The FAA's Interpretation of the Special Rule for Model Aircraft

Drew Palmer

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THE FAA'S INTERPRETATION OF THE SPECIAL RULE FOR MODEL AIRCRAFT

DREW PALMER

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* J.D., SMU Dedman School of Law, 2015; B.B.A., Finance, The University of Texas at Austin, 2012. The author would like to thank his family, friends, and wife, Julie, for their constant motivation, love, and support.
I. INTRODUCTION

SECTION 336 of the Federal Aviation Administration (FAA) Modernization and Reform Act of 2012 (FAA Modernization Act) exempts model aircraft from future FAA rulemaking.¹ In an attempt to clarify this exception, on June 25, 2014, the FAA released a proposed interpretation of the definition of model aircraft that set more narrow limits on the exemption.² This proposed interpretation outraged the model aircraft community, and in response, multiple petitions were filed with the District of Columbia Court of Appeals to nullify the FAA’s proposed interpretation.³ In evaluating this ongoing debate, this article will use two competing theories of jurisprudence—Richard Posner’s pragmatism and Ronald Dworkin’s constructivism—to examine whether the FAA’s purpose of maintaining air safety is best achieved by a narrow definition of the model aircraft exemption that more heavily regulates the model aircraft industry or a broader exemption that allows the model aircraft industry to continue to innovate.

In Part II, the background and facts surrounding the proposed interpretation of the model aircraft exception are explained. In Part III, Posner’s pragmatism theory is explained, along with his views on rules compared to standards. Then Posner’s pragmatic view is applied to the situation at hand. In Part IV, a similar task is performed using Ronald Dworkin’s constructivism theory. Then in Part V, the two theories are compared to evaluate which theory would be preferred for the best intended effect on the model aircraft industry.

II. FACTS AND BACKGROUND

A model aircraft is considered a type of unmanned aerial system (UAS), and Congress has chosen to distinguish model aircraft from its planned regulation of small UAS by a definition that exempts model aircraft.⁴ More than twenty years after the Wright brothers invented the airplane, Congress passed the first airplane safety regulation in 1926 due to a growing number of

² FAA Interpretation of the Special Rule for Model Aircraft, 14 C.F.R. Part 91, 11 (proposed June 23, 2014) [hereinafter FAA Interpretation].
airplane accidents and the commercialization of the airline industry. After many attempts over the next several decades at creating a successful air safety agency, the FAA was established in 1958 to protect the general public and the growing and innovative airline industry from large-scale disasters, such as the Grand Canyon Disaster. Historically, the FAA has excluded model aircraft from FAA regulation. At most, in 1981, the FAA encouraged "voluntary compliance" by model aircraft with FAA safety standards, and in 2007, the FAA released a non-binding statement to the public introducing a policy that a special airworthiness certificate was required to operate model aircraft operated for compensation or in a national park. While the amount of "close calls" with airplanes has increased, there have yet to be any accidents of model aircraft with conventional airplanes.

A. THE FAA MODERNIZATION ACT

The FAA Modernization Act was promulgated to update the United States' airspace regulation to match the improvements in technology and globalization. As part of the FAA Modernization Act, Congress required the FAA to develop a plan for safely integrating civil unmanned aircraft systems (UAS) into the national airspace, while still maintaining the safety of the national airspace. Moreover, the FAA was required to issue a rule that permitted the use of small UAS in the national air-

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6 See id. One hundred twenty-eight people died in a collision between two commercial airlines at 21,000 feet over the Grand Canyon (the Grand Canyon Disaster). See id. The Grand Canyon Disaster occurred in 1956, and the FAA was established by the Federal Aviation Act of 1958. See id.
8 See id. at *3.
space.\textsuperscript{12} As the FAA begins the integration plan, the public believes that first rulings are predictions of how the FAA will intend to integrate UAS as a whole in the national airspace system.\textsuperscript{13} Thus, this proposed interpretation by the FAA is controversial because it establishes a precedent of how the FAA will regulate UAS, and with the narrow interpretation of the special rule, more of the model aircraft industry would be subject to the small UAS integration plan.\textsuperscript{14}

The FAA Modernization Act defines a model aircraft as “an unmanned aircraft . . . (1) capable of sustained flight in the atmosphere; (2) flown within visual line of sight of the person operating the aircraft; and (3) flown for hobby or recreational purposes.”\textsuperscript{15} Moreover, Section 336 of the Modernization Act lists five requirements to determine if a model aircraft is exempt from future FAA regulation:

1. The aircraft is flown strictly for hobby or recreational use;
2. The aircraft is operated in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization;
3. The aircraft is limited to not more than 55 pounds unless otherwise certified through a design, construction, inspection, flight test, and operational safety program administered by a community-based organization;
4. The aircraft is operated in a manner that does not interfere with or gives way to any manned aircraft; and
5. When flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower . . . with prior notice of the operation.\textsuperscript{16}

In the fall 2013, the FAA fined an individual $10,000 for flying a model over the University of Virginia’s campus to film a promotional video.\textsuperscript{17} In March 2014, a National Transportation and Safety Board (NTSB) judge ruled that the FAA’s fine was not

\textsuperscript{12} See Pirker, 2014 WL 3388631, at *4.

\textsuperscript{13} See Timothy J. Lynes, FAA Issues Proposed Interpretation of Model Aircraft, LEXOLOGY (Sept. 17, 2014), https://www.lexology.com/library/detail.aspx?g=0c3c087b-6cc5-4e34-87b3-97c15035462e.

\textsuperscript{14} See Carr, supra note 4.

\textsuperscript{15} FAA Interpretation, supra note 2, app. A at A-1.

\textsuperscript{16} Id.

\textsuperscript{17} Pirker, 2014 WL 3388631, at *6.
under its authority and that no precedent or rule justified the FAA’s fine.\textsuperscript{18} Subsequently, the FAA appealed the ruling.\textsuperscript{19}

\section*{B. THE FAA’S INTERPRETATION OF THE MODEL AIRCRAFT EXCEPTION}

Seemingly tied to the NTSB judge’s ruling in \textit{Huerta v. Pirker}, the FAA issued a proposed interpretation of the five requirements for exemption of model aircraft in Section 336 of the FAA Modernization Act.\textsuperscript{20} The FAA stated six interpretations for the definition of model aircraft, but only three are worth noting since they were the most controversial.\textsuperscript{21} First, the FAA interpreted the requirement for “flown within the visual line of sight” of the operator as:

\begin{enumerate}
\item The aircraft must be visible at all times to the operator;
\item that the operator must use his or her own natural vision (which includes vision corrected by standard eyeglasses or contact lenses) to observe the aircraft; and
\item people other than the operator may not be used in lieu of the operator for maintaining visual line of sight.\textsuperscript{22}
\end{enumerate}

This interpretation prohibits the use of goggles that view the flight of the aircraft from an onboard camera, and operators are required to have an “unobstructed view of the aircraft.”\textsuperscript{23} Moreover, the operator must be able to personally view the aircraft and cannot rely upon another person to see the aircraft.\textsuperscript{24}

Second, the FAA interpreted the third prong of the model aircraft definition to mean “\textit{strictly} for hobby or recreational purposes.”\textsuperscript{25} For example, the FAA said that a person may use a model aircraft to take photographs for their personal use, but if any of the photographs are sold or used in a business, then the operator is not exempt from future FAA regulation.\textsuperscript{26} Moreover, a farmer is allowed to fly a model aircraft to examine a field of crops if the crops are grown for personal use, but is prohibited...

\begin{itemize}
\item \textsuperscript{18} See id. at *5.
\item \textsuperscript{20} See \textit{Lynes}, \textit{supra} note 13.
\item \textsuperscript{21} See FAA Interpretation, \textit{supra} note 2.
\item \textsuperscript{22} \textit{Id.} app. B at B-8.
\item \textsuperscript{23} \textit{Id.}
\item \textsuperscript{24} \textit{Id.}
\item \textsuperscript{25} \textit{Id.} (emphasis added).
\item \textsuperscript{26} \textit{Id.} app. B at B-10.
\end{itemize}
from doing so if the crops are grown for commercial purposes.\textsuperscript{27} The distinction appears to be based on whether the operator receives a fee in any way for flying the model aircraft.\textsuperscript{28}

Regarding Congress's third requirement, the FAA interpreted the requirement of "55 pounds or less" to mean the weight of the aircraft at the time of takeoff.\textsuperscript{29} The FAA stated that the takeoff weight includes the weight of the body of the aircraft along with any fuel or loaded equipment.\textsuperscript{30} In stating its reasoning, the FAA felt that this requirement was to allow only small model aircraft to fly without FAA regulation and that allowing a seemingly unlimited amount of equipment being added to a model aircraft that weighs 55 pounds would contradict Congress's intent behind the rule.\textsuperscript{31}

C. Public Reaction to the FAA's Interpretation

After releasing the proposed interpretation, the FAA allowed comments on the interpretation of the model rule. As shown from the comments, the model aircraft community, researchers, media, and businesses were outraged.\textsuperscript{32} For example, the Information Technology and Innovation Foundation (ITIF) filed a ten-page response stating that the FAA interpretation would severely limit a growing innovation and experimentation opportunity, and the narrow interpretation would also subject the industry to unnecessary regulation, particularly since only two deaths had been caused by model aircraft in the past few decades.\textsuperscript{33} Another comment, written by two fellows from the Mercatus Center at George Mason University, argued that the FAA's interpretation would harm innovative ideas, such as Amazon's and Google's respective plans for using UAS as means for deliv-

\textsuperscript{27} Id.
\textsuperscript{28} See id. (noting also that the model aircraft can transport a package without compensation, but is prohibited if the operator receives a fee for delivering the package).
\textsuperscript{29} Id. app. B at B-11.
\textsuperscript{30} See id.
\textsuperscript{31} See id.
\textsuperscript{33} See Letter from Robert D. Atkinson et al., President and Founder, Information Technology and Innovation Foundation, to Dean E. Griffith, Office of Chief Counsel—Regulations Division, FAA (July 24, 2014), http://www2.itif.org/2014-faa-comments.pdf. The ITIF is a renowned technology think tank funded by large IT corporations, such as Google and Cisco. See Carr, supra note 4.
Moreover, the comment speculated about the safety that could have resulted from UAS being used during the riots in Ferguson, Missouri, which would be a use prohibited by the FAA's interpretation. Additionally, hobbyists organizations, such as the Remote Control Aerial Platform Association (RCAPA), filed comments opposing the interpretation because the strict definition of recreation eliminates any competitions or paid gatherings between hobbyists, and there is no evidence of unsafe model aircraft practices that warrant regulation. The RCAPA also believes that the model aircraft community is best suited to regulate itself because the proposed ban on First-Person View (FPV) is unnecessary in light of the current industry standard to have another person with controls personally viewing the aircraft, in addition to the main pilot for the UAS.

Since the comments have been filed, a few events in the model aircraft community have unfolded. On the pro-regulation side, the National Parks System now prohibits the flight of civil UAS in national parks. This regulation came amidst several model aircraft crashing in national parks, such as the model aircraft that crashed into a hot spring in Yellowstone National Park in August 2014. On the anti-regulation side, the FAA allowed the use of UAS in movie production for certain film companies. Both regulations do not show a clear consensus on the issue of regulating model aircraft and continue to show that the issue is not yet settled.

34 Public Interest Comment, Ryan Hagemann & Adam Thierer, FAA Interpretation of the Special Rule for Model Aircraft, MERCATUS CENTER 2 (Sept. 23, 2014), http://mercatus.org/sites/default/files/Thierer-FAA-modelairplane-PIC.pdf; see also Vindu Goel, A New Facebook Lab is Intent on Delivering Internet Access by Drone, N.Y. TIMES (Mar. 28, 2014, 1:10 PM), http://bits.blogs.nytimes.com/2014/03/04/now-facebook-has-a-drone-plan/?_r=0 (noting that Facebook intends on using UAS to broadcast wireless internet in any space).

35 See Hagemann & Thierer, supra note 34, at 6.


37 See id.


39 See id.

D. Claims Filed by Members of the Model Aircraft Community

During the midst of the comment period, three separate appeals were petitioned to the District of Columbia Court of Appeals to review and nullify the FAA's proposed interpretation of the model aircraft exception. After the petitions were filed, the District of Columbia Court of Appeals consolidated all three petitions into one case, UAS v. Huerta. This article is about the broad concept of whether the FAA should regulate the model aircraft industry, and not this specific case. But the claims filed in these petitions are helpful in understanding the public outrage regarding the FAA's proposed interpretation of the special rule for model aircraft.

One appeal was filed by a group of research universities, the Council on Governmental Relations (COGR), because the proposed interpretation prohibited using model aircraft for research purposes. In its petition, the COGR argued that the proposed interpretation "poses a grave threat to science, research, education, and technological innovation across the United States by purporting to regulate, restrict, or even completely prohibit, use of model aircraft technology by universities, colleges, and research institutions, their faculty, and their students."

Another appeal, by the Academy of Model Aeronautics (AMA), focused on the proposed interpretation's inconsistency with past precedent. In the AMA's eyes, not only has Congress said it would exempt model aircraft in the FAA Modernization Act, but the FAA has never imposed regulations on model aircraft during its 100-year history. Moreover, the AMA sees vast safety problems created by the strict requirement for no commercial benefit because activities that promote safety would be prohibited, such as paid lessons for learning how to fly model aircraft.

41 See Petitioners Seek to Ground FAA's Model Aircraft Directive, supra note 3.
42 See id.
44 See id.
46 See id. at *3.
47 See id. at *4–5.
Lastly, the third appeal was from a group of businesses, the UAS Fund, Skypan, Sachs, and FPV Manuals, who are now subject to the FAA’s regulations for operating their commercial model aircraft businesses. The UAS Fund finances the emerging commercial UAS industry. The proposed rulemaking purports to “greatly restrict or outright prohibit the operation, research, development, and testing of UAS.” This ability to “freely research, develop, test, and deploy UAS . . . is crucial to the financial success of the UAS Fund. This Order disrupts the ability of the UAS Fund to invest in American companies.”

SkyPan is a business of aerial photography using radio-control model helicopters, specifically photography of buildings for real estate and construction projects. These pictures are used to “fund, design, and market residential and office towers nationwide.” Its commercial photography business would be completely prohibited by the proposed rulemaking. Sachs has operated model aircraft for commercial and non-hobbyist purposes, such as using a model aircraft to assist a fire department in assessing a quarry fire, which “saved fire department resources, improved public safety, . . . and prevented the injury or death of fire fighters.” FPV Manuals operates as an online retailer focusing on sales of model aircraft. Customers have canceled orders for FPV aircraft, which are rendered illegal by the proposed rulemaking. Moreover, FPV Manuals is prohibited from test-flying the model aircraft before selling the product, which was previously used as a means of product control. Additionally, FPV Manuals cannot use their model aircraft products to film advertising or marketing projects to promote their business.

49 See id. at *2.
50 Id.
51 Id.
52 Id. at *3.
53 Id.
54 Id.
55 Id.
56 Id. at *4.
57 See id.
58 See id.
59 See id. at *5.
III. POSNER'S PRAGMATISM

Richard Posner is the leader in incorporating economic principles into judicial decision making, a theory defined as pragmatism. As a descendent of realism, pragmatism has three main principles: (1) distrust for Kantian metaphysical principles, such as "truth" and "fairness," which have no clear definition; (2) testing judicial decisions by their consequences and differences produced; and (3) comparing whether judicial decisions meet social needs, rather than if they meet metaphysical principles, such as "fundamental rights" and "liberty." As a guide in economical judicial decision-making, pragmatism weighs the consequences of the judicial decision using a cost/benefit analysis to find the decision that brings the most "wealth maximization" for society. Moreover, following the distrust for metaphysical ideas, pragmatists also do not feel obligated to follow precedent and do feel compelled to act contrary to past decisions if it is best for society. The pragmatist feels that following precedent without considering social consequences can result in hurting society. Thus, the decision from a pragmatic perspective is strongly dependent on the facts of a case. Before looking at the economics of the case at hand, Richard Posner's views on administrative regulation versus common law standards will be discussed to provide a direction for how a judge would view the economics of this decision.

A. POSNER'S VIEWS ON RULES VERSUS STANDARDS

In Regulation (Agencies) versus Litigation (Courts), Richard Posner examined the economic efficiency of controlling society via

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60 Oliver Wendell Holmes was considered the father of legal realism, with his article, The Path of Law. In that article, he wrote that "[f]or the rational study of law the black-letter man may be the man of the present, but the man of the future is the man of statistics and the master of economics." Oliver W. Holmes, Jr., The Path of the Law, 10 HARV. L. REV. 457, 469 (1897).


62 See id. at 76.

63 See id. at 77–78. This has roots in the view Holmes presents in The Path of Law, in which he disagrees with "the notion that the only force at work in the development of the law is logic." According to Holmes, "judges have a duty of weighing considerations of social advantage." See Holmes, supra note 60, at 467.

64 See Cantu, supra note 61, at 77–78.
judicial decisions or through regulatory rules. Since Posner’s jurisprudence is simply an economic analysis of law, describing his views in this article is helpful to show the pros and cons of regulating through legislative and administrative rules as opposed to letting innovation and the common law regulate the safety of an industry. According to Posner, the goal of both the courts and agencies is “to solve economic problems that cannot be left to the market to solve.” In the case regarding model aircraft, if the FAA does not regulate, the alternatives would likely be the court system or the model aircraft community.

1. Administrative Regulation

Looking to administrative regulation, Posner provides a detailed analysis of the costs and benefits of administrative regulation. First, Posner views administrative regulation as a preventive measure for control that is determined before an injury takes place. In that regard, there are many positive aspects of administrative regulation. If rules are explained at the outset, society has better clarity about how to perform and the legal obligations towards the activity being regulated. If society has clarity over legal obligations before acting, there likely will be better compliance with the regulation than if society was uncertain about its responsibility. Moreover, litigation costs after creating the regulation may be low if the regulation is definite and carries strict penalties, which could prevent people from breaking the rule. Thus, administrative regulations are “attractive when the alternative would be vague standards, resulting in frequent actual or arguable violations and hence frequent enforcement proceedings.” To create an effective rule, drafters have the advantage of being able to draw on experts in the particular field to create a specialized rule that takes into account unique areas of an activity. Lastly, administrative regulation is not burdened by precedent and thus, can make decisions for social

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66 Id.
67 See id. at 13.
68 See id.
69 See id.
70 See id.
71 See id. at 14.
72 Id.
73 See id. at 19.
needs without ignoring an obligation to follow existing authority.\textsuperscript{74}

However, the positive aspects of administrative regulation also result in weaknesses. Posner notes that a significant disadvantage is that administrative regulations can “exclude from consideration factors the significance of which was not realized when a rule was promulgated.”\textsuperscript{75} Administrative regulations by themselves are static and are probably not broad enough to predict every circumstance for each case.\textsuperscript{76} Administrative regulations run the risk of not being able to cover activities that the drafters did not expect when creating the rule or that the drafters chose to omit to keep the regulation clear and definite.\textsuperscript{77} A rule may additionally omit an activity because of substantial interest group pressure, which is not present in a judicial decision.\textsuperscript{78} Moreover, instituting a rule to create a definite and clear regulation with strict penalties that effectively prevent society from violating a rule has heavy fixed costs in the initial design.\textsuperscript{79} When drafting an effective rule, experts in the specific field tend to be used and considerable time must be used to draft a rule that will effectively prevent certain conduct.\textsuperscript{80} While costs may be low after the regulation is released, large costs to create an effective rule cannot be avoided.\textsuperscript{81} Subsequently, Posner notes that administrative regulation can be a requirement for a license or permit, such as requiring a building permit, rather than a prohibition of an activity.\textsuperscript{82} If a license is required, costs after the regulation could be high because obtaining the license may have high costs, and bribery or other unethical practices may arise if the license is hard to obtain.\textsuperscript{83}

2. Common Law Standards

Looking to common law standards, Posner analyzes the costs and benefits of using litigation and standards developed by courts as a post-event means of deterring harm. The rule’s big

\textsuperscript{74} See id. at 18.
\textsuperscript{75} Id. As will be discussed later, Dworkin considers this to be a violation of fundamental rights. See discussion infra Part IV.
\textsuperscript{76} See id. at 14.
\textsuperscript{77} See id.
\textsuperscript{78} See id. at 19.
\textsuperscript{79} See id. at 14.
\textsuperscript{80} See id.
\textsuperscript{81} See id.
\textsuperscript{82} See id.
\textsuperscript{83} See id.
disadvantage is conversely the standard’s big advantage, which is
the ability to incorporate case-specific information. This creates an information advantage over rules, which can be combined with the adversary process. Since the case-specific information is weighed by judges or a jury in a lawsuit, the information is treated more carefully to ensure the best decision is reached in the case. Therefore, combining the information advantage with the adversarial process creates flexible standards, which allow for increased accuracy in achieving the desired goal.

Moreover, there is a possibility of a few cases being filed on the subject, and the court can make a small number of rulings on the subject to show the public what the regulation is. While there may be costs of compliance with a judge-made rule, the overall costs in creating the rule would be low, and regulation costs would only be incurred after harm, if any, has actually occurred. Furthermore, the person who makes the standard is also the one who applies the standard, which eliminates the costs that would be associated with interpreting legislation. This also increases the accuracy of applying standards because the minds behind creating the standard are also applying it.

As with rules, standards’ advantages also create distinct disadvantages. While standards’ information advantage is beneficial, it also imposes high costs per lawsuit because a high amount of information is produced for each specific case. On the contrary, with a rule similar to a speed limit, for example, a police officer only has to give out a ticket each time for enforcement, which creates a low cost of enforcement. Thus, while the frequency of regulating standards may be low, the costs of each of those events is very high, and additionally, there is no guarantee that the events will be low in number, which would severely increase costs if there were many lawsuits. Moreover, all of these factors can create uncertainty, and the ability to be judged in an adversarial proceeding can create “more variance in out-

84 See id. at 15.
85 See id.
86 See id.
87 See id.
88 See id.
89 See id.
90 See id.
91 See id.
92 See id.
93 See id.
94 See id.
come." While the decision can be tied specifically to the facts of each case, the reliance on a standard can result in the public not knowing exactly how the facts will be applied to their case, which can result in people being unintentionally liable. Along with uncertainty and variance, there may be issues in proving the harm caused, and people may be free from liability due to technical errors in the trial process. This uncertainty also results in difficulty monitoring whether a judge is correct in the decision making, since it may be expected that results will differ. Likewise, while the appliers of the standards are advantaged as generalists, the judges also have "limited investigatory resources, antiquated procedures, commitment to incremental rulemaking, and delay in responding to serious social problems." Furthermore, there are established methods, such as limited liability entities and liability insurance, that may lessen the deterrence of a damages verdict and create a moral hazard of committing the harm. And there is uncertainty if a party will receive all of their damages owed, such as when a decision exceeds the limits of an individual's personal liability insurance policy. Finally, large-scale disasters, such as the Great Recession of 2008, showcase the standard's inability to measure damages and completely deter after-the-fact. As Posner states, "it is quite impossible to see how [standards] could protect the economy from the macro-economic consequences of an unregulated business cycle."

B. APPLICATION TO THIS CASE

In this case, a judge taking Posner's view would reason through the cost and benefits of the FAA's interpretation on the definition of model aircraft. As stated above, there would be a disregard for past precedent and a concern for the prospective view of the ruling's social consequences. Additionally, the judge would weigh the costs and benefits to find the greatest

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95 Id.
96 See id.
97 See id.
98 See id.
99 Id. at 20.
100 See id. at 17.
101 See id.
102 See id.
103 Id.
104 See Cantu, supra note 61, at 77-78.
wealth maximization for society.\footnote{See id.} Since the economic analysis uses a prospective view, the heavy fixed costs already incurred in creating the FAA’s interpretation are considered sunk costs and are not a part of the analysis.\footnote{See BLACK’S LAW DICTIONARY 398 (9th ed. 2009) (defining the term sunk cost as “[a] cost that has already been incurred and that cannot be recovered”).} However, model aircraft do not fit many of the FAA’s current regulations, which requires more regulations to be passed that apply to model aircraft.\footnote{See Pirker Brief, supra note 10, at 18 (noting that under FAA regulation, the “minimum safe altitude for an ‘aircraft’ is 500 feet,” which is a significantly higher altitude than most model aircraft can fly) (emphasis omitted).}

1. Benefits of the FAA’s Interpretation

In regards to the benefits of the FAA’s interpretation, many of the principles from Posner’s article will apply here. First, uncertainty in rule application is low.\footnote{See Posner, supra note 65, at 13.} Under the FAA’s interpretation, operators of model aircraft can know with certainty whether they are operating an aircraft under FAA regulation. Since there is certainty in compliance with the definition, then compliance with the rule will arguably be better.\footnote{See id.} Moreover, costs in the law’s application will be low as the case will likely not be taken to court to determine if the UAS meets the model aircraft definition. Such as in the case of \textit{Huerta v. Pirker}, the FAA can simply issue a fine if an operator illegally flies a UAS that fails to meet the exception for model aircraft.\footnote{See Huerta v. Pirker, CP-217, 2014 WL 3388631 (N.T.S.B. Mar. 6, 2014).} However, as in \textit{Huerta}, the operator may appeal the fine, which would increase the costs associated with the FAA’s interpretation.\footnote{See id.}

Furthermore, the FAA’s interpretation subjects many UAS to FAA regulation, which increases the public safety by not allowing many aircraft to fly, but on the other hand, does not allow for safety prevention through market competition. The administrative rules can be used as an effective means of preventing large-scale harm and can clearly explain how to avoid harm.\footnote{Cf. Posner, supra note 65, at 19 (noting that standards could not have been used to prevent large scale disasters such as the Great Recession).} The ability to regulate at the outset can likely prevent harm from occurring, whereas harm would need to be incurred to establish a judicial standard to govern the conduct. An example of regulating at the outset is the FAA’s requirement for
a Special Airworthiness Certificate for the model aircraft and a flying certificate for the aircraft’s operators. By requiring special flight certificates for both the aircraft and operator, the FAA can prevent unsafe aircraft and inexperienced operators from flying and injuring the public.

Additionally, if fines are not issued by the FAA, insurance becomes the cost that covers damages for harm caused by model aircraft. The risks associated with model aircraft are largely unknown today because not many injuries have occurred yet, with only two deaths in the history of model aircraft. Therefore, insurance providers will have a difficult time pricing accurately for an unknown damage or harm. To avoid charging too much or too little, regulation by the FAA may be the insurance industry’s preferred method to determine the risk associated with this activity.

Finally, the FAA is a specialized agency that has the purpose of maintaining the safety of the public airspace. With the FAA’s expert aviation knowledge, the agency can create rules better tailored to model aircraft than a generalist judge can for a case that needs to be decided relatively quickly. More specific rules can lead to better compliance with rules, which could lead to greater avoidance of harm.

2. Costs of the FAA’s Interpretation

While safety benefits exist, many costs result from an extensive regulation. Primarily, innovation is hindered along with the results that innovation brings to the public. The FAA’s interpretation prevents many experimental technologies that, with market forces, could lead to safer innovations and arguably safer activities that could prevent more harm than regulation could. For example, due to a lack of regulation, model aircraft today can “follow GPS waypoints, land autonomously or return to a pre-

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115 See Pirker Brief, supra note 10.
117 See id.
118 See FAA Origins, supra note 5.
119 See Posner, supra note 65, at 19.
120 See id.
determined point if the connection with a controller is lost." If FAA regulation intends to match a fast-paced, innovative system, high costs will be incurred because the regulation probably cannot take into account every innovation of model aircraft.

The FAA is also using unnecessary resources to create overlapping regulation, especially considering the harm's low frequency. Common law causes of action, such as nuisance, trespass, and negligence, are regulatory schemes currently in place. Since the costs for more regulation are very high, the market may be more cost-effective at controlling itself, such as organizations like the AMA creating self-regulating standards for the model aircraft community. Considering that only two deaths have occurred in the past 100 years, costs may be lower if few cases are taken to court rather than extensive regulation being passed. While the judges are generalists, an absence of FAA regulation enables the model aircraft community to be self-regulated and to create specialized rules for themselves to follow. But as Posner points out, the court standards cannot prevent cases of severe wide-scale harm, such as the Great Recession. While the use of model aircraft has been increasing rapidly and is projected to continue, the probability of a large-scale disaster is unknown at this time, but it still could occur.

If model aircraft are to be incorporated in the FAA regulatory scheme, more costs will be incurred to create specific standards for model aircraft. For example, some model aircraft would not meet any current FAA regulation since they cannot fly over 500 feet, which is the base altitude for any aircraft under FAA regulation. Since this is such an innovative industry, the FAA will likely have to incur future costs in rewriting the rules or adding

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123 See Posner, supra note 65, at 18 (noting that a major disadvantage of regulation is that it can "exclude from consideration factors the significance of which was not realized when a rule was promulgated.").
124 See id. at 17.
125 See Hagemann & Thierer, supra note 34, at 2 (stating that the UAS industry is projected to add $82.1 billion to the national economy between 2015 and 2025).
126 See Pirker Brief, supra note 10, at 18.
further amendments and interpretations to the definition of model aircraft.\textsuperscript{127} Therefore, the FAA will incur present and future costs in creating a regulatory framework for model aircraft.

3. Weighing the Costs and Benefits

Thus, a judge will consider whether the FAA regulation is worth the additional cost, when the probability and gravity of the harm may not seem that great. As seen from current model aircraft innovations, greater public safety has been achieved through innovation.\textsuperscript{128} On the other hand, innovation is probably hampered by regulation at the expense of the public gaining a greater likelihood of safety. Even with the increased usage of model aircraft, there has been little harm caused by this industry, which would not justify impeding a growing innovation. Moreover, given the model aircraft community's ability to self-regulate, the government would inefficiently spend resources to regulate an industry when the government could use the resources to regulate a more harmful industry. Given the little harm created thus far from model aircraft, the cost of judicial decisions would probably not outweigh the time, money, and effort spent in creating detailed regulations that would effectively cover an evolving industry. Also, any resources spent may be doubling over any practices that the model aircraft community already has in place, such as the use of an additional observer when using FPV.\textsuperscript{129} Other considerations than mentioned here may be present, but if these are the only considerations, the FAA's interpretation would be nullified because the greatest wealth maximization and safety for society in this situation is achieved by allowing innovation and self-regulation.

\textsuperscript{127} For example, the requirement for human watching the aircraft in the proposed interpretation is due to the recent development of using First-Person View, or goggles, to watch the aircraft fly at ranges up to ten miles from the operator. \textit{See} Glenn Derene, \textit{Flying Unmanned Aircraft in the Face of Authority}, \textit{Popular Mechanics} (Mar. 7, 2014, 7:32 PM), http://www.popularmechanics.com/technology/aviation/diy-flying/flying-UAVs-in-the-face-of-authority-15441157.

\textsuperscript{128} \textit{See} Cawley, \textit{supra} note 121.

\textsuperscript{129} \textit{See} RCAPA Rebuttal to the FAA's Interpretation of the Special Rule for Model Aircraft, \textit{Remote Control Aerial Platform Assoc.}, http://rcapa.net/rebuttal-to-the-faas-interpretation/.
IV. DWORKIN'S CONSTRUCTIVISM

In contrast to Posner, Ronald Dworkin argues that principles should be the basis of a judicial decision, not policies. According to Dworkin, a policy is a "standard that sets out a goal to be reached," such as an economic, political, or social improvement. On the other hand, Dworkin says principles are a concept of morality, such as justice or fairness, and are not observed solely because they will advance an economic, political, or social aim accepted by society. By focusing only on policy, the judge destroys the concepts of fixed rights and entitlement, which must be looked at in difficult cases.

In controversial cases, the rules may not be able to extend to the case, and thus the judge will use principles to determine the rights of the parties. Dworkin believes judges should attempt "to find the best justification they can find, in principles of political morality, for the structure as a whole, from the most profound constitutional rules and arrangements to the details of, for example, the private law of tort or contract." Thus, a judge must find the principles that justify practices of society and past precedent. Since competing principles may be found, the judge then chooses the interpretation that is "substantively' better, that is, which promotes the political ideals he thinks correct." Once the "substantively better" principle is found, it can then be applied to the existing law. This two-step process, of finding the justifying principles and then choosing the "substantively better" principle, will be applied to the case at hand to determine the outcome if a judge uses Dworkin's constructivist theory.

A. JUSTIFYING PRINCIPLES

From the narrow details of model aircraft history to the entire constitutional structure, a judge will have many principles to dis-

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132 See id.
133 See Dworkin, *Hard Cases*, supra note 130, at 1091-93.
134 See id. at 1093.
138 See id.
cern in making a decision whether the FAA should regulate model aircraft.

1. Narrow Principles

Looking first to the narrow details of model aircraft’s history, the FAA’s prior history of no regulation of the model aircraft industry indicates a principle of not regulating model aircraft. This lack of regulation was shown from the FAA’s insistence on choosing not to regulate the model aircraft industry in a formal opinion.\(^{139}\) Moreover, a principle of no government regulation is also derived from the ability of community-based organizations, such as the AMA, to self-regulate the model aircraft industry and adopt regulations for model aircraft users.\(^{140}\) However, despite the long history of lack of regulation, there is also a recent history of the FAA attempting to regulate model aircraft, such as the definition within the FAA Modernization Act.\(^{141}\) Furthermore, in 2014, many rulings have been issued about model aircraft, such as preventing their use in the national park system\(^{142}\) and allowing their use on movie sets.\(^{143}\) Given the differences in these rulings’ results, no clear principles can be drawn from recent events of whether there is a principle of not regulating model aircraft.

2. Broad Principles

In addition to the narrow view of the model aircraft industry, Dworkin also says that the judge should look at broad principles from the government as a whole.\(^{144}\) First, there is a principle of favoring innovation. The best example has been the government’s decision not to regulate the Internet to spur innovation.\(^{145}\) By letting the Internet previously operate without

\(^{139}\) See Pirker Brief, supra note 10.
\(^{142}\) See Hughes, supra note 38.
\(^{144}\) See Dworkin, Hard Cases, supra note 130, at 1084–85.
\(^{145}\) See Hagemann & Thierer, supra note 34, at 3. However, there has been a recent debate over whether the Internet should be regulated, which stems from
regulatory interference, the government indirectly supported the Internet in becoming a successful innovation.\textsuperscript{146}

There is a second applicable principle of the government protecting the public's general safety. Within the airline industry specifically, the FAA was created to regulate the safety of an innovative industry.\textsuperscript{147} Throughout history, there have been many other government agencies and programs that were created to protect Americans' safety. An evolving example has been the creation of the Securities and Exchange Commission (SEC), which was originally created in the aftermath of the Great Depression.\textsuperscript{148} The SEC was created to protect the general public from the investing abuse that led to the Great Depression and to encourage public trust in investments.\textsuperscript{149} The main statutes Congress created to protect the investing public were the Securities Act of 1933 and the Exchange Act of 1934.\textsuperscript{150} However, the SEC's regulation has not remained stagnant, but rather has evolved to keep pace with changes in technology and the creation of new financial instruments.\textsuperscript{151} Another example of a federal agency being created after wide-scale harm is the Environmental Protection Agency (EPA).\textsuperscript{152} The EPA was created in 1970 after growing awareness of harmful waste, such as throw-away packaging, sewage, and industrial chemicals, that were deteriorating the environmental landscape of America.\textsuperscript{153} Moreover, like the SEC, the EPA's regulations have continually


\textsuperscript{146} See Hagemann & Thierer, \textit{supra} note 34, at 3.
\textsuperscript{147} See \textit{FAA Origins, supra} note 5.
\textsuperscript{148} See \textit{Marc I. Steinberg, Securities Regulation} 1 (6th ed. 2013).
\textsuperscript{149} See \textit{id}. at 5.
\textsuperscript{150} See \textit{id}. at 1.
\textsuperscript{151} See \textit{id}. at 2–3. Most recently, the Dodd-Frank Act was passed to better prevent the corporate misconduct that contributed to the 2008 financial crisis, and the Sarbanes-Oxley Act was passed in 2002 to combat many of the innovative frauds at companies such as Enron and WorldCom. See \textit{id}.
\textsuperscript{153} See \textit{id}.
evolved to keep up with changes in technology. This history of the SEC and FAA, along with other government agencies, shows a principle of the government using agencies to protect the public safety and evolving the agency’s regulation to keep up with changes in technology. However, the history of both the SEC and FAA also display a principle of the government not regulating until a large harm has occurred. This shows a reactive principle of not regulating an industry based on speculative harm, but issuing regulations after harm has actually occurred. While there may be some instances of protecting speculative harm, these examples show the government does not waste resources on protecting harm until the harm actually occurs.

Third, there are principles of personal privacy resulting from cases of aircraft equipped with cameras. On one hand, the Supreme Court has allowed the police to conduct surveillance from manned aircraft and the pictures taken did not amount to a search. In California v. Ciraolo, the Supreme Court stated

154 See id.
155 See FAA Origins, supra note 5; see also Steinberg, supra note 148, at 1–3 (noting that the SEC was not created until after the Great Depression). Moreover, the two recent large congressional statutes regulating the securities market, Sarbanes-Oxley and Dodd-Frank, both were created after large-scale harm in the financial market occurred. See Steinberg, supra note 148, at 1–3.
156 "Regulatory policy generally seeks to prevent harm before it occurs, but the reality is that it usually has been more reactive than precautionary, responding only after harm has become manifest." Robert V. Percival, Risk, Uncertainty and Precaution: Lessons from the History of US Environmental Law, in Trade, Health and the Environment: The European Union Put to the Test 25, 25 (Marjolein B.A. van Asselt et al. eds, 2014), http://ssrn.com/abstract=2365518.
157 See Chappell, supra note 145 (noting that after a longstanding policy of not regulating the internet, the FCC voted to regulate the internet after harm from broadband providers occurred). While not present in the Net Neutrality decision, the FCC has adopted a proactive approach to regulating the telecommunication monopolies. See Philip J. Weiser, Toward a Next Generation Regulatory Strategy, 35 Loy. U. Chi. L.J. 41, 42 (2003). Additionally, although a foreign example, the European Economic and Social Committee published an opinion deciding to take a proactive law approach, as opposed to its traditional reactive approach. See generally Opinion of the European Economic and Social Committee on "The Proactive Law Approach: A Further Step Towards Better Regulation at EU Level", 2009 O.J. (C 175) 26.
158 See, e.g., Dow Chemical Co. v. United States, 476 U.S. 227, 238–39 (1986) (noting the Environmental Protection Agency did not conduct an illegal search by taking aerial photos of a Dow Chemical plant as part of an environmental investigation).
159 See California v. Ciraolo, 476 U.S. 207, 211–12 (1986) (holding that the police’s surveillance of the defendant’s backyard and discovery of marijuana plants did not constitute a search under the Fourth Amendment).
that "[t]he Fourth Amendment simply does not require the police traveling in the public airways at this altitude to obtain a warrant in order to observe what is visible to the naked eye."\textsuperscript{160} Additionally, the Supreme Court in \textit{Florida v. Riley} made a similar ruling, but noted that while the police were flying above 400 feet, which is within the airspace regulated by the FAA, a different ruling would have been reached if the police were flying below that level.\textsuperscript{161} These Supreme Court rulings show no violations of personal privacy by police from the air, but as stated in \textit{Riley}, different results may be had if the aircraft were flown at low altitudes.\textsuperscript{162} Thus, a principle can be derived that police searches from aircraft are valid at a certain altitude, but under that altitude, privacy issues can be violated. Since model aircraft do not have the capabilities to be flown at the FAA's current regulated altitude, model aircraft would logically have a high probability of violating privacy rights if used by police for surveillance.

In summary, there are three broad principles that are applicable in this case: preference of favoring innovation, protection of general public safety through a government agency after large scale harm, and violation of personal privacy from surveillance of aircraft flown below the FAA regulated airspace.

\textbf{B. Choosing the "Substantively Best" Principle}

Following the next step in constructivism, the substantively best principle is chosen to decide whether the FAA should regulate model aircraft.\textsuperscript{163} After looking at the foregoing narrow and broad principles, the substantively best principle is that the government should not regulate an innovative industry until large-scale harm has occurred. Given the lack of regulatory history, this decision would be most consistent with past precedent, or lack thereof. The low amount of harm in the past was probably due to little use, and with increased use of model aircraft, the probability of harm may stay the same but with increased magnitude. However, as with the examples of the Internet, along with the financial and environmental industries, the government has a history of not initiating protection of public safety until wide-
scale harm has occurred.164 In this case, no large amount of serious harm has yet to occur, which indicates that model aircraft should not be regulated.165 While personal privacy may be violated, these are solely speculations that personal privacy may be violated using model aircraft.166 If privacy issues were the main justification for regulating model aircraft, then the greater safety measures that could be achieved through innovation would be lost, which contradicts the FAA’s purpose.167 The government does not indicate a history of protecting speculated harm, but rather harm that does in fact occur. Establishing a precedent of heavily regulating an industry that has only produced minor harm could result in justifications in the future for broad government interference with innovation. While harm from privacy issues may occur, air safety is still promoted by the continuance of innovation, which furthers the FAA’s purpose of air safety.168 Thus, until wide-scale harm occurs, model aircraft should not be regulated.169

V. THE PREFERRED THEORY FOR MODEL AIRCRAFT

As shown from the foregoing, both theories will likely reach the same result. However, these two theories of jurisprudence are very different. Thus, one theory may be realistically better for future decisions regarding the regulation of model aircraft and for spurring the innovation of the model aircraft industry. Posner’s theory of pragmatism has positive and negative aspects. A decision using this theory would reach the most economic decision, without regard to infringement on ideals such

164 See, e.g., Chappell, supra note 145.
165 See Lowry, supra note 9.
166 See Wells C. Bennett, Civilian Drones, Privacy, and the Federal-State Balance, BROOKINGS INSTITUTION (Sept. 2014), http://www.brookings.edu/research/reports2/2014/09/civilian-drones-and-privacy#ftn2. “It would be hard to design a preemptive, national-level policy without knowing more about what sorts of drones will fly, what sorts of privacy rules will survive a first round of legal review, and so forth.” Id. at 14.
167 “The FAA’s mission is to provide the safest, most efficient aerospace system in the world and does not include regulating privacy.” Unmanned Aircraft System Test Site Program, No. FAA-2013-0061 (proposed Feb. 22, 2013) (to be codified at 14 C.F.R. pt. 92), http://www.faa.gov/uas/media/UAS_privacy_requirements.pdf.
168 See id.
169 Since model aircraft are a subset of UAS products as a whole, most of the arguments in this paper could probably be applied to show the degree to which the FAA should integrate the entire UAS industry.
as privacy and fairness. Additionally, a judge would be able to easily take into account changes in technology because the judge is not tied down by past precedent, which was applied to older technology. Moreover, a pragmatic decision could better meet society’s current goals or social aims. For instance, by using a pragmatic approach, the judge can take into account the decision’s economic effect on technology companies’ goals of using the emerging model aircraft technology. However, the most economic decisions can be disliked by the public for being unfair. For example, during the Sydney hostage crisis in December 2014, the taxi company Uber’s objective pricing algorithm calculated taxi fares of four times the normal rate because of the highly increased demand to leave downtown Sydney during the turmoil caused by actions from the Islamic State. The public perceived this pricing surge as maliciously taking advantage of people, and Uber received much criticism for this perceived unfairness. With a constant supply, a pure economic decision would increase price as demand increases, which is what Uber did, but this economic decision is not always the best in the public’s eye. Moreover, future decisions on similar cases may differ because of the judge’s perspective, which could result in a lack of consistent decisions. This article was influenced by the author’s perspective, which may differ from a judge’s view and result in a different outcome than reached in this article. For example, the judge may have a political party bias or may favor government regulation over the freedom of innovation. Furthermore, biases and heuristics could wrongly influence the judge’s economic analysis. For example, if more negative or positive news is released about model aircraft before a decision is made, the judge may incorrectly put more weight on the recent news, resulting in an availability bias. Additionally, the judge

170 See Cantu, *supra* note 61, at 77.
173 See id.
174 See id.; see also Reem Heakal, *Economic Basics: Supply and Demand*, *Investopedia*, http://www.investopedia.com/university/economics/economics3.asp (last visited Nov. 6, 2015) (stating that “as consumers have to compete with one other to buy the good at this price, the demand will push the price up”).
176 See Daniel Kahneman, *Thinking Fast and Slow* 129 (2011). Daniel Kahneman, the 2002 Nobel Prize winner in Economic Sciences, defines the avail-
may be more inclined to place more weight on loss from harm than on gains from innovation, even if both are of equal degree.177

Dworkin's constructivism also has good and bad aspects. On the positive side, a judge using constructivism would create a rule that is most consistent with past decisions, which can show fairness to society because of consistency in rule-making. This approach can allow for consistent decisions over a period of multiple cases and keeps in line with reasoning that has been developed over many years. This consistency can provide certainty, which leads to better observance of a rule.178 On the other hand, constructivism is less likely to take into account changes in technology, which may warrant a need for regulation when past precedent is based on older, less used technology. Along these lines, this approach's result would likely follow the FAA's purpose of air safety, which may lead to ignoring society's new goals and social aims with model aircraft. Additionally, not to the same degree as pragmatism, constructivism depends in part on the personality of the judge, particularly the judge's view of morality. This may lead to error in a single decision, but over a long period, would lead to more consistent results.

In the author's view, Dworkin's constructivism is the best theory of jurisprudence in this case because of its advantages of consistency and predictability. Looking at the two theories from an economic perspective, the consistency and predictability of constructivism would likely result in greater innovation of model aircraft, which would likely lead to a safer model aircraft industry. For an innovative technology to develop, consistency in regulation or lack of regulation is important for making a technology that the inventor knows conforms to the rule. Under the pragmatic approach, a judge may change his mind on the

ability heuristic as "the process of judging frequency by 'the ease with which instances come to mind.' . . . You wish to estimate the size of a category or the frequency of an event, but you report an impression of the ease with which instances come to mind. Substitution of questions inevitably produces systematic errors." Id. Among others, additional cognitive biases affecting people, including judges, are focusing on existing evidence and ignoring absent evidence, overweighting low probabilities, and responding more strongly to losses than to gains. See id.

177 See id. at 308–09. This concept is defined as "loss aversion." See id. Regarding loss aversion in the law, Kahneman explained that in legal decisions about commercial transactions, assuming both amounts are equal in dollar amount, we are more likely to restore losses than compensate for foregone gains. See id.

178 See Posner, supra note 65, at 14.
subject and prevent certain types of model aircraft from flying. If an aircraft was suddenly prohibited, the developers would suffer severe setbacks on their inventions by unexpectedly not being able to operate the aircraft. Along with consistency, there is greater predictability that results from constructivism, which again can result in greater innovation when the developers know the constraints that are imposed when creating the inventions. While large scale harm may occur before any regulation, the government can wait to see if regulating model aircraft is necessary without wasting costs on an industry that may never cause harm or that may create its own safety measures through innovation.

VI. CONCLUSION

As shown from the foregoing, model aircraft is an innovative industry that does not need to be regulated. Through Posner’s economical approach and Dworkin’s evaluation of past precedent and constitutional principles, both theories of jurisprudence show model aircraft should not be regulated by the FAA and that air safety can best be achieved by allowing innovation to continue. Posner’s view takes into account the judicial decision’s effect, but ignores precedent and notions of morality. An analysis under this economical form of jurisprudence would probably determine that the government wastes resources in regulating an industry that does not pose harm to society and that has already created its own set of self-regulating practices. Dworkin’s approach is more structured and less flexible but promotes consistency and fairness by adhering to previous decisions. An analysis under Dworkin’s jurisprudence would determine that the government has a history of not regulating an industry until wide-scale harm has happened and that innovation, which could lead to safer practices than regulation could create, should be favored until society is harmed. Given the need for the environment of an innovation to be reliable in order to thrive, Dworkin’s jurisprudence would be the best reasoning because it promotes a predictable environment that would allow for the most innovation for model aircraft. Therefore, the FAA would create the safest environment for model aircraft by allowing continued innovation in the industry, and the proposed interpretation of the special rule should be nullified.