the motive question.

The US-China strategic confrontation supplies geopolitical context.

The American ISR programmes establish an extraordinary contemporary surveillance and autonomous-aircraft environment.

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The Shanghai repair supplies an aircraft-specific access window that can be tested through engineering records.

The 4 March Boeing transaction supplies a financial lead whose precise task-order purpose can be determined.

The 9 March cyberattack demonstrates that sensitive information concerning MH370 became the target of a sophisticated collection effort almost immediately after the disappearance.

And the surveillance and radar evidence creates questions about what different states actually knew about the aircraft's subsequent movement.

These strands do not all have to connect.

The purpose of the investigation is to discover which ones do.

What evidence should exist?

The external-control hypothesis is useful because it makes predictions.

If something like this happened, evidence should exist somewhere.

There should be a technical pathway into the aircraft's control architecture.

There should be hardware, software or both.

There should be communications.

There should be wiring or interfaces.

There should be engineering documentation.

There should be testing.

There should be people who developed the capability.

There should be procurement or programme records.

There should be aircraft configuration records.

There may be satellite or surveillance records.

There may be maintenance records.

There may be patent-prosecution records.

There may be flight-test records.

And there may be classified records which ultimately become declassified.

That is why I am following the paperwork.

I want Boeing's original correspondence with the Malaysian investigators.

I want the prosecution and invention history behind the two 2007 Boeing patents.

I want the programme history behind Whelan, Jones and Wenberg.

I want the demonstrations Boeing's patent says had already occurred.

I want 9M-MRO's complete Shanghai work package.

I want Orion's individual pre-8 March flight cards and sensor configurations.

I want the Blue Devil residual-component disposition records.

I want the missing programme reports connecting Gorgon Stare, Blue Devil and signals geolocation.

I want the exact country and statement of work behind Boeing delivery order 0005.

And I want the provenance of the remaining military-radar data.

Those documents can move individual propositions from possibility to evidence — or eliminate them.

Closing

Perhaps the most important thing I want to leave you with is this.

I no longer think the most interesting question about MH370 is simply: what happened inside the cockpit?

I think we have to widen the frame.

What was happening geopolitically?

What was happening technologically?

What was happening financially?

Who was aboard?

What knowledge did they possess?

What technologies were being tested?

Which programmes were being funded?

Which sensors were moving between programmes?

Which experimental aircraft were flying?

Which organisations were integrating them?

What exactly was Boeing developing?

What had Phantom Works investigated?

What enabling technologies had already been demonstrated before 2007?

What happened to 9M-MRO during its Shanghai repair?

Who targeted the Malaysian investigation with malware one day after the disappearance?

What information did they want so urgently?

What did American surveillance know?

What did China know?

And what exactly could a Boeing 777 do if an external system obtained a pathway into its flight-control architecture?

Those questions are now converging.

Many technologies that would once have been dismissed from the MH370 discussion as implausible were not imaginary.

Remote aircraft-control architectures existed.

Boeing zero-pilot concepts existed.

Satellite control links existed.

Persistent wide-area surveillance existed.

Advanced signals intelligence existed.

Autonomous UAV technology existed.

Five-day-endurance UAV development existed.

Sophisticated defence semiconductor technology existed.

And intense strategic competition between China and the United States existed.

Then, on 8 March 2014, a Boeing 777 carrying 239 people — including twenty employees of an American semiconductor company travelling to China — disappeared.

Within approximately twenty-four hours, somebody was already stealing sensitive information from organisations trying to understand what had happened.

For me, that is the point at which MH370 stops being solely an aviation mystery.

It becomes an intelligence problem as well.

And intelligence problems require a different methodology.

Follow the technology.

Follow the people.

Follow the data.

Follow the contracts.

Follow the patents.

Follow the aircraft.

And above all, follow the money.

Because if some of these events are connected rather than coincidental, somewhere those trails should cross.

That is what I am trying to find.

And that is where the investigation stands today.