

“As Time Drones On...”

**What IS and ISN'T Happening regarding the Federal
Regulation of Robotic Aircraft**

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**WHERE WERE WE LAST
YEAR...**

Are Drones Friendly and Commercial? MAYBE!

TacoCopter: One-click Taco Delivery in the SF Bay Area - Windows Internet Explorer


http://tac... x

TacoCopter: One-click Taco ... x

File Edit View Favorites Tools Help

TacoCopter Login

Private Beta - SF Bay Area Only



Flying Robots Deliver Tacos To Your Location

Our unmanned delivery agents are fast and work tirelessly.

Easy Ordering On Your Smartphone

Just tap and let the machines do the rest.

59k 8,481

Like Tweet

Get a TacoCopter Invite!


Email

Why You Deserve Tacos

Send Me Tacos, Please!

TacoCopter Swag

Get the shirt!



Beer Drones To Deliver Brew to Concertgoers [VIDEO] - Windows Internet Explorer

http://mashable.com/20... Timothy ... Beer ... x

File Edit View Favorites Tools Help

Google drone beer delivery Search More >> Sign In

Mashable

Beer Drones To Deliver Brew to Concertgoers

6.6k / 3709 1887 606

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BY VIGNESH RAMACHANDRAN / MAY 05, 2013

Thirsty music festivalgoers in South Africa this summer may be able to get beer instantly delivered to them — via [drones](#).

During August's OppiKoppi Music Festival, attendees can [order beers from their phones](#) to be delivered the event's District 9 campsite. The beer-equipped drones will swoop down and deliver beer via parachute to the appropriate customer, as explained in the video above. The organizers say the beer drones are now hand-guided, but in the future they'll fly on a GPS grid.

But this 21st-century service might not fly without its share of turbulence: Targeting the right customer amongst [the crowds at OppiKoppi](#) will be an interesting challenge to overcome. And festival attendees might not have the greatest sense of motor control for catching their drink order, after having one too many.

Are they Keeping US Safe? MAYBE

Los Angeles Times

LOCAL U.S. WORLD BUSINESS SPORTS ENTERTAINMENT HEALTH LIVING TRAVEL
POLITICS NATION NOW POLITICS NOW TOP OF THE TICKET SCIENCE SCIENCE NOW

YOU ARE HERE: LAT Home → Collections → Law Enforcement

Police employ Predator drone spy planes on home front

Unmanned aircraft from an Air Force base in North Dakota help local police with surveillance, raising questions that trouble privacy advocates.

December 10, 2011 | By Brian Bennett, Washington Bureau

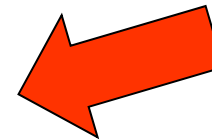
  Email  Share  +1 160  Tweet 316  Recommend 1.7k

Reporting from Washington — Armed with a search warrant, Nelson County Sheriff Kelly Janke went looking for six missing cows on the Brossart family farm in the early evening of June 23. Three men brandishing rifles chased him off, he said.

Janke knew the gunmen could be anywhere on the 3,000-acre spread in eastern North Dakota. Fearful of an armed standoff, he called in reinforcements from the state Highway Patrol, a regional SWAT team, a bomb squad, ambulances and deputy sheriffs from three other counties.

He also called in a Predator B drone.

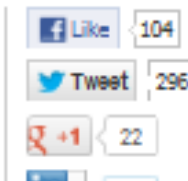
As the unmanned aircraft circled 2 miles overhead the next morning, sophisticated sensors under the nose helped pinpoint the three suspects and showed they were unarmed. Police rushed in and made the first known arrests of U.S. citizens with help from a Predator, the spy drone that has helped revolutionize modern warfare.



Are they a Big Business Opportunity? DEFINITELY!

Domestic-Drone Industry Prepares for Big Battle With Regulators

BY SPENCER ACKERMAN 02.13.13 6:37 PM

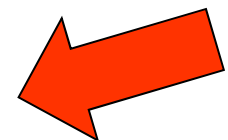


For a day, a sandy-haired Virginian named Jeremy Novara was the hero of the nascent domestic drone industry.

Novara went to the microphone at a ballroom in a Ritz-Carlton outside Washington, D.C. on Wednesday and did something many in his business want to do: tenaciously challenge the drone regulators at the Federal Aviation Administration to loosen restrictions on unmanned planes over the United States. Judging from the reaction he received, and from the stated intentions of the drone advocates who convened the forum, the domestic-drone industry expects to do a lot more of that in the coming months.

There's been a lot of hype around unmanned drones becoming a fixture over U.S. airspace, both for law enforcement use and for operations by businesses as varied as farmers and filmmakers. All have big implications for traditional conceptions of privacy, as unmanned planes can loiter over people's backyards and snap pictures for far longer than piloted aircraft. The government is anticipating that drone makers could generate a windfall of cash as drones move from a military to a civilian role: Jim Williams of the Federal Aviation Administration told the Wednesday conclave of the Association for Unmanned Vehicle Systems International (AUASI) that the potential market for government and commercial drones could generate "nearly \$90 billion in economic activity" over the next decade. \$90 billion.

But there's an obstacle: the Federal Aviation Administration.



TAKAHASHI'S PROBLEMS WITH THE WAY DRONE LAW IS GOING...

History of Regulation of Aviation

- **When Aviation was young, it was unregulated**
- **But then the First World War Happened...**
 - Airplanes could fly long distances, cross countries at will
 - Were a viable weapons delivery system
 - Crashed regularly (in war and peace) causing property damage
- **Initial Efforts to Regulate Aircraft in the US (failed)**
 - Treaty of Versailles
 - Not Ratified by Congress
 - Proposed Constitutional Amendment (Would have followed Woman's Suffrage)
 - Abandoned
- **Compromise Plan Enacted**
 - Defers to Federalism (10th Amendment) and the Commerce Power of Congress
 - The States voluntarily adopted basic laws covering aviation, states enforce violation of Federal laws, but defer to the Federal Government for Certification
 - Congress passed and President **Coolidge** (R) signed into law the "Air Commerce Act of 1926"



The Constitution / Federalism and Aircraft Design

- **The Constitution**

- Specifically calls out Admiralty Law, the Army, the Navy, the Post Office (but remains silent regarding aircraft)
- The Commerce Clause is important (Article I, Section 8, Clause 3):

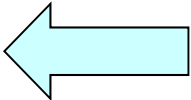
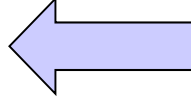
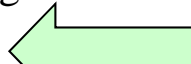
The United States Congress shall have power ... to regulate Commerce ...among the several States.

- The Tenth-Amendment is important

The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.

Key Elements of the Air Commerce Act of 1926

- **Federal Regulation of Air Commerce**

- Transportation in whole or in part by aircraft of persons or property for hire, navigation of aircraft in furtherance of a business, or navigation of aircraft from one place to another in the conduct of business.
- Federal Government to
 - Encourage the establishment of airports, civil airways
 - Carry forward Research and Development
 - Investigate, record and make public the causes of accidents
 - Grant registration to eligible aircraft
 - Rate aircraft as to their airworthiness 
 - Design, calculations upon which the design is based
 - Materials and methods used in the construction
 - Periodic Inspection / Re-rate aircraft as to their airworthiness
 - Periodic examination and rating of airmen 
 - Federal Statutes & Regulations
 - Air Traffic Rules 

The reach of the FAA (through the commerce power of the United States congress)

- **The FAA has jurisdiction to:**
 - Regulate Aircraft Design
 - Certified by the FAA – “Type Certificate”
 - Authorize Aircraft Manufacturers
 - Certified by the FAA – “Production Certificate”
 - Decide whether any individual aircraft can fly
 - Certified by the FAA – “Airworthiness Certificate”
 - Limit who has access to fix aircraft Aircraft Mechanics
 - Certified by the FAA
 - Designate “legal” Aircraft Repair Stations
 - Certified by the FAA
 - License Aircraft Pilots
 - Certified by the FAA
 - Direct where Aircraft Fly
 - The FAA runs the Nation’s Air Traffic Control System

Constitutionality affirmed: Neiswonger v. Goodyear Tire, 35 F.2d 761 (N.D. Ohio, 1929).

The FAA Modernization and Reform Act of 2012

FAA Modernization and Reform Act of 2012, 112 PL 95 – Feb. 14, 2012.

- The *FAA Modernization and Reform Act of 2012* has **Federalism Problems**
 - Airspace above 1200-ft is clearly Federally Regulated (above 500-ft has shared jurisdiction)
 - Federally regulated Airspace is that suitable for interstate commerce – U.S. Const., Art. I, Sec. 8.
 - Airspace below 1200-ft is locally regulated (above 500-ft has shared jurisdiction)
 - Violation may constitute a **trespass**
Swetland v. Curtiss Airports Corp., 41 F.2d 929 (N.D. Ohio 1930)
 - This limit results from a legislative compromise made prior to the *Air Commerce Act of 1926*.
 - This limit was key to the privacy holding in Florida v. Riley, 488 U.S. 445 (1989)
 - What is the Republican House doing ordering the FAA to allow drone flight in “private,” “local” airspace?
 - Aren’t they the avowed champions of “states rights?”

The FAA Modernization and Reform Act of 2012

FAA Modernization and Reform Act of 2012, 112 PL 95 – Feb. 14, 2012.

- The *FAA Modernization and Reform Act of 2012* has **Separation of Powers Problems**
 - It commands the FAA do treat similar parties in dissimilar ways
 - FAA is expected to qualify the design, manufacture, maintenance and operations of **all** aircraft.
 - FAA is instructed not to qualify the design, manufacture or maintenance of **public drone** aircraft
 - FAA “may not promulgate **any** rule or regulation regarding a model aircraft, or an aircraft being developed as a model aircraft, if ... the aircraft is flown strictly for hobby or recreational use.”
 - An executive branch Agency cannot “pick and choose” how to follow conflicting statutory commands

Whitman v. Am. Trucking Associations, 531 U.S. 457 (2001)

Where we stood in 2011

- The Federal Government pervasively regulates **all** aircraft design, manufacture, repair and operations
 - It publishes an elaborate set of rules as Title 14 in the Code of Federal Regulations (CFR).
 - The FAA regularly releases clarification and policy documents in the form of Agency Orders, Advisory Circulars, and Notice-to-Airmen (NOTAMs).
 - Today's Title 14 doesn't expressly differentiate between **manned** and **unmanned** systems

ISSUE # 1 – LACK OF DESIGN TO FORMAL AIRWORTHINESS STANDARDS

Drones Crash History

- **Drone crash rates are much higher than civilian aircraft**
 - *Visit a model aircraft flying field, you will see crashes occur on an hourly basis*
 - In November 2013, the U.S. Navy suspended operations of their Northrop Grumman BQM-74E and BQM-34S Drones after one unintentionally crashed into a guided missile cruiser wounding two sailors.
 - In April 2014, a triathlete in Australia was injured when a commercial Drone operator filming the sporting event “lost control” of his vehicle.
 - In May 2014, press reported that police are “looking for the owner of a drone aircraft that crashed into the highest office building in St. Louis.”

Drones Crash History

- **Title 14 CFR does not differentiate between piloted and remotely piloted aircraft**
 - 14 CFR § 23 (airworthiness of “General Aviation” aircraft)
 - 14 CFR § 25 (airworthiness of “Transport Category” aircraft)
 - 14 CFR § 71, 91 (“rules of the road” for pilots)
- **Non-commercial drones operate as “Model Aircraft”**
- ***Model Aircraft Operating Standards*, FAA Advisory Circular AC 91-57, June 9, 1981.**
 - “Voluntary compliance” document
 - Recommend less than 55-lbs, operate under 400-ft, away from active airports
 - No formal airworthiness requirements

ISSUE # 2 – DRONES IN PUBLIC AIRSPACE W/O RESPONSIBLE CERTIFIED PILOTS

Near Misses

- **The Federal Government regulates controlled airspace (class A,B,C,D and E) more than 1,200 feet above ground level as an instrumentality of interstate commerce.**
- **The press reports that on March 22, 2014, a US Airways regional jet and a drone “nearly collided in midair over the Florida Panhandle” (on approach to Tallahassee Regional Airport)**
- **In March 2013, an Alitalia jetliner came within 200 feet of a small Drone at an altitude of 1,750 feet during final approach into John F Kennedy airport in New York.**

ISSUE # 3 – AIRSPACE JURISDICTION & THE MODEL AIRCRAFT “LOOPHOLE”

What about Class G Airspace?

- **The Federal jurisdiction of uncontrolled class G airspace has been subject to some controversy.**
 - Common law holds that a “landowner's rights are not limited to the surface of the earth, but extend into the space above it
 - It is a “trespass to thrust one's arm into the space over a neighbor's land.”
 - One hundred years ago, the Supreme Court held that that the shooting of ordinance across the land of an adjoining owner constituted a trespass.
 - Thus a trespass occurs when someone “fir[es] a missile ... or driv[es] an airplane through the air, over the land of another, sufficiently low to invade that space which the owner of the soil may effectively possess.”
- Does this precedent make it impossible for the Federal Government to control commercial flight in close proximity to a landowner's property?

Problems with the Model Aircraft “Loophole”

- The *Act* defines “Model Aircraft” so broadly as to encompass airframes that may be indistinguishable from a commercial or military Drone.
 - “[There is] virtually **no physical difference**, whether it be size or some other factor, between what constitutes a **model aircraft** and a **drone**. ... size is not the distinction. It’s what’s being collected, the data, that is critical.”
 - Michael Toscano, AUVSI President (2013)
- The rules forbidding the FAA from regulating any non-commercial unmanned aircraft no matter what its size, seem to open the door for unsavory elements to produce large ostensibly “hobbyist” airframes for use as weapons.

Pirker is the KEY Developing Case...

- Administrator v. Pirker, NTSB Docket CP-217
- <http://www.youtube.com/watch?v=OZnJeuAja-4>
- Pirker fined \$10,000 by the FAA for flying a UAV for commercial purposes at high speed around the University of Virginia
 - Flew between 10 feet above the ground to more than 400 feet above ground level in proximity to people and property
- **The FAA claimed that Pirker violated 14 C.F.R. § 91.13 for flying his Drone in a “careless or reckless manner”**

More on *Pirker*

- Administrator v. Pirker, NTSB Docket CP-217
- <http://www.youtube.com/watch?v=OZnJeuAja-4>
- Administrative Law Judge dismisses case because FAA's policy statements (documents such as AC 91-57) are “**non-legislative rules**” articulated outside of the Administrative Procedures Act (5 U.S.C. § 553).
- The judge also held that there are no enforceable FAA rules or regulations that apply to model aircraft.
- FAA has this case on Appeal!

ISSUE # 4 – FAA MOVING SLOWLY ON ALL FRONTS (LACK OF FUNDING?)

What has happened....

- **The FAA has designated six “Drones Testing Sites” but has declined to directly fund them with substantial \$\$\$\$**
- **No action in Federal Register regarding clarification of applicability of 14 CFR 23, 25, 71 or 91 to unmanned aircraft despite 2015 deadline to “integrate drones into federal airspace!”**

ISSUE # 5 – ABSENT FEDERAL COORDINATION, INCONSISTENT PATCHWORK OF LOCAL DRONE LAWS ENACTED

What has happened....

- **Nine states have passed Law Enforcement Drone legislation**
 - Requires Police to have a valid warrant before using a Drone for a criminal investigation
 - Prohibits Drone flight within 100-ft of private property without express consent of property owner
- **Municipalities and Drone legislation**
 - No-Drone zone (Virginia, Washington, National Parks)
 - Drone hunting zone (Colorado)

UPCOMING LEGAL “COLLISIONS”

Warrantless Police Searches?

A **Police Patrol cannot violate the Fourth Amendment** because an inspection “that involves merely looking at what is already exposed to view - ... is not a ‘search’ ... and ... does not even require reasonable suspicion.” Arizona v. Hicks, 480 U.S. 321 (1987).

- “A police officer could conduct binocular surveillance ... provided that he only observes and reports on items that are within his **plain-view**.” Coolidge v. New Hampshire, 403 U.S. 443 (1971).
- “In an age where private and commercial flight in the **public** airways is routine ... The Fourth Amendment simply does not require the police traveling in the public airways ... to obtain a warrant ... to observe what is visible to the naked eye.” California v. Ciarolo, 476 U.S. 207 (1986).
- “Any member of the public could **legally** have been **flying** over Riley's property in a helicopter at the altitude of 400 feet and could have observed Riley's greenhouse. The police officer did no more.” Florida v. Riley, 488 U.S. 445 (1989).

BUT!

- “Surveillance of private property by using **highly sophisticated surveillance** equipment ... might be **constitutionally proscribed absent a warrant**.” Dow Chemical v. U.S., 476 U.S. 227 (1986).
- When “the Government uses a **device that is not in general public use**, to explore details of the home that would previously have been unknowable without physical intrusion, the **surveillance is a ‘search’** and is presumptively **unreasonable without a warrant**.” Kyllo v. U.S., 533 U.S. 21 (2001).

**WARRANTLESS POLICE PATROLS W/ DRONES WILL
CAUSE THESE TWO LEGAL THEORIES TO COLLIDE!**

Warrantless Police Trespass?

Warrantless Police Trespass does not inherently violate the Fourth Amendment because

- No legitimate expectation of privacy in an **open field**. Oliver v. United States, 466 U.S. 170 (1984)
- No legitimate expectation of privacy in **curb-side trash**. California v. Greenwood, 486 U.S. 35 (1989)
- Exigent Circumstances may allow Police to search without a warrant. Minnesota v. Olson, 495 U.S. 91 (1990)
- Warrantless inspections of ‘closely **regulated** [private] **business**’ allowed. N.Y. v. Burger, 482 U.S. 691 (1987)

BUT!

- “Fourth Amendment rights do not rise or fall with... [Justice Harlan’s] *Katz* formulation. *Katz* may add to the baseline, it does not subtract anything from the [Fourth] Amendment’s protection.”” United States v. Jones, 132 S. Ct. 945 (2012)
- A warrant is necessary when police conduct amounts to a **trespass at common law** AND police invade a **constitutionally protected area** enumerated in the Fourth Amendment (persons/houses/papers/effects) AND police perform such an act **for the purpose of gathering information**. Florida v. Jardines, 133 S. Ct. 1409 (2013)

**WARRANTLESS POLICE TRESPASS W/ SURVEILLANCE DRONES
WILL CAUSE THESE TWO LEGAL THEORIES TO COLLIDE!**

Warrantless Access to Business Records?

There is no Fourth Amendment protection for any incriminating information voluntarily transferred to a third party. No warrant is needed because there is **No Legitimate Expectation of Privacy** in:

- numbers dialed into a telephone system. Smith v. Maryland, 442 U.S. 735 (1979).
- cheques and deposit slips sent through the banking system. Cal Bankers v. Shultz, 416 U.S. 21 (1974).
- E-mail headers sent over the internet. United States v. Forrester, 512 F.3d 500 (9th Cir. 2008).

BUT!

- “I would not assume that all information voluntarily disclosed to some member of the public for a limited purpose is for that reason alone disentitled to fourth amendment protection.” United States v. Jones, 132 S. Ct. 945, 950 (2012) (Sotomayor, concurrence)
- “In the pre-computer age, the greatest protections of privacy were neither constitutional nor statutory, but practical. Traditional surveillance for any extended period of time was difficult and costly and therefore rarely undertaken.” United States v. Jones, 132 S. Ct. 945, 950 (2012) (Alito, concurrence))
- There exists a “reasonable societal expectation of privacy in the sum of one’s public movements.” United States v. Jones, 132 S. Ct. 945, 950 (2012) (Sotomayor, concurrence)

**WARRANTLESS ACCESS TO THIRD PARTY DRONE TELEMETRY
WILL CAUSE THESE TWO LEGAL THEORIES TO COLLIDE!**

Airspace Jurisdiction?

- **The FAA (Federal Government) has statutory authority to regulate all airspace used in interstate commerce**
 - The 400 or 500-ft limit is the result of **historical compromise**, not inherent in Federalism
 - Local property rights do not fully preempt Federal regulation
 - The FAA is specifically expected to control “the use of the navigable airspace and regulat[e] ... operations in that airspace in the interest of ... safety and efficiency.”
 - To date case law has not questioned the authority of the Federal Government to regulate the national airspace from earth to the heavens.

Need to Extend *Jones* and *Jardines* to the Sky

- ***Riley* seems ripe to be further distinguished.**
 - *Jones* and *Jardines* hold that a warrant is necessary when police conduct amounts to a **trespass** at common law AND police **invade a constitutionally protected area** enumerated in the Fourth Amendment (persons/houses/papers/effects) AND police perform such an act for the purpose **gathering information**.
 - *Riley* fact pattern
 - Police Drone < 500-ft → Constructive Trespass
 - Used to look within the home → invade protected area
 - Gathering information → without a warrant
- “It is inconceivable that the government can intrude so far into an individual's home that it can detect the material he is reading and still not be considered to have engaged in a search. ... If government agents have probable cause to suspect criminal activity and feel the need for telescopic surveillance, they may apply for a warrant; otherwise, they have no right to peer into people's windows with special equipment not generally in use.”) United States v. Kim, 415 F. Supp. 1252, 1256-1257 (D. Haw. 1976)

Narrowly distinguish the breadth of the “Third Party Doctrine”

- **Modern society compels us to make use of third party data providers. Permanent “contrails in cyberspace” arise from:**

- Telephone Calls & Text Messages
- E-mail Messages
- ATM & Credit Card Use
- Airline Flights / Hotel Stays
- Google Maps searches

“All of these interactions create records in the hands of third parties about our interests, problems, loves and losses, finances, associates, family moments, and even our location at any moment.” - Orin Kerr and Greg Nojeim, *The Data Question: Should the Third-Party Records Doctrine Be Revisited?*, ABA JOURNAL, Aug.2012

Grant the FAA the Authority to Regulate Privacy

- **Amend the Current FAA Organic Act**

49 USC § 40101 - Policy

(a) Economic Regulation.— ... the Secretary of Transportation shall consider the following matters ...

(1) assigning and maintaining safety as the highest priority in air commerce.

...

(3) preventing deterioration in established safety procedures, recognizing the clear intent, encouragement, and dedication of Congress to further the highest degree of safety in air transportation and air commerce, and to maintain the safety vigilance that has evolved in air transportation and air commerce and has come to be expected by the traveling and shipping public.

...

(7) developing and maintaining a sound regulatory system that is responsive to the needs of the public and in which decisions are reached promptly to make it easier to adapt the air transportation system to the present and future needs of— (A) the commerce of the United States;

**PRIVACY MATTERS EXCEED THE CURRENT STATUTORY
AUTHORITY OF THE FAA!**

Retain Comprehensive Federal Certification of ALL AIRCRAFT, NO DRONES CARVE-OUT!

- Drones have “got to be regulated. ... It's one thing for governments, who have some legitimacy in what they're doing [to operate Drones], but [to] have other people doing it ... It's not going to happen.” – Eric Schmidt, Google (2013).
- Petition the FAA to establish a Federal code of “best practices” so that decisions regarding design, construction, operations, repair, maintenance and workmanship, **must be made by certified** technically trained personnel.
- Conventional aircraft safely transport their passengers precisely because they do not crash
 - Unsafe aircraft ➔ Liability to Manufacturers & Operators

SUMMARY

Sum Up

“Planes do not wander about in the sky like vagrant clouds. They move only by federal permission, subject to federal inspection, in the hands of federally certified personnel and under an intricate system of federal commands.”

- Northwest Airlines v. Minnesota, 322 U.S. 292 (1944), (J. Jackson concurring)

Why should Drones be any different?

QUESTIONS?