The Saga Of
“WHAT SPHINX?”

A ridiculously long making-of memoir from the team who placed 2nd in the 2016 Red Bull Flugtag Event in Boston

By Alex Ezorsky-Lie AKA “Alexander The Alright”

CHART OF ALL EVENT STATS AND LINKS | WHAT SPHINX PHOTO ALBUM | EVENT PHOTO ALBUM

WHAT SPHINX FACEBOOK PAGE | A MUCH SHORTER ARTICLE

1 hobby maker / artist (Alex Ezorsky A.K.A Alexander the Alright)
+ 1 freelance machinist (Andy Haycox A.K.A Memphis Slim)
+ 1 pedicabber engineer (Jonathan Lopatin A.K.A J-Lo A.K.A Horus)
+ 2 “pushers” (Max Prum A.K.A Bubba Hotep and Jeff Magni A.K.A Just Jimmy)
+ 1 hobby costume maker (Nicole Mongeon)
+ 2 months designing
+ 30 days to build
+ apx 140 hrs building
+ 5 hrs painting
+ 6 hrs making costumes
+ 2hrs planning dance routine
+ $650 in Home Depot materials
+ $50 in model airplane mylar
+ 1 $50 custom steel tube
+ the Artisan’s Asylum’s AWESOME free workshop days
+ the backyard of the best mom/step dad ever
+ a ridiculous amount of blind faith, giddy excitement, and learning the hard way

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- 1 giant flying fart lion glider named “What Sphinx?”
- with a 23’ wingspan, 12’ length,
- apx 80lbs,
- 1 spring-loaded tail-mounted fart launcher,
- 1 colorful 8’x5’ launching cart
- which when pushed off of a 22’ high ramp, at apx 9mph, into apx 8 mph headwind, lands apx 42’ from the edge of the ramp,
- a.k.a. at apx a 63 degree downward angle,
- a.k.a. a distance to drop ratio of 2:1
- a.k.a. **GLIDES!**

Sure, if you watch the video in realtime our flight looks a bit more like a graceful plummet.

But considering that 80 percent of the other crafts either went straight down or stalled immediately before (Draper Labs) or immediately after (MIT) leaving the edge of the ramp, our 42 feet, in *front* of where we left, was a huge accomplishment. After watching so many other teams take off, stall, or even backflip, our lead engineer J-Lo intentionally positioned the plane in that slight “downward” angle. In other words, had we pointed the wing a tad more upward or positioned the pilot a tad further back (thus tilting the wings up like a seesaw effect) we might’ve gone further.... *OR* ended up behind our starting point. With only one chance to test the possible outcomes, J-Lo made a very safe choice, winning us a second place trophy I can’t cherish enough.

Ever since I was a kid I had two very clear passions: building things, and filming things. When I failed math 4 times in 4th grade and won a few animation festivals in 6th grade it was clear which field would take over most of my life. But despite feeling unworthy for the engineering world, the tinkerer inside me never calmed down, constantly building contraptions that beeped, glowed, flung things or sped around the block. At 15 I was the youngest competitor at the BattleBots competition. With my motorcycle starter motor stuck to a steel bar on wheels which I called "Poink" I won my first match. When my steel bar slammed into my second rival and the back pressure instantly broke the starter motor in half I once again was reminded of the importance of calculations over pure determination. Since then my creations have steered toward the safer world of Art, where no teacher, panel, or broken motor could say I didn't do the math right. But that all changed in the mid-summer of August 2016 when a friend mentioned on facebook that the home-built art-glider competition "Flugtag" was coming to Boston for the first time.

CONCEPTION

I quickly brainstormed and submitted my wildest dreams to Red Bull, the sponsor of the giant ad / event. The true inspiration for the theme was my desire to have the pilot look like a part of the craft. The original design had the beast's hind legs down so that from the side view the pilot's legs and the craft's legs helped form a half-man half-winged beast, pegasus, griffin, and yes, look it up, Sphinx's often had wings! Since I didn't really like the Peter Griffin (from Family Guy) idea anyway, and since the front support arms that held the pilot looked a lot like the extended arms of a sitting sphinx, the idea of a Sphinx felt complete, needing only the tinge of humor to keep it from being too fantasy-nerd serious.

While waiting to see if I was accepted, I had the great opportunity to promote my idea at a "Secret-Boston" event in JP. I met other aspiring Flugtag teams including my now friend Eugene Zeleney from team 90's Nostalgia. I even got a chance to explain my idea to Spencer Buell from the Boston Metro.

"Sphinxtor." It's a blend of "sphinx," the Egyptian mythical creature, and "sphincter," the body part," was what he wrote.

To my absolute joy and disbelief, he also posted the promo video I animated demonstrating exactly how this butt-joke flying lion would dominate the competition, complete with death metal and what is probably the first and only presence of a suggestive lion's anus on their website. To my even greater disbelief, weeks later Red Bull accepted "SPHINXTOR" as one of the 30 teams out of 200 entries! To my not-surprise, they did not accept the name "Sphinxtor" and required us to change it. Determined to treat this 30 seconds of fame as if it were our last, we tried many alternatives, including "Ripple of the Spanx" and "The beast formerly known as Sphinx" all which were denied before our 12 yr old senses of humor begrudgingly settled on the PG fart joke "What Sphinx?" minutes before the deadline. We came up with a few comical slogans to go with the new name:

"The trash? Uncle Steve? The dog? From Oedipus Rex to your roommate's girlfriend, mankind has pondered the greatest riddle of all... "What Sphinx?"
Prophecy foretells that in 2016 the Great Sphinx shall finally return to release the answer...and by the time it truly hits you, the messenger shall have taken flight."

"The body of a lion made of foam, the 24' wings of an eagle made of plastic and metal, and the torso of a man made of Pennsylvania Dutch, "What Sphinx" is a beast-craft to behold, just make sure you also be-hold your nose."

RULES / RESEARCH

In case you, like most people, wonder why nobody has been genius enough to strap an engine on these things, or at least use a giant cartoon slingshot...believe it or not, Flugtag has rules. Most importantly: No stored power whatsoever (engines, rubber bands, catapults, or even pedal power), all gliders must be made from scratch, there is a maximum size of 24 feet wide by 20 feet long and the rider plus craft and cart cannot be taller than 8 ft or exceed 400lbs. Now you, as did we, might be wondering why it looks like you've seen craft that launched from higher than 8 ft, or maybe did use a slingshot, or smoke (later found we couldn't do that), Flugtag Rules, are NOT universal. The rules in their hometown in Austria are different than the rules in Dubai which are different than the rules in Boston. As a town crammed with lawyers, safety-first liberals, and a legit fear of terrorism, not to mention still standing laws written by puritans, my guess is that getting Boston to agree to this event was like pulling teeth and probably had to fight tooth and nail to get the barge up to 22' (way lower than most other competitions). With these known rules in mind the design phase was a constant pitching, ditching, and re-chiseling of concepts.

Knowing how much I didn't know about proper engineering, I was very glad to have two engineers on the team. As I am sure many teams did, we spent countless hours studying the Flugtag world record holders "The Chicken Whisperers." Luckily those geniuses put out a ton of super boring and insanely informative information about exactly why and how they built their craft. In between boredom breaks I would jot down notes like "V shape stabilizes roll" "wingtips help reduce drag and increase ground effect"...."ground effect is when a craft floats on a cushion of air near the ground." Here is a page doc where we kept most of our notes.

Assuming most other teams would be building similar V-shaped large-wingtip wing designs (since the Chicken Whisperers made a great argument for them) we tried to focus our engineering creativity on the launch mechanism. We came up with one wild atlatl-based launching cart to really get an edge on the opponents. Our lead engineer loved it, it was genius...and it was instantly denied by Red Bull...then our lead engineer dropped out :(But this was just a ripple in my spanx, nothing my bloated determination couldn't overpower.

THE TEAM

Ok, no problem. Growing up in Cambridge, I knew at least one of my homies would be down to be part of this insanity. Andy Haycox, my friend from CRLS and now a notorious engineering madman who helped build "Stompy" the 2-ton robotic hexapod, was my first choice. He was on board and at my house before I could finish explaining. Then, time pressures and a totally logical fear that our skills wouldn't meet our needs caused our second original engineer to drop out. It was a bit of a sad goodbye but Andy couldn't have found a better replacement. Our hero of the month, Jonathan Lopatin A.K.A. J-Lo, straight outta Case Western with a BSE in mechanical engineering. His torn jeans, courier bag and

glasses represented the exact attitude we needed, “We’re gonna be smart about this, but we’re not gonna be afraid to take huge risks, measure by eye, and do what it takes to get it out the door and on that ramp Aug 20th, no matter what “it” turns out to be”.

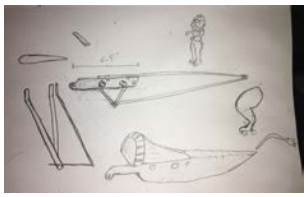
Picking the pilot was easy. At 5’10” Andy only weighed 145lbs and vowed to drop 5lbs even though we urged him not to. J-Lo was our lead engineer and I was the creative captain. Our other two “pushers,” or “craft propellers” as they prefer to be called, were my best friend since 2nd grade, Max Prum, (his slogan for high school class president was “Vote for Prum, it rhymes with plum, not stupid”) and my sketch comedy soul mate Jeff Magni (perhaps most famous for our submission to another creative competition/giant ad Dorito’s crash the superbowl). Aside from propelling our craft, Jeff and Max helped write our stage skit, work on PR material, and acted as the much needed comic relief that lubricated the sometimes dry and tense engineering process. Jeff and his girlfriend Nicole Mongeon also put in serious hours helping with the costumes.

From that moment on, the fateful crew had been chiseled in stone:

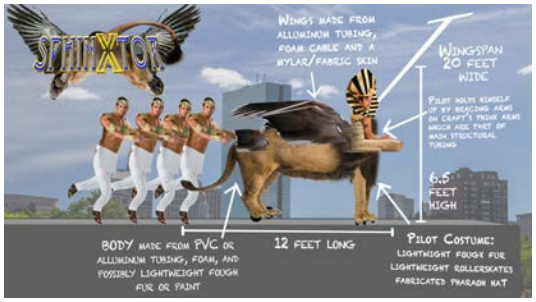
LET THE GAMES BEGIN

It was just hours before the big Flugtag Boston event kickoff party at MJ O’Connors in Boston that Andy sat impatiently as I scurried to finish the gold sequin pharoah hats I had begun the day before. “We’re gonna be late” he said, and unknowingly triggered flashbacks to every halloween night in my life, where friends and girlfriends uttered those same words as I hurried to stitch, paint, or glue the last bits of my velociraptor, halfsharkaligatorhalfman, or fractal-suit. I’m not a furry, and I’ve never been to a costume-comic-gaming-con in my life, and yet ever since I was a kid I’ve been obsessed with making costumes. As was the case in the all-female costume class I took at Mt. Holyoke, I’m used to women in the fabric industry like the nice ladies at Sew Fisticated (the last fabric shop in Somerville) being simultaneously curious and frustrated by my requests for things like “something gold, Egyptian, cat-like, gaudy, and, oh yeah, somehow represents farts.” I ended up texting a photo of the gold satin vs gold sequin to Jeff the comedic captain, and in a few minutes got “SEEQUINZ.” Anyway I got the hats to presentation form, shoved them in our backpacks and Andy and I biked our asses to the bar. All the other teams were there, great people, fun as you would imagine. The Red Bull crew was there filming interviews and most of the teams prepared their trash-talk, mainly aimed at MIT. What Sphinx? totally blindsided the competition being the only team bringing the early fashion smackdown (that, and we almost blinded people with our giant pokey foam sequin headdresses in a packed Boston bar).

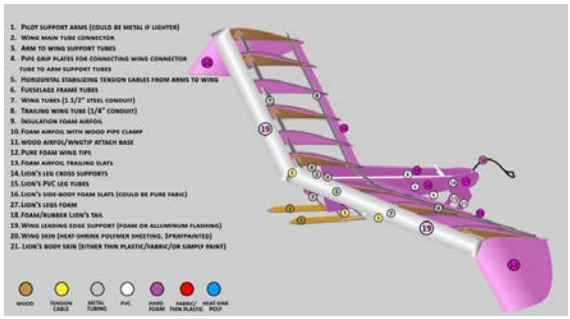
DESIGN



The craft design process generally went like this: I make a sketch of the craft or often a detailed design; I spend hours depicting in colorful sharp animated imagery and send it to the team for approval. J-Lo does some calculations and politely suggests massive changes. Andy chimes in too with some seriously appropriate points like: “Hey if the plane bisects my back couldn’t it paralyze me on landing?” “Putting the pilot below the wing will also give us a much better center of balance to reduce unwanted roll rotation.” says J-Lo. While sitting in an AirBnB on the island of Ponza, a beautiful sunset just outside the door, I finish my re-design and submit it. Maybe I miss the sunset, but I feel rays of satisfaction from knowing I will soon be building one more wild-craft, in the face of logic and my 4th grade math teacher, and I would have been beaming with pride had I known how literally I would be doing it in the face of MIT.



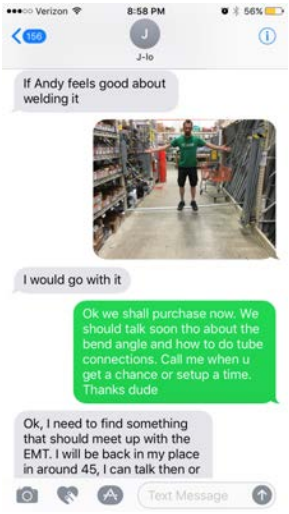
The design we settled on includes a range of creatively inspired elements such as the lion’s body fuselage, Sphinx-arm-like pilot holder and a lot more elements inspired by our research on actual airplane building. If you were to look at the craft head on the slight upward “V” shape bend of the wings allows the plane to auto stabilize if it were hit by wind from the side. Since airfoil wings work best when level, wind pushing up on one side will cause the other wing to become more level, gain more lift, and return the plane and pilot to the proper orientation. This simple design seems too genius to pass up, so it’s first to make the cut. Next we agree on fairly large downward wingtips. These act like the bent up edges on a shovel, making sure no wind spills out of the sides of our giant wind catching wing. A wing catching more wind actually creates a cushion of air underneath it which works even better when near the ground (a.k.a. ground effect). We all agree we need the wing itself to be formed into a proper airfoil (see below) for its mystical lift-creating powers, but aren’t sure which magical curve to pick. The actual construction of the wing involves at least one bar running through the wing for main support, thusly called the “main spar.” Personally, I’m a bit cautious to even consider adding a second bar, but the team and other logic convince me we need that “rear spar” to help ensure that the wing doesn’t twist. We agree that these main structural elements of our wing need to be metal, because it’s cheap, rigid, and surprisingly light when compared to solid wood of similar strength. The airfoils are to be cut in foam, slid on the spars, and the spars then somehow connected to the cockpit. That cockpit at this point is nothing but a shape, “something” that comes down from the wings and then sticks out forward to hold the pilot while looking “Sphinx Arm”-like. The body of the lion is to be made of the lightest, thinnest, yet most rigid materials we can think of. When I think ridgid I think triangles, and when I think light I think tubes, so a PVC triangle is our current design for the body. Then it’s all covered in some vague plastic and/or fabric and painted awesomely. Our design has just enough vagueness to fit our ridiculously short time schedule.

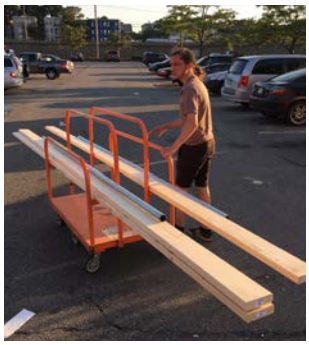


MATERIALS

By the time I get back from my Eurotrip it's August 15th, I am jetlagged; life feels weirder than usual, and, oh yeah, I have only 1 month to build an airplane. The first thing we do is assemble a budget/materials list. As a freelance video producer I have a good bit of experience with Excel and making budgets. I skim home-depot's website, a few others, and round it up to about $450. We all agree that's something we can collectively handle. Other than my month-long trip to Europe, the second biggest threat to our time-schedule was a cautious wavering between going full Home Depot, and considering doing things like real engineers, with fancy online catalogues listing aluminum bars measured in the thousandths of an inch. Before his evening shift pedaling drunken Red-Sox fans to train stations, J-Lo calculates and skims http://www.mcmaster.com/. At the same time I go about things the way I did as a kid, I go find materials I can touch.

Luckily, Home Depot is only a short bike-ride through a tangled mess of highways away from my home near Union Sq. Somerville. I go immediately to the metal conduit in the electrical aisle (I think it's #9). I lay a bar of 2" diameter conduit across the isle perched on two low shelves suspending the bar a few inches off the ground. Nobody coming my way and probably nobody watching those security cams they have everywhere, I stand on the center of the 10' bar, it doesn't bend! As I put it back I notice how "hefty" it feels for an airplane, and use that very calculated knowledge to decide maybe we go thinner. I grab a 1 ½" conduit, same test, no bend. I'm sold. "I found our main wing spar! And I don't even think we're gonna need cross supports!" I tell J-Lo over the phone. He's such a cool dude, he sees my photo and says, "ok!" I guess what really made our team work was a combination of science and gut feeling, giving each other the benefit of the doubt in moments when they felt like they "really had something." But we decide not to buy the bars and instead spec everything else out before really doing the big buy. But hey, while we're here let's get the wood we need for the cart. Nobody's gonna care how much *that* weighs, right?...wrong.





THE CART

Between Andy and I we had two parents' basements to scrounge through for wood and bike wheels. Andy's parents won this round, rewarding us with 2 bike wheels off his old Gary Fisher, complete with slick tires, and his childhood cherry wood bed frame complete with D.A.R.E stickers. "Are you sure you want us to slice up your childhood and turn it into an airplane?" "YES." Andy blurts in an instant (sentimentality is not Andy's thing). Over the next few days we spend a handful of hours cutting and screwing together scrap beams and plywood along with giant Home Depot 2x6's into a cart that matches our initial design. We've chosen to make the cart 16' long so that our lion's 12' body / fuselage can rest somewhere solid without hitting the pushers in the face. We made the cart 5' wide so that if necessary our pilot can re-adjust left and right without falling off the cart. A basic box with a few cross beams for the base and then some wooden external "wheel frames" to hold the four 26" bike wheels on the outside.

The wheels are held in with ¼" threaded dowel from ACE hardware down the street (they saw a lot of me in August ;) threaded through the wooden frame, the hole in the wheel's axle and out through the wood on the wheel frame. Despite my minor fear that the rod would sheer off, tadaa, sweet rolling action!

Now to just put it on top of my Chevy Venture minivan and take it to the storage garage I share with my friend and business partner Jason Behrens from Space Park. Bend from the knees annnd OMG this thing weighs almost 200 lbs! Having no idea how much wooden glider push carts are supposed to weigh, we just suck it up strap it down and with the complete assurance that our 200 lb wooden death kite won't fly off the roof because my manly ass left arm has a grip on it through the car window, we somehow drop it off in the garage. Cart DONE! Great, now just to build an airplane in 24 days.

AIRFOILS (the sexy part of the wing)

By far the sexiest part of an airplane, airfoils are those sleek salmon teardrop shapes that form the cross section of a wing and allow it to slice through the air in some magical way that produces lift. Ok, so it's not magic, but not a single engineer I spoke with in this entire experience seemed to be able to explain the Bernoulli Effect in a way that made sense, and many of them considered it a trumped up concept altogether...I mean if it's so important why do paper airplanes work? But hey, every glider in the world uses them. The Chicken Whisperers had them, J-Lo says we need 'em, and plus they are sexy looking. After much deliberation J-Lo's long awaited email lands in my inbox, an exact diagram of the airfoil we're gonna use. It's called NACA 4214. The fancy name is actually just like measurements for a dress:

4 = 4% camber,
2 = max camber is 25% back from the leading edge
14 = the 14% ratio of chord to thickness. (Our chord was 4 feet, so the height was be 6.75 inches)

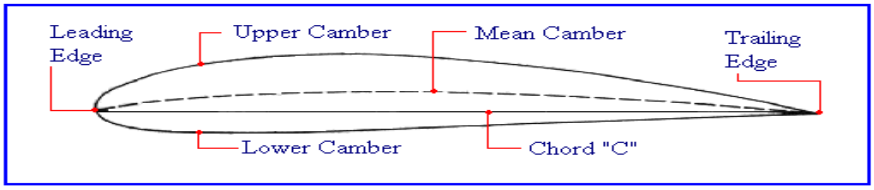


Figure 3-1 Cross section of an airfoil

In other words, one sexy-ass wind slicing wing sliver.

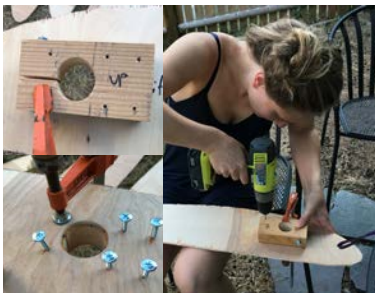
As I came to find out, despite his rather fly-by-the-seat-of his pants attitude towards life, Andy is an absolute perfectionist when it comes to calculations. He printed the image, carefully tacked it to a piece of ¼" plywood and cut out our very first template for foam cutting (using my shitty jigsaw to his distaste). We knew that most of our airfoils would be foam since it is very light and rigid enough hold the airfoil shape in the face of wind, but the wing also needed to resist twisting which the foam would not do. For this we had a 2-in-1

solution; We made 6 airfoils out of ¼" plywood which when placed along the wing and sufficiently clamped to the front and back wing spars would keep the wing from twisting as well as offer a rigid surface to secure half of the 12 foam airfoils. It was mostly my idea, getting just enough approval from Andy and J-Lo for me to test it out. Their skepticism lay in my ability to make a flat wooden surface rigidly attach to a round surface at 90 degrees and have it be light. While I figured that out, we needed to cut those foam airfoils.

You'd think by being mostly air, pink insulation foam would be cheap, but at $33 each we only purchased a single sheet of 4x8' 2" pink panther from Home Depot. This amount spared us only inches of extra after carefully tracing out roughly 10 airfoils. The right way to cut foam is with a hot wire cutter. They are either $100 if you buy a cheap one or $20 if you can follow this instructable without blowing too many transformers or burning your house down. That's when I remembered I had a scroll saw in my mom's basement. The machine wasn't designed to cut anything 4' long, due to the direction of the blade, so…..I twisted the blade. "Another fudge-it Alex solution," as Andy would say. 3 airfoils and 3 broken blades later we decided to give the DIY hot wire-cutter method a go.

I built the wire holder rather easily with some scrap wood, screws and power cable. The transformer is a very necessary part of most appliances, essentially using electromagnets to safely drop the power coming out of your wall to something more manageable. However, the amount of power you attempt to draw out of the transformer can put a strain on it until the coils inside burn up and "blow." Despite the instructable clearly mentioning this might happen without proper precautions taken, I went through a few transformers before I considered it a lesson satisfyingly learned the hard way. Then I remembered reading somewhere that a pc power supply would also suffice. Anyone with a basement who's been storing crap since the 90s has an old PC power supply and my mom's had two. Only 5 volts, but with a max amp draw of almost 100 amps, there was no way we'd blow the supply. A few days prior, I had purchased 24 gauge nichrome wire from the internet in the off-chance it would get to me before we figured out a better solution. Being that it was now that off chance, we had everything we needed: 5v PC power supply + 24 gauge nichrome wire (we tested a few lengths but settled on 6") = cuts through foam like butter. We were getting high off of the satisfying sensation of slicing those sexy airfoils (Have I mentioned I find airfoils sexy yet?) in just a few swift long draws along our homemade $5 foam cutter. That, and perhaps the fumes it released. In an hour or so, we had the 10 sleek foam salmon. Now just to figure out how to stick 'em on those skewers.

Andy and J-Lo kept throwing "helpful hints" to me that the airfoil-to-tube clamps could be welded metal plates or aluminum blocks. I heard them, but every aspect of my wooden clamp design was fresh in my fore-magination and in that world it worked beautifully. I diced up Andy's 1¾" cherry childhood bed frame and made the clamps in an hour. They were essentially brace-lets that would brace the tube with the full internal surface area of the inside of the hole that was cut through the 1¾" thick wood. Then I cut a slice in the side of the block to make room for the clamping action and finally drilled a hole through the two sides of the clamp and inserted a bolt for the clamping action. Bracelet slid on tube, bolt tightened and clamp secure. Being made of *wood* instead of metal meant I (or Clara [see image]) could easily secure these clamp blocks to the wooden airfoils by screwing them up against the face of the wood. Sure, those clamps *could* crack under pressure as Andy and J-Lo's eyes seemed to be beaming at me, but... so far they didn't!



CONNECTING THE WINGS - Home Depot Fenceposts vs Fancypants McMaster-Carr

Not knowing what parts should be special ordered vs. fudged in practice (like the clamps) caused areas of time pressure and time excess that started a strange swirling of time which resulted in doing things a bit backwards. By the time we had figured out the smaller specifics of things like airfoils and clamps we still hadn't figured out how we were going to secure the wings to each other....oops! We had finally purchased those two 1½" conduit tubes to be our wing's "main spars" which would hold most of the wing and the weight. To give the wing further strength and twist resistance we ended up purchasing two much thinner ½" conduit tubes to be the "rear spars" of the wing. We had figured out how to connect the airfoils to the two spars but still had nothing to connect the two wings to each other. J-Lo was on McMaster-Carr racing to find a custom connector with the perfect inner diameter and wall thickness that wouldn't break our budget. In the meantime I decided to race against both him and time, determined to just "find" a solution. As a kid I was known for walking down the street staring at the ground. Growing up in a city meant there were hidden treasures all over the place that people not constantly building tiny catapults didn't know (care) about. Street cleaner's for example scrape the street with thousands ol little metal bristles and often lose these bristles. I had a little drawer just for them in my piles of junk I picked off the street. They had fabulous flinging capabilities and also make great prongs on a thumb piano. It was on one of our countless "final" trips to Home Depot that I decided to turn on that street-scavenging mind and scan for some sort of tube that might fit in or around our 1½" main spar to connect them. Nothing, nothing, nothing. Then suddenly in my right peripheral vision I see something metal and cylindrical. I follow my senses, DING DING DING! In the far left back corner of the store was the "fence" isle. Long steel tubes that looked like they just might work.

While I drag a few fence tubes to the conduit isle to test my theory, I wonder what percentage of Home Depot's profit comes from wacko artists trying to figure out how to make things that never existed out of things designed for a very clear purpose. I guessed 5-10% at least for the one in Somerville. I put the fence post tube face to face with the 1 ½" conduit annnd!...no fit. The fence is too small by a smidgen. In one last effort to test fate (and Andy's patience having been there for probably hours) I tried a the smaller 1 ¼" conduit annd! The most satisfying insertion of one tube into another that my engineering eyes had seen, a perfect fit. But will 1 ¼" conduit hold up a falling Andy against the wind? Andy and I do some slightly less than scientific tube stress tests and it passes! We're definitely bordering on the edge Alex's fudging-it-riskiness so we call the big brain. J-Lo gives it the OK and now we've got our connector! Turns out it would've been $80-$100 for the perfect tube from McMaster-Carr, instead we were only set back $10 for ours from Home Depot, but the sense that we'd literally "found" the solution was priceless to me.

Of course this tube had its drawbacks compared to a tube from a custom tubing manufacturer, such as the internal seam running down the inside which meant less tube-tube contact. Then there's the fact that its galvanized which makes welders like Andy pissed for having to risk more deadly fumes than necessary. Plus we still hadn't found a solution for connecting the 1/2" rear spar. I scavenged my

personal scrap piles, kept a keen eye on trash nights and dumpsters, and even got Andy to help me spend 2hrs combing Home Depot like a computer roomba. We tried shower curtain rods, shovel handles, shelving posts, plumbing pipes, scanning every single aisle from the back right to the bottom left, divining for that gift from the fudge-it gods that would fit perfectly over our ½" tube. We were probably being followed by a suspicious Home Depot rep by the time we reached the bottom left corner of Home Depot and gave up. We called J-Lo. Being between the clock and a hard place we ended up giving J-lo the ok to pay $50 for a single 2' metal tube from McMaster Carr. My street-scavenger heart was broken, but I'll be damned if it wasn't the right thing to do, and the last minute we could've done it.

"Hey guys, what about the skin we're gonna wrap the wing in? Do you think this painter's plastic might work? It's only $20 for 12'x50' feet!"... I figure I might be able to get fudge-it gods back on my side.

ALUMINUM???

Despite all my preference for in the moment fudge-it-ing there was one stupid diversion I took in the opposite direction while actually trying to find a new Thai diner during my lunchbreak teaching at AGI in Woburn. As I pass one of the many giant manufacturing buildings built when Woburn thought it was going to boom in the 60s instead of struggle in the 2000s, I saw it had a sign for "Markham Metals Steel and Aluminum." Now it's fairly common knowledge in the engineering world that if you want it to be light and strong you go aluminum. In fact, our team's original engineers almost required that our wing be made of it, but our budget so far required that it not be. It's not cheap stuff, but there have been rare occasions in my life that large industries have taken pity on my little artsy ass. The steel bar for my battlebot Poink for example was found at the metal scrapyard which is now a Green Line station-in-waiting in Union Square, Somerville. I still have vivid memories of the grizzly bearded white man who ate his sandwich with black hands and licked his fingers as he and his equally mangey mutt "guarded" the junkyard from metal thieves on weekends. Every once and awhile he would let my dad and me in to scavenge around. When he did it was my scrappy-ass-kid version of a Chuck-E-Cheese birthday party. Once inside, I was in junk-scavenger heaven. There were more bikes, chainsaws, and half-built go-carts than I could have ever begged my dad to strap to our car, so instead I would settle on steel bar for Poink... oh and can I get that chainsaw too? I don't know if my dad was secretly a master finagler or if it's just that Somerville a.k.a. Slumerville in the 90s lived up to it's name, but $10 was exchanged and we'd make a stealing (probably literally). So with that spoiled child mindset still freshly informing my adult life, I figured I'd stop by Markham Metals and ask if he could spare a few tubes for a one-time flying art project. By the time I got there it was only minutes before he closed. Their waiting room looked like nobody had waited in it for 40 years. Then Dave came in asking how he could help me. I gave him the spiel and he was very helpful, printing out a form for their square and round tubing via the only printer in the room that still worked and was made *after* I was born. I thanked him profusely and said I would call him the next morning to discuss an order. I called J-Lo and Andy and told them I might have kicked What Sphinx's professionality up a few notches and its weight down a lot more. I told J-Lo to put all orders on hold till the next morning when we could get a pricing quote. The next morning Andy is at my house and ready for our team emergency phone meeting with Dave. At the other end of the phone Dave picks up, probably completely forgetting about the desperate team of weirdo artists who he made an appointment with. We tell Dave what tubes we want and all business-like he says he'll get back to me within the hour. The hour turns to many hours and it being Aug 8th these are hours we don't have. I call him back. The tone of his voice alone sends a message I read as a clear: "Look I've got orders for 100 tons of aluminum, and you folks want two tubes? Do you really think I'm gonna be in a hurry to give you a deal?" In reality his calm voice states "$215 per tube," and essentially confirms what I assumed. Heart crushed, I utter my dying requests as mere reflex "And is there any chance you'd be interested in some sort of sponsorship deal?"...."No thanks….".

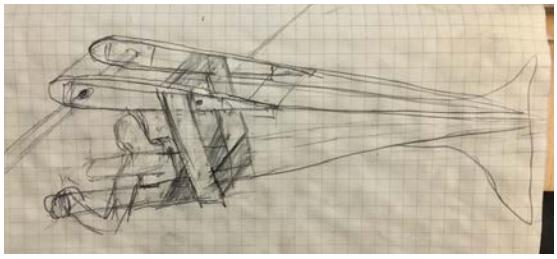
I apologize to the team for that terribly risky waste of time. I guess times have changed. Either that, or when you're 29 years old people take less pity on your little art "pwojects." Anyway, from then on the deal is sealed with steel, wood, and foam for our airplane.

ORDERING THE SKIN (The clock really starts ticking)

With only 3 weeks till take-off there are still 3 more major aspects of our plane that are still theoretical: the lion's body (fuselage/tail), the wing skin, and the cockpit. I've had the basic design for the lion's body in my head for a while. Confident that I can pull concepts like the wooden clamps from the fog of my mind into reality, I assume the same can be done for the body and suggest we move onto the skin. Skinning a wing is an artform, delicate, frustrating, and often complicated. A proper skinning material must be impermeable, lightweight, shrink under heat (to become taut) and yet remain rigid and inflexible. So naturally I decide we should just wrap it in painters plastic, tape it up, and hit it with a blowdryer. Andy chimes in with a much more intelligent compromise: test the material first. We wrapped the $12 painters plastic between two test airfoils, taped it, and hit it with the heat gun. It seemed like it was tightening up! Thennn it really didn't, it started to sag, bulge, and even melt. In the end the issue seemed to be that standard polyethylene plastic has a tendency to "creep" or slowly release tension. As J-Lo put it, if you secured standard PE plastic to the top of a doorframe on one end and put a weight on the other, over time that weight would pull the plastic to the floor. What a heat-sink plastic needs besides shrinkability is a lateral resistance, like paper, it either tears or doesn't stretch. After our failed test, J-Lo goes scanning the interwebs again. Eventually he finds a dealer willing to sell us the plastic. The plastic he has is a tad thinner than we want, and certainly more expensive than painter's plastic, but it's actual heat-shrink plastic and the guy used to sell it for for model airplanes. Yeah, "used to" as in he's not really in the business anymore but he says he'll sell it to us anyway…. for some reason this wasn't an obvious red flag till later on.

THE COCKPIT (DESIGN)

Now to tackle the cockpit, a.k.a. the thing that holds the wings together with the lion's ass, and oh yeah, Andy up in the air... kinda important. Rough sketches of the cockpit design all had the same basic concept, essentially a sideways C shape running from the front of the wing to the back, then down and then back out towards the front like a forklift to hold Andy up by his armpits. It sounds a bit ridiculous and shaky but it's actually a tried and true design used by not only the Chicken Whisperers, but also this experimental craft from the 60s. But would it be metal? Wood? Where do the cross braces go? How does it all attach? Personally, I was leaning towards a wood/metal combination as metal tubing can often beat wood in its strength-to-weight ratio. But Andy had a hunch it could all be wood and so he gave his woodworker father a call. "1" pine will do it" was the very clear answer provided by Andy's dad. His vast experience using pine to build everything from shelves to stairs led him to believe that when positioned properly it could easily hold up 145lbs and probably even 500lbs. So we re-design the cockpit with pine 1" thick and 4" wide. Our design centers around two pine boards for each side of the cockpit, each drilled with one hole for the main spar in front and hole for the rear spar in back. These boards would be slid over the spars and then secured to our "connecting tubes" a.k.a. the fencepost tube I found to connect the front tubes and the McMaster tube for the back spar. This design used a number of different methods to keep it ridgid, including angle



braces and wide thin plywood strapping for the wood and welding for the metal. But since the rigidity of the wooden frame relied somewhat on the rigidity of the metal connecting the wings and vice versa, this wood-to-metal interface needed to be the most rigid. My initial idea was to sell them on a continuation of my “wood clamp” method “clamping” the cockpit to the spar tubes with the old hole-saw and a bolt. Andy and J-lo weren’t sold. Their idea was to weld metal plates to the center connector tube that would then be bolted to the cockpit’s top wooden beams. The forklift shape was then to be screwed to this wooden top beam. The plan looked great and being 90% wood meant it should be relatively easy to build and cheap enough to screw up a few times... but then there’s that 10% that is way less easy to do and especially undo—welding.

Welding is actually a lot easier than it sounds or looks. There are four main methods MIG, TIG, stick, and Oxy Acetylene, but they all essentially involve the same concept: Heating the two metals to be connected to the point that they melt and then sticking in extra metal as filler. By far the easiest method is MIG welding as the heating method and the filler are the same thing. When you offer a jump to someone with a dead battery and those two clips accidentally touch each other you are witnessing the power of a short circuit to not only scare you but shoot sparks and melt metal. A MIG welder creates this spark intentionally by connecting one of those power clips to one of the metals being welded and the other is connected to a spool of steel which smoothy feeds out of a gun and creates a “weld” the moment it touches the other metal. In other words, MIG welding is basically: point where you want the metals stuck and pull the trigger. But then you could say painting is easy too: point, spread Sistine Chapel. Welding is purely functional but it’s an art, and my welds often come out like Jackson Pollock, not particularly secure for making airplanes. Andy, on the other hand, has much more experience, skill, and desire to not fuckup. I have a MIG welder at my mom’s house [shh don’t tell her what it does ;)], but no Argon. I wouldn’t waste your time explaining Argon if it didn’t have a big frustrating effect on our schedule.

Oxygen is the most important variable in how hot combustion events are, combustion events like arc welds. When this variable is as variable as the wind in the air the amount of combustion in a weld becomes random, bubbly, and shitty. Argon is like the opposite of oxygen, inert and non-combustible. When argon is blown evenly over a weld via the tube in your MIG welder nozzle it creates a “gas shield” that protects the arc weld from the random nature of the oxygen in the air and the result is a much cleaner, smoother, stronger weld. Being a good welder, Andy demands Argon; being a shitty welder I don’t have Argon. Being extremely fortunate, the Artisan’s Asylum is offering its final FREE FLUGTAG TEAM WORKSHOP day this coming Saturday and they have all the Argon Andy needs. The only question is will we have all the metal we need. So far, Home Depot has supplied us with our two front spars (conduit), two back spars (conduit), front connecting spar (fencepost) and for the wood-to-metal connector plates I took an hour or so to dice up a Home Depot steel plate using a metal cutting blade on the table-saw. The only thing missing was the one thing we ordered online: the tube for connecting our rear spars. Our fingers were crossed it would get there in time. We track the package… it was expected to arrive Monday. Shit, if we can’t get into the Asylum on monday how will we weld? I call a bunch of local welding suppliers and find that Airgas in Dorchester rents Argon for $40 and I reserve a tank.

BIG KID BUILDING AT THE ARTISAN'S ASYLUM

The Artisan's Asylum is a magical fantastical place that seems too good to be true if you're a maker and too weird to be true if you're just someone who wonders how the hell they can afford the rent with their clients being Artists. But so far they can and we should do everything we can to make sure they continue to be able to. Anyway we show up with our giant 10' conduit tubes and the fence post connector, sign in, and head right for the welding room. Before we weld anything on the tubes we have to do the pipe-bending. Remember, a "V" shape to the wing with the tips higher than the center acts like a sling, causing the plane to always want to right itself with the center lower than the tips of the wings. In other words the V helps keep the plane from rolling left or right (looking back Draper labs might've wanted to consider this). We settle on a 5 degree amount of V. We use J-Lo's handy pocket protractor to make a jig, then with a fair amount of frustration we finally find the industrial strength pipe bender. We stick our pipe in start jacking the bender till it forces our bar into a curve, back it off annnd….wait...it's not backing off. With tons of whacking pulling and prying we get our tube out of the bender. And with further tons of whacking pulling and prying (at the suggestion of one of the Artisan's Asylum helpers) we get our second tube bent. At this time the amount of whacking pulling and prying is getting ridiculous and another AA helper comes and offers a much simpler solution. The Artisan's Asylum welding room has a giant professional welding table, which is a super genius, super simple, thick slab of steel with lots of little squares holes in it. It works a bit like a horizontal pegboard, where "spikes" clamps and other devices can be easily stuck in the holes and use for holding or *bending*. Luckily the only tubes left are the ½" conduit. We jam a spike-clamp into the table and clamp down a pipe-bending bit from the busted bender. We stick our ½" pipe in our hobbled jig and bend the pipes to a very scientific 5 degrees using our advanced "eyeballing" skills. Now for Andy to weld.

Being that the Boston Esplanade was built to feel like an enclosed private hangout rather than an airplane runway there isn't a lot of room for things with 24' wingspans so one rule Red Bull rather lately announced was that the wings be removable. We figured both wings being removable was unnecessary and so we decided to have one wing welded to the center tube (which is permanently attached to the cockpit) leaving the other wing to be attached via a bolted cotter pin. We make our sharpie pen drilling and welding marks with a combination of rulers, protractors, jigs and a fair amount of "that looks about right." While J-lo and I do the drilling in the bolt-on side, Andy does the welding. With breath held for fear of fucking up but mainly of deadly galvanization fumes, Andy comes out of the safety room with a gorgeous result. The right wing is secured to the center tube with beautiful rosette welds (also less beautifully named butt welds) and the cockpit connecting plates are permanently secured to the center tube with perfect alignment and minimal warpage (common when welding thin metal). When

it finishes cooling off we put our remaining wing spar into the open side of the connector tube and lay the complete main spar assembly on the ground. That perfect 5 degree angle, that nearly 20 foot wingspan...something about this long bent tube looks like it wants to fly.

Satisfied with a job well done we take a moment to enjoy our surroundings. Cute Red Bull chicks prance around the Asylum with their backpacks full of “product” and we follow them to the Artisan’s Asylum main meeting room. Other teams are there, schmoozing with the Red Bull reps. Like an indentured metal-worker my bodily needs are often overpowered by our slave-master-plan. The plan satisfied, I am given a brief moment of freedom and head straight for the complimentary chips and veggie plate. After almost finishing the hummus I realize the Red Bull rep is none other than the great Nicki. The person behind the email address info@RedBullFlugtag who at that point I had at least 20 email correspondences with. 90% of those correspondences were requests to include an anus joke in our name or some sort of explosive fart in our skit. The most patient woman in the world greeted me with a smile and I humbled myself to her before continuing to ask nagging questions about rules and setup. Then we ran into Andy’s friend Matt. Matt is a maker himself, an engineer, a co-builder of Stompy, and today an official hired Flugtag Helper. While nibbling at the last remaining carrots we ask Matt about his opinion on airfoils, to see if he can explain their magic. He pulls out a napkin and confidently shoots down the concept entirely. J-lo’s ears perk up, he grabs a pen himself and the two go into a head-to-head engineer battle about how airfoils work. I can’t remember the argument exactly but I do remember it was so heated they had no choice but to agree to disagree. In my mind J-lo came out as our continued fearless leader. Our first battle over and neither team even had a plane yet. We helped Matt help his client/team Mass Instruction until we were clearly bugging them and left.

Monday rolls around and our rear spar connector finally arrives. We desperately need to get into the Asylum for just the single weld it will take to connect the two pipes. Our new friend and competitor Matt graciously offers to get us in with his guest passes. We show up ready to go and attempt to sign in. The fact that the Artisan’s Asylum has a very strict entrance policy and workers to enforce it is what ensures they don’t end up on the news because someone off the street came in and burned their face off. But right now that neurotically relentless rule abiding is seriously hindering our schedule. It turns out Matt’s guest passes are somehow old and debatably usable. We wait nearly an hour. Airgas the Argon supplier closes in an hour, I figure we can’t risk it, so Andy and I speed to Dorchester to pick-up the tank. Just as we leave with our Argon tank representing newfound welding independence from the Artisan’s Asylum, Airgas locks their doors...and then we realize we forgot to get a regulator. In other words we just

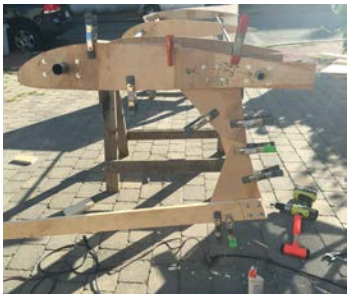
spent $40 on a tank we can't connect to anything. Great :/ "Gee I wonder if Matt figured out his pass situation yet?" Andy calls Matt. Turns out he did! We speed back to the Asylum, burst through the door with our long pipes, mark them, cut them and stick Andy in the welding room within minutes of arriving. It turns out welding in a rush is far worse than welding without Argon. The welds themselves are great, but our back spar is welded 3 inches too far into the connecting tube, lopsided wings are not good wings. While Andy freaks out I try to remain calm and scramble through fudge-it solutions in my head.

FIXING MISTAKES

The next morning I instantly put those fudge-it solutions into action. So far our design for the tip of the wing was to basically clamp one of those ¼" plywood airfoils to the end of the tubes using the same wood-clamps. But with the rear spar now welded 3 inches too short to meet the clamp, my solution was to extend the wood clamp 3 inches to compensate. My "extended wingtip clamp" looks great, it works for a bit and then just as we go to move our new finished wing it cracks.(Man, if there was one engineering course that would've changed the success of my projects it would be "materials under stress.") (That, or any engineering courses.) Determined that if it looks good it must be good, I try it again, this time with the wood grain going the other way...same problem. Finally we wonder what would happen if instead of cutting a slit and clamping the wood (and putting it under a stress it's not naturally designed to withstand) we don't split the wood and instead drive a few screws through the wood to press up against the metal. In the metal world this is called a "set screw" and they are what keep your old doorknobs on their axles (or allow them to fall off). Rather than using the rather small surface area of the screw tip to apply pressure against the tube, I drilled the set screw to the left of the tube. This allowed the wood screw to force its way between the wood and the metal tube. This resulted in an interesting combo of biting force and pressure, it was unconventional, unscientific, and worked perfectly. But having a 6" wooden clamp stick out from a ¼" plywood airfoil looked precarious because it definitely was. Andy came up with the awesome idea of a plywood cross brace parallel to the wing and perpendicular to the airfoil. When screwed into the clamps, this cross brace not only strengthened the wooden clamps but also ensured that the tips of the two wing spars would stay parallel and not flex against the wind. It worked. It made the wing feel much much more rigid, and it looked really cool. With the wing spars connected and all of our wooden airfoil clamps figured out, we now had the entire skeleton of our wing. Man did that feel good. It felt *so good* that time slowed down, which was great because in reality it hadn't, and truly contemplating what it meant to have only a week left would have been paralysing.

THE COCKPIT (Building)

Now to build the cockpit. Measuring the lengths of the pine boards for the C shape wasn't too hard. The horizontal plank that connected the front and rear spars was essentially the chord (distance from front to back) of the wing. The planks that Andy rested his arms on were a very scientific "way longer than we could possibly need" and the length for the vertical planks holding the wing above Andy was...let's just wing-it. We measured from his armpit to the top of his head, and then added a bit of pharaoh hat room and ended with 3 feet. Getting the angles right however was something that required a fair bit more sciencing (J-Lo). Based on the lift factor of the airfoil and a bunch of other smartypants research, J-Lo decided that with the bottom of the cockpit level the wing should be tilted up at apx. 10 degrees. I'm sure this number had a lot to do with our success but to me it just "looked about right." While the wood itself was unlikely to crack under the pressure, the joints were a point of concern. While simply using 4 bolts in a diamond pattern might've worked alone, J-Lo had the very intelligent idea to include ¼" plywood bracing triangles to ensure Andy didn't fall without the rest of the plane. The next day we put it all together. There was a fair amount of mis-interpreting our very mis-interpretable labeling system "Wait who's left?" (see "fuct" in image) but eventually we got it all bolted together. We were very proud of ourselves for having chosen to measure twice before gluing (they love glue). The next day we took off the clamps (we never had enough clamps) and to our surprise beheld the glory of what looked a heck of a lot like a glider.



WINGTIPS

Andy and I took turns on time duty, ensuring to nag the team about things that were pathetically behind schedule. This time it was Andy's turn and he called me out on the wingtips and the lion's body, both of which I had so far only claimed were totally finished in my head. In my mind, short stubby directly downward pointing wingtips ruined the bird-wing look since birds don't have fingers that bend down at their wings. Instead a bird's wings have a much more gradual bend to the ends of their wings and my original plan was to emulate this with long gradual wingtips. This plan was shot down rather early on as the construction of the bent main wing was far more complicated and unnecessary.

J-lo reminded me that the wingtips (often called winglets) are not for generating lift, but rather for reducing drag. Imagine you take a knife covered in cream and push it flat side down into a coffee. The downward pressing is the wing falling from gravity, the cream is the air compressed under the wing and the swirling you would get around the tip of the knife is the drag.

This swirling motion can cause unwanted downward pressure on the wing. By bending the end of that knife up, or in our case down, you essentially create a wall that does not allow the cream/air to swirl out around the edge of the knife/wing and reduces potential drag. We chose downward wingtips because the wall it creates actually traps air like a big cup (or upside-down shovel) and when close enough to the ground allows your craft to float slightly on this trapped air like a cushion. This is called ground-effect and while airplanes actually find it frustrating for landing, a ground-effect plane/boat is designed to increase the effect.

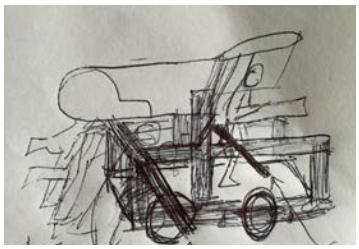
We debated making these tips out of wood (too heavy) foam (too fragile) and then my favorite idea, corrugated plastic folded in a structurally sound shape. Essentially my idea worked like the exoskeleton of a crab, the material is very thin and relatively weak, but when shaped into a hollow form (in this case an extension of the airfoil shape) the tension and compression forces transfer along the walls themselves and the shape can resist flexing. I had long imagined how easily it would work, but imagining origami is usually easier than doing it. In this case it totally wasn't! I cut the 4x8' sheet of corrugated plastic in half then folded each 4' square roughly in half forming the far edge of the wingtips. Here's where the only mathy origami part came in. Just like our wingtips, sleeves on a jacket are generally designed to point downward so a tailor measures the length from your wrist to the top of your shoulder to get one

length and then the length of your wrist to your armpit for a shorter length. This offset in lengths of the outer and inner planes is what keeps the sleeves, or wingtips, from wanting to stick straight out. So I didn't actually fold the plastic for the wingtips in half but instead needed to figure out how much of my 48 total inches would be on the longer outer half with the rest being on the shorter inner half. These two lengths connected to the top and bottom of a 3rd length being the height of the airfoil, 6 inches. To calculate the best lengths to angle ratio I found this cool online triangle calculator. I then just tried out different ratios until the triangle it made...looked right. To then form this shape into a hollow airfoil "sleeve" I used rivets. I riveted the back of the wingtips into the flat "trailing edge" of the airfoil shape. For the "leading edge" of the airfoil I curved the plastic into a round shape, overlapped the two faces slightly and then riveted that shut as well. The rivets and folds actually did a pretty good job of holding the shape on its own but it needed more strength and of course to be attached to the wing. Interestingly attaching the wingtip to the wooden end of the wing simultaneously gave it its strength. First I screwed the bottom face of the open end of the wingtip to the bottom of the ¼" plywood at the wing end. The wingtip flopped down like a strange airfoil shaped basket hanging off the wing. Then I pulled the top face of the open end of the wingtip up to meet the top edge of the plywood wing end and screwed that in as well. With the top and bottom planes of the wingtip now rigidly secured to the wing end plane the holy trinity of structural triangle integrity was complete and the wingtip instantly became a rigid, unmoving, lightweight success. The top edge did have excess material that stuck out beyond the screws fastening it to the wing end, so I simply sheared those of with a box-cutter. Now the wingtips were not only structurally sound but with the continuation of the airfoil shape, sexy too. "Bam!" I proclaim in the face of time pressure and doubt, "Great, now the entire fuselage?"

THE LION'S BODY

The body of the lion was something that both meant almost** nothing aerodynamically, but held the entire theme of a Sphinx together, our artistic backbone. As we would eventually find upon entering the Red Bull hangar, the evolution of the crafts from their initial sketches went one of two ways: In one direction teams kinda scrapped the possibility of flying and focused mainly on the wild creative nature the event encourages with giant foam swans, tall-ship sails, or an entire MBTA train-car, all plummeting awesomely. The teams that went in the other direction funneled their wild goofy concepts through a filter of practical flyability and came out looking roughly the same: beautiful airfoiled wings, a forklift style hanging cockpit and then their theme decaled or painted on whatever surfaces would hurt their flight the least (including the cart). That being said, there were many aircraft that seemed to straddle the flyability/creativity line very well such as Team Flyin Ryan with their sex-ass corseted wing, Team Gusdave & The Whiteheads with their replica of the first flying craft in history, and yes, my buddies at Team 90's nostalgia who had a real-deal airfoil yet nailed their theme of a cartoon airplane beautifully and even had the balls to use an actual trashcan as their nose-cone. It was my main goal as creative captain to ensure that the giant flying sphinx didn't end up as a Chicken Whisperer's knockoff with some sphinx decals. The ass and legs of a sphinx and the farting tail were my babies and I made sure they were gonna fly. As I mentioned in the intro, the fuselage/body of the lion originally had downward legs to match the pilot's legs like a pegasus.

Aside from the potential drag of lion legs flopping all over the place one of our biggest concerns with this design was that the legs would act like a giant hook catching on some part of the cart and dragging the craft and Andy down in a dangerous direction. I even went so far as to start preparing to build those hind legs before giving it a good hard look-over and letting my practicality-filter scrap the hanging legs idea. Instead, we compromised with the final design where the legs would simply be painted on the side of the tail in a crouched position. While I wasn't going to witness the surreal look of a proudly standing half-man-beast, I was easily able to win back my creative conscience with the argument that the real Great Sphinx has crouched legs. In some ways it's a better thematic match than before!

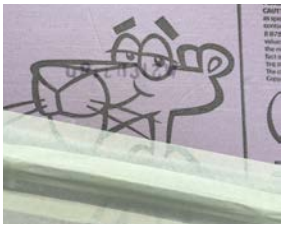


**So as it turns out, the giant farting back section of What Sphinx? actually *did* serve a bit of an aerodynamic purpose. In order for a wing to work best it should be pointing directly into the wind and stay there. The flat surface of a weathervane works by allowing the wind pressure on either side to equalize and thus point the object in the direction of the wind. On a boat there is a large flat surface sunk below the boat called a keel. The keel keeps the boat going straight rather than being pushed sideways by carving out a forward path. In our case the giant flat surface of our tail offered the advantages of both a keel and a weathervane, pointing us in the direction of the wind (slightly) and keeping us from wavering from that direction. Real airplanes take advantage of this directional surface by adding a "tail," but most add a third advantage with the inclusion of an actuated "rudder" to force the plane in whatever direction the pilot wants. While the team Flite Riot which won first place *did* have an actuated rudder, meaning they could force the plane to turn left or right, we decided against any of the complication and potential failure (MIT) of complex controls.

A rudder or a keel is worth nothing if it's able to flex and bend against pressures so we knew we would need the tail to be rigid. But to keep the overall weight down and since we made most of our weight calculations based on the wing and pilot, we needed to keep the tail light for things to balance out and fly. As I mentioned when designing the wingtip, to make something light and rigid there are two key concepts to remember "hollow" and "triangles." While it's hard to see, there were actually two triangles that held our tail rigid. Looking down from the top, the the triangle which kept our tail from flexing left and right could be followed starting on the left side of the cockpit where our left tail support strut was fastened, then following the strut towards the lion's ass where it was fastened to the right support strut which led back to the back right side of the cockpit where it met the horizontal steel wing connecting bar from the right to left of the cockpit where we started. The other triangle could be seen from the side, one more strut fastened from the bottom of the cockpit back to the ass, then back to the cockpit via the top support struts. Technically these 3 rods plus the base strength of the cockpit created a pyramid. These triangles wouldn't budge. To keep these triangle lines light, I went into the garden section looking for nature's lightest strongest material, bamboo. Home depot didn't have any bamboo long enough but they did have something called a vigoro garden stake which came long enough, seemed rigid enough, and was super light (Andy only weighed 1 lb more holding 3 of them and standing on our handy bathroom scale).

But as you have probably noticed, the tail isn't just 3 lines (although you can kinda see them in this image), it's mainly a giant flat cat-ass two-dimensional plane. Deciding what lion-ass-painted flat plane these triangles were securing was bit of a debate. We considered wrapping the triangles in thin plastic: Advantage: super light, Disadvantage: creates a potential air-trapping net and also lion's bodies aren't exactly long horizontally stretched out pyramids. Our second choice was more of that trusty pink foam. The foam was just barely light enough (it's not as light as you think), easy to work with, and rigid enough that it would resist most of the flexing.

So I ran out and bought a 4x8ft sheet of 1” thick pink foam. We ran that bottom support rod along the flat side of the lion’s body to increase the rigidity and resistance to cracking. You can’t see this rod on the final craft because it’s covered in masking tape and then a lion’s body was painted over it. The center rod also worked as a great attachment point for the lower part of the ass to the cockpit. To keep the upper part of the foam attached to the cockpit we built little custom wooden clamps. These were made of two 6x2” ¼” thick plywood surfaces glued to either side of the foam and then screwed into a 1” thick wood block that could be screwed to the cockpit. This clamp spread the surface area out so we didn’t tear through the foam trying to screw it directly. Earlier in the day my mom gave me one of her common “I’m at a store and have coupons, do you want things?” calls and was conveniently located at Tags Hardware with a $5 paint coupon. I asked for lion-fur gold paint. I trusted her to get the paint way more than me because she is a painter, I am partially color-blind. Before the day was done I paint-rollered a thick coat over the pink foam in the perfect lion-fur-gold almost egyptian sand color mom totally nailed. I continued painting the rest of the cockpit in this color so that parts not covered by something more awesome would still fit the look. This all took about a day and ended in another “Bam! Look we made something simple that works!”. Little achievements are the key to overcoming (and ignoring) the bigger more complicated ones.



WING SKELETON / GLUE

It was really starting to look like an airplane thing now, with a nice wooden cockpit/sphinx, a practically finished lion’s ass tail, annnd... the skeleton of a wing. In other words, all the parts that did little to make it fly were almost done while the wings were still just metal tubes loosely skewering wood and foam airfoils. We stalled on this part of the plane to some degree on purpose since it was most important and complex. But we were way behind our already ridiculously short schedule so we only spent about another 10 minutes or so inspecting the wing before we glued it into permanence. I’m glad we took that extra 10 minutes because it wasn’t ready. My eyeballs told me the left wing was twisted due to the rear spar being bent wrong (I probably just banged it on one of the many doors in the house we regularly pulled it through). We grabbed a nearby rusty tube lying near my mom’s shed that happened to fit over the rear spar and carefully (very not careful if you ask an actual engineer) bent it back into the correct angle. With this angle adjusted the craft passed the eyeball check. So we tightly bolted the wooden airfoil clamps and our reinforced wooden wing-tips and gave the wing a quick twist resistance check. The wing held its shape really well and resisted any twisting. To test the wing’s flex resistance we lifted up on the wingtips, which bent up about another 5 degrees before the the cockpit was off the ground. If you were to do this with any commercial airplane the wings would most likely break in half before you got any lifting of the fuselage. When an airplane is in flight the wing is not lifted only by the tips, but rather gets lift equally across the wing. Since our plane passed the tips-only flex test we were more than satisfied.

With the construction of the plane parts passing simple stress tests in a merely clamped state, it was time to really pump-up the strength with some good ol' glue. Now, to me, "glue" brings up lots of crappy memories starting in childhood. First there was paste, ugh, strong as boogers and felt like it too (some say tasted), it was useless. Then there was Elmers, sure it worked fine with wood but deformed anything paper or cardboard, and how many maceroni of your macaroni art picture actually make it home still stuck to the paper? Glue-guns were next and became my best friend as a middle school machinist. I used it to stick together everything, including my product line of "Omni-devices," inventions which were a cluster of small independently useful items which became far less useful when glued together. With the "Omni-calculator-compass-ruler-gun" you never again need to search twice to defeat bad guys or measure something! But as much as I loved glue guns there were countless "look what I ma... wait let me glue that back on" moments until the point when I got my first erector set. Horrible innuendo aside, the Erector set was my machinist entry into manhood. After realizing the immense power of screws, I was sold and vowed to hate glue ever since. I guess Andy and J-lo didn't have the same childhood cuz they swore by it. This would've been fine if either of them knew exactly which glue to swear by, so we ended up trying a few options from Home Depot. As it turns out, there is no one "good glue," as there are many important variables such as what materials you're gluing (in our case metal, wood and foam), and how long you can wait for them to cure, vs how tacky you need them to be in order to hold parts in place (we should've done more research on this one). In lieu of technical glue knowledge, we went with the "use way too much" method and ended up wiping a ton of the adhesive caulking onto sticks, rags and fingers (shortening life-spans no doubt). In the end I think the glue was probably better than no glue, but definitely didn't change my lifelong opinion on the matter of glue in general. After meeting the 1st place team and talking about their highly glue-centric practices I was a bit more sold. I was really surprised to hear them claim that gorilla glue indeed was a "clearly best glue." I had suggested this one as an option but Andy and J-lo weren't sure about it as its advertising always seems too good to be true.

LEADING / TRAILING EDGE

To some degree, a wing is like a knife and a surfboard, cutting through the air and then surfing on the air forced below it. As you might expect, these two pressures are different and their effect on the wing is largely dependent on the surface area that these pressures act upon. The "surfing" underside of the wing spreads this pressure along a large flat area from the wing's leading edge to its trailing edge (apx 4 feet in our case) and so the pressure at any given point is not super great. This is why the plastic skin we stretch along the wing can be very thin and still be able to resist this pressure and keep its shape. However the leading "cutting" edge of the wing feels a combination of the surfing pressure along with the pressure of air molecules that would rather not be pushed out of the way and thus a greater pressure is placed on this relatively thin part of the wing. This which is why a wing's leading edge is typically reinforced.

On superlight gliders a leading edge might be a slightly more stiff portion of foam or fiberglass, and on bigger planes thicker sheets of metal. In our initial Home Depot runs I stumbled across something called "aluminum flashing" which is basically a roll of a bazillion-ply aluminum foil. Flashing is often used for reinforcing corners of things, it's light, relatively strong, and comes in 10' by 2' rolls for about $15. I was pretty much sold on using that for our leading edge for a long time and it even passed the J-lo test. But when browsing the foam isle I also stumbled across something called fanfold insulation sheeting. This is basically a slightly thicker foam than styrofoam take-home containers in a gigantic 50ft long by 4ft

wide rectangle folded into a neat block that weighs about 14lbs but costs $50. I couldn't stop thinking it might make a better edge material mainly because it looked like the more professional dacron foam that the chicken whisperers used for their leading edge. It even flexed correctly without breaking. But it did weigh a lot and as a general construction rule metal is more predictable and easier to work with than foam. In other words, being halfway through using our $50 massive sheet of foam and getting a single crack could be a huge time waster which wouldn't happen with aluminum. We did our calculations and found out that while the giant block of folded foam weighed significantly more than the aluminum rolls, it actually weighed slightly less per square foot. The final decision was actually made by another factor:

The plastic skin we we're going to wrap the wing in was, as far as we knew, still sitting in the basement of the man who sold it to us, or perhaps didn't even exist at all (it's scary doing business with someone who tells you "this isn't my business anymore but I'll sell it to you"). We had only a few days before we had to be flight ready. If the plastic didn't come in we still needed to wrap the wing in something… we looked at the foam, 50' by 2' was just enough to cover the top and bottom of the wings if we didn't screw up much.... We take a risk and buy it mainly for the leading edge but if necessary as a 14lb of foam armor replacement for wing skin. That night J-lo is constantly hitting refresh on USPS tracking which says the plastic is in Philadelphia and "should" be in Boston by tomorrow.

The next morning J-lo texts us: "Got it!" Phew, this means we can use our foam the way the chicken whisperers did solely as leading and trailing edge material rather than a wing skin the way...well, the way some kids making a plane in a backyard might. But still our foam isn't fancy-pants dacron, it's meant to keep walls warm, so we approach carefully. My instinct says to use the length of the foam as the long edge against the wing and bend the 4ft dimension evenly around the front of the wing in one big long piece, secured, seemless, done. J-lo sees it differently: first of all working with a 10 foot piece of anything can make things harder, not easier, especially when you include the frustration of wrapping, forming, and bending. So J-lo suggests cutting the foam into 2' by 4' sections bending, forming, securing, and then taping up the seams which would run perpendicular to the length of the wing. Then J-lo's method get's a huge boost in the form of a "snap" when I accidentally bent the accordioned foam sheet the wrong way and it split. It shouldn't come as a surprise but we learned the hard way that when you accordion something the seams become brittle and are weakened. This meant that we didn't really buy a 50' by 4' sheet, we really bought 100 2' x 4' rectangles weakly connected together. So, we went with J-lo's idea.

Foam has a fair amount of resistance to flexing and not the greatest tendency to stay put once flexed. So, to overcome this, the leading edge panels had to be bent far beyond the shape we wanted them to eventually hold. Before we had time to consider fancy methods of forming the edge material with jigs and heat guns I grabbed that trusty rusty metal pole that's always lying around, perched it up across two sawhorses, and then just bent the panel down around it. After a bit of hand-massaging and rolling which made me feel like a life-long hard-learned foam-smith (see cocky face in image) I pulled the product off of my foamsmithing "forming rod" (the steel tube) and voilà! It held a rough airfoil leading edge shape!

We knew we would be attaching these panels to the actual airfoils along the wing, but weren't sure exactly how. Foam doesn't generally like fasteners since most fasteners have small pressure points which tear through foam. And I certainly wasn't going to trust glue alone so we compromised with the old screw/glue combo. Since most of the wing is empty space, all of our glue/screw fastening would be at points where the leading edge foam was pressed against a

foam airfoil. Screwing through foam is one thing, screwing into foam is another. Since we were doing both not so good things, it was important to find screws with the widest thread possible. A screw is like a shovel spiraled around a center shank. By that metaphor, most screws are like a hand garden shovel wrapped around a street sign pole. What I wanted was a giant contractor's shovel wrapped around a pool cue. Maximum shovel area and minimum center shank means much more horizontal surface to resist getting yanked out through the foam (this concept also works in the real dirt world). Then I found what I was looking for and it happened to have a cool name, "wall dog screws". The thread on these things is awesomely huge but the head is still a bit tearably (pun!) small so we just got bigass washers to solve that. When we had all the panels formed, adhesive caulk gun ready and wall dog's in hand we went at it in one swift sticky go. Andy laid on the glue I held the panel, and then J-lo screwed them in. Then we went back to the seams where the current and previous panels met and taped them with some trusty blue plastic tape. My one beef with the panel method rather than the one long strip was that since these seams were often at points not secured by airfoils being beneath them they tended to want to bow out. I tried fixing this with a bit more tape but this continued to be a minor issue. By the time we finished the leading edge it felt really airplan-y, like a real wing, ready to take on the wind head first.

The "trailing edge" of a wing must also be built with a certain level of reinforcement as it directs the final direction of the wind and determines to a large part the amount of drag. Luckily we had enough foam paneling left over to build a trailing edge, otherwise the back of the wing would have been loose flapping plastic skin. Construction was a very similar process to the leading edge and rather easy since we had figured out the securing method. Making the shape was super easy since the foam already came with sharp folds which we then reinforced with tape. One issue that did come up, literally, was that the edges where the foam panels met the foam airfoils created a slight lip, an imperfection in the streamlined profile of the airfoil shape. We had considered this issue, and to reduce it, spent a ridiculous amount of time sanding the edges of the already thin foam panels into super paper thin tapers that… in the end... probably weren't worth the effort. This lip however was made worse by the glue underneath expanding. To cover up this issue physically and mentally, we just placed long strips of tape where the panels met the airfoils.

Speaking of tape, the last thing we (J-lo) did to the wing before skinning it was add tape cross supports to the bottom of the wing. Hypothetically these cross straps could've added a tiny bit of rigidity to the wing itself like the straps on the back of a metal shelf. In our case, these strong fiber reinforced strapping-tape straps were mainly used to help stiffen the bottom surface of the wing and resist the pressure caused by surfing on air. The air wants to go up through the wing, the skin resists most of it, and the straps are like the wood cross piece you put on your basement door to back it up. With tendons and muscles in place all these sphinx wings needed was the skin.

SKINNING THE WING

The next morning we met up and opened the holy USPS package from the mystery airplane plastic ex-salesman. The rolls were super light and the plastic itself was super thin, like tissue paper, a bit frightening. We setup the same test we did with our cheapo painters plastic and hit it with the heat gun. Under the heat the plastic tightened and lo-and-behold did not sag nor did it melt (unless we

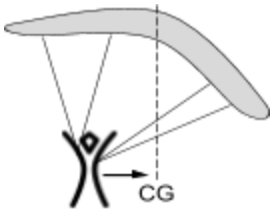
put the gun too close). To get a bit sciency again, unlike the painter's plastic this plastic did not sag or "creep" because of its bi-directional molecular structure, fancy words for a pricey plastic. Another major advantage of buying plastic actually designed for this purpose was that it came with a heat-activated glue on the underside. When heated by the heat gun or when lightly pressed by a clothes iron the opaque glue would turn transparent as it became liquid and sealed the plastic to whatever it was facing.

Just like the leading edge paneling we had to decide which way to run these rolls of plastic: Seams that run parallel to the length of the wing, or perpendicular? Just like the panels, we decided to cut our plastic into 2'x8' lengths and run them perpendicular to the wing like arm bands on a bird wing. This way the seams went in the same direction as the wind that flowed over and under the wing and did not risk being blown open. Another reason we went with these perpendicular 2' segments was because our airfoils which would be the surfaces we could push against to seal the plastic to itself as well as the airfoil were spaced 2' apart. The plastic sheets would be cut into 8 foot lengths to run from the trailing edge of the 4 foot wide wing, over the top to the leading edge, then wrap down under the wing where it was sealed back where it started at the trailing edge. We did the first one very carefully. J-lo manned the iron while Andy and I ran around holding the sheet taut, in place, and ensured that it did not veer from its straight alignment. We carefully scurried around this fragile project from top to bottom, front to back, switching hands, places and plastic a bit like a mini-circus act. J-lo had the scurriest act of them all as he ironed the sheets to the foam airfoils in increments from left and right to top and bottom, even going upside down in the dirt like a true "Iron-man" (lol). When he was finished, we cut off any extra that went beyond the airfoil and then ironed and taped that extra down along the sides of the airfoil. Once everything was finally sealed, it was finally time for that magical transformation from "flabby to firm in minutes!" using a heat gun. It was actually kinda slow but it was magical. As soon as we finished the first part of the wing we suddenly had the first actual wing part of the wing. Aside from general aches and pains, the only issues we ran into while doing this was an occasional stubborn sagginess on the bottom due to improper alignment of the plastic at some point. The heat gun would usually lessen this sag to a reasonable degree but not always enough to get it as tight as I had wanted. Continuing to heat it with the gun risked melting holes. Holes unfortunately did happen at which point we rushed in with the packing tape for a quick patch. Interestingly the tape was actually stronger than the plastic itself, which led me to realize that technically we could've covered the entire wing in a single bulk package of packing tape. It would've been slightly heavier and probably even more frustrating to work with but would've offered more strength for way less money…(maybe next time). When we reached the end of the wing we were able to heat-glue the remaining plastic around the end of the wing with the wing tip removed and then screwed the wing tip back on. When it was all taut we went through and patched any remaining holes as well as added metal tape to the wing tip joints and other open seams to make them more aerodynamic...looking. By the end of that night (click here to see a timelapse of this day) we were all extremely impressed with the result:

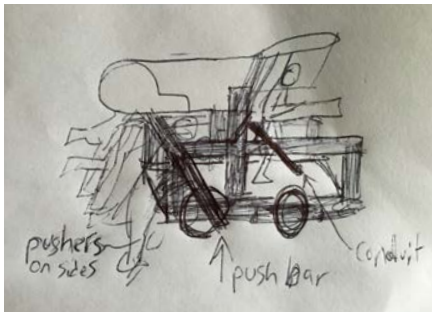
Wait...how did this glider get here? Did actual airplane engineers sneak in and make this? Nope just enough research, testing, and basic knowledge, really goes a long way….that and probably a fair amount of good luck.

THE CART - REDUX

No offense to Max, our valiant pusher and skit writer, but perhaps his greatest contribution was his relatively frequent nagging about the weight of our cart. Mainly his comments like “man do you think your cart might be a bit too big?” after helping lift the 200lb 16’ behemoth on and off my car. That wise nagging was now coinciding with another good reason to shrink the cart. One of the reason’s why the cart was so long was to make sure our lion’s legs sat on a flat surface and wouldn’t dangle behind the cart and potentially snag. But now that we had decided to simply paint the legs on the side of the body the cart didn’t need to be so long. Eventually the pressures of Max and logic won out over the pressure of short time and I decided to speedily re-design the cart. I sketched a version of the cart very similar to the old one but basically just cut in half lengthwise. Most teams with the forklift cockpit design such as the Chicken Whisperers add a wide horizontal bar to the back of the cockpit which rests on raised rails built on the cart. We had considered this option for its obvious advantage over making the pilot hold the plane up himself. However my experience as a novice paraglider has taught me that during take-off the wing will want to tip as one side gets lift first. Rather than trying to fight this tipping by pulling the center of the wing back over you, a paraglider pilot is taught to move their body under the center to achieve a level wing with far less effort. For this reason the thought of the pilot being stuck between two rails scared me as I imagined the wing tipping and having no way of compensating. In the end the thought of Andy having to carry our 80 lb plane while simultaneously attempting to balance it was far more dangerous than the rails concept so I agreed to implement it.



With my worries in mind we decided to take a novel approach. I drew a long stabilizing bar onto the craft. The bar is long and sits freely on the rails allowing the pilot to slide left and right for balancing and, if given the chance, to run a few extra steps forward before ideally being lifted into the air. Just as the plane was free to slide forward and lift upward it could’ve also slid backwards and fallen off the back of the cart when hit by wind. To fix this I added two wooden vertical stops behind the cross bar that would be just high enough to push the plane even if it got a bit of lift but not so high as to risk penetrating the wings. During a quick shade and seltzer break I showed my design to J-lo and Andy looking for suggestions/approval. Andy said, “What if we used a C-shaped guide?” When he said this, I first assumed he meant a C-shaped channel on the plane which loosely clamped onto the round rails allowing the plane to slide forward and back but not up or down until he went off the front end of the rails and flew. I was quick to remind him the danger of having a plane that could not easily lift off from the cart, at which point he clarified that his suggestion was nothing of the sort. Instead the C-shaped guides he was talking about actually sat at the back on either side of the cockpit with the open part of the C facing downward and parallel to the rails rather than perpendicular. The key to Andy’s design was that the stabilizing cross bar would not be secured to the craft or the cart. Instead this cross bar would simply be placed across the rails. The airplane would then sit on this cross bar sliding the bar into the open ends of these downward C shapes. The C shapes would loosely hold the bar and keep it from slipping out from in front or behind the plane. With this new design the stabilizing bar still achieved the goal of holding up the craft and sliding along the rails but added the huge advantage of the plane



being able to lift off from the cross bar allowing it to fall with the cart rather than being stuck to the back of the plane and weighing it down. “GENIUS!!!!!” I proclaimed. I was not only super proud that our team had come up with such a smart design, but that it was also one the Chicken Whisperers didn’t. It wasn’t until competition day that this bit of genius would stand out amongst all the competitors with budgets from $50-$50,000 who severely suffered from under-designed launch mechanisms in the face of wing-tilting wind.

Before we built the cockpit, Andy mentioned the possibility of his uncle Paul, who owns the carpentry company Community Builders Cooperative, perhaps lending us some wood. For some reason that communication didn’t pan out at the time, but I wondered if he might be able to help out for some of the wood needed to re-design/finish the cart. While my backup plan was to just add more to that vague looming number subtracted from my bank account so far--this time, contacting Andy’s uncle paid off bountifully. Paul called me up the night before I planned to build with a pleasant tone and asked for a shopping list. I did a bit of a double take and then immediately filled out that list, thanking him profusely. He said he’d drop it off at my mom’s the following morning, like a wood angel. While I expected Paul’s heavenly carriage to be a big pickup and not an early 2000’s volvo, my god did he deliver. 6’ planks, 8’ planks, 10’ planks, probably all in all near $75 of wood.

With one final hoist from Max and I, we got the cart down off the roof of my car and onto the driveway operating table. While Andy and J-lo worked on the wing skin I went into full speed mode (see time lapse video here) dismantling our giant cart, roughly sketching the lines for the new placement of boards, wheel mounts, and axles and then going to town with the Ryobi handheld skill-saw-scalpel. I put it all back together with most of my lines and rough calculations working out. Pretty soon I had turned our 16’ 200lb cart into an 8’ cart that weighed roughly 90lbs. The rest of the cutting and calculating (yes, I should say calculating and cutting, but time was short and the sun was hot) was around the rails, back-stop bars, and push bars. I used the leftover 2x6’s to make the front and rear rail holders and the center beams / backstop bars because their 6” width added significant resistance against lateral movement or rotation. The rails were made of the super long 2x4’s screwed down onto the vertical holders and into the sides of the taller center planks. Last but far from least was the horizontal bar our pushers would be pushing at the back of the cart.

With a roughly 13 foot long craft and an 8 foot long cart, the tail was surely going to have to stick behind the cart. If we had the rear push bar run across the full width of the cart it had to be low enough that the tail of our plane could stick out over it. Our fear was that if the push bar sat under the tail too closely when Andy adjusted the tilt of the craft or perhaps when he got hit with enough wind, the plane might tilt nose up thus tilting the tail down and hitting this rear bar. This could’ve not only damaged the tail but more importantly thrown off any aerodynamically advantageous angle that we or the craft wanted to be in. My thought was that if I could build push bars that stuck out from the sides of the back of the cart without crossing in the middle we would avoid any potential problem. But this required much more planning, designing braces, figuring out lengths, angles, and of course the physical mental and temporal resources which we sooo did not have. In fact, a strong reminder of how much time we didn’t have came in the form of the sun setting before I could even attempt a non-crossing back push bar. Running on backup brainpower and under light of streetlamp J-lo and Andy came to offer a hand. They simply lifted up the 12 foot long 2x4 I was complaining about, pushed it up on the back of the cart across the back, lowered it to a point where they figured it probably wouldn’t be hit by the tail, and said, “Here, just screw it

here." While they held it, I did just that and completed the frame of our chariot with the final screw going in just around the time neighbors were probably thinking, "I hope that's the last screw of the night."

It wasn't. We put the steel conduit tube we used as our cross bar support on the rails. We very carefully carried our nearly complete aircraft up, over my mom's fence separating the yard and the garage and sat it onto the cross support. Andy got in and we all oohed and awed and took photos and it was truly one of the greatest moments of my crafting career. Then Andy tried a quick test of the design by attempting to slide the craft and it's support pipe forward along the 2x4 rails. He was met with really unexpected resistance. It turns out that when the weight of the metal conduit tube presses down into the microscopically flexible material of the wood, it's like sliding a chair on the carpet, every moment of push involves overcoming a previously depressed area. To get a truly slick interface we needed two very rigid surfaces that wouldn't form any of these tiny depressed divots. Tags Hardware closed in 10 minutes. I grabbed Max's crappy road bike and sped over just in time. I bought two 6' PVC tubes, sped back home, quickly pushed them down the table saw (the neighbors were definitely not expecting that), and cut long strips out of each tube. Then I spread these split areas over the 2x4 rails and they became the new interface with the cross tube. The conduit cross bar seemed to slide much better on the PVC, allowing Andy to easily glide the plane forward. Slickness achieved!.

MAKING IT FABULOUS - PHASE 1

The sun finally set on the day before it has to go the esplanade. We've just put the beast on the cart, added the PVC to the cart rails and Andy and J-lo have to leave soon. They take a step back and take in the glory of their hard work and diligent designing. It's a gorgeous homemade glider that seriously looks functional, so to them it looks like a job well done. They are well deserved to feel that way. But I look at it and see a mystical beast *far* from done. Right now it's a glider...it's supposed to be a flying sphinx.

Earlier that day Max asked if there was anything he could do to help on his way over. "We need lion's fur!" was my hastened response. With only some hesitation I handed Max one of the biggest artistic decisions of the Sphinx's creative design and asked him to pick up the fabric at Sewfisticated near our house. I told him we wanted tan yellow, short hair, and super cheap. He texted me photos of the 3 options he found. We all huddled around the phone and put in our 2 cents. The cheapest fleece option (top in the photo) won the general vote as well as the approval from the engineers who feared longer fur option might fuzz up our aerodynamics. Right now the front of the craft looked like a strange wooden forklift. The plan was to transform this forklift into a lion's forearms and a Sphinx's headdress with a combination of the fabric and some sort of medium stiff material.

I figured I'd tackle the hardest part first, the headdress. Luckily we had lots of extra thin foam paneling lying around that we had planned to use to cover the wing in case the wing skin didn't show up in time. I laid a 4x5' panel on the ground, drew a rough headdress shape, and cut it out. But the real challenge was making this headdress curvature clearly identifiable after bent around the complex forklift/wing shape. By deciding to put the wing above and in front of the pilot the front of *our* Sphinx was an abstract concave shape very different than the relatively flat headdress of the real Great Sphinx. The solution? Well logic and enough time would suggest that applying a 2D shape onto a complex 3D structure requires complex math to work out the compensation to certain angles. I didn't have time for logic so my instinct to just "fudge it" won out. I stuck the tip of the foam headdress cut-out to the front-center of the wing and then just pushed the rest against the wing and cockpit as I went down. To my surprise it was forming fairly well. It only took a medium distortion at the top to account for the two sides

spreading out not only on the X dimension but also rotating on their Z axis to hug the vertical sides of the cockpit. While this solution looked like it would Sphinxify our cockpit, I couldn't ignore the large ugly open space between the wings above the cockpit. Since the beginning J-lo seemed indifferent to the shape and form of the wing above the pilot as he assumed the air in this section would be too disturbed by the pilot for an airfoil shape to be any advantage. But having it open and showing the exposed cross bars, and now the back side of the headdress just looked-half-baked. So in my second drawing of the headdress I included a large portion of foam above the headdress which was to be folded over the top and stapled to the trailing edge of the wing where it meets the lion's body. While we joked about leaving the pink foam of the headdress "raw" to show the "Pink Panther foam company logo" which matched our theme (with lots of poetic license), as usual I preferred surreal realism. So I took the yellow fur fabric that Max had purchased and asked Max to glue it to the outside of the headdress cut-out while I went to go take care of late night car-related matters. When I got back I tested the newly cut and upholstered headdress and its new dimensions allowed it to curve just right and it looked awesome. Before I finally attached it I decided to tackle the much easier task of lion-izing the forklift/arms.

A week earlier when I was on a run to get ink for printing our silly sponsor flyers I found two random pool noodles in the trash outside. I knew they were a hint from the reality show director in the sky and so I took them. I grabbed them from my car, sliced them open, and slid them right on our 2x4 forklift arms. As Andy clung onto the lion's arms with his own arms these foam tubes would spare Andy's armpits. Some of the noodle foam stuck out in front of the 2x4's and rather than just cut it off, we decided to wrap the extra down under the front to create the look of a folded lion's paw. Max taped it in shape and our forklift was no longer purely functional, now it was also posing. We then wrapped the forklift arms in the yellow fur fabric and staple gunned them to the 2x4's as quietly as possible.

Finally I finished attaching the headdress with a combination of zipties and staples. The stresses put on warping the 2D shape would've caused any staples or zip-ties to tear right through the foam if it wasn't for the fur fabric providing a tough membrane to resist it. With the final staples shot in as quietly as our cringing faces could do it, our craft was finally a creature. Briefly we awoke from our manic trance. With our qualifications and time constraints, there was no way we built this. It was as if while we weren't looking someone just dropped it off in my mom's backyard. It was art; it was craft; it was creature; it was comically surreal and surreally serious-looking. It was a giant fart lion that looked like it could actually fly.

Max and I still had a few combustible fumes in our tanks so we burned the midnight braincells painting the cart. At least for this we got to use the same house-paint we used on the tail. If the beast-craft looked this good there was no way I was going to let it rest on a throne of mere wood and Home Depot bar-code labels. This was no random practical plywood push-cart; no, this was at the very least going to look like it came from the same planet as the beast it propped up.

The cockpit and the cart were lookin' seriously snazzy with the tan Egyptian paint job and faux fur Sphinxyness, but the wings, well, they still looked like they were from earth (specifically Home Depot). By looking at the wings without our filter of having known how hard they were to make we realized how kinda dorky and lame it was to literally see all of that work. I saw this day coming and had long planned to cover all that up, which is exactly why I purchased a crapload of "summer squash" yellow spray paint from Home Depot. Max and I knew we probably didn't have the time or braincells to finish covering the whole wing so we just gave it a "test coat." As Max paused to let the yellow clouds fade into the midnight air he inspected his work. "Oh dude, this is not good… we're making holes!" Max pointed and I saw little quarter sized holes. We instantly patched them with tape. "Were they there before we painted and we just missed them?" "Good question. Let's keep painting to find out." This dumb and dumber conversation and subsequent layering of paint and then tape went on until a smart thought came along and stopped us. "Hey let's do a test and check it in the morning." Max and I stretched a sheet of leftover wing plastic across our trusty sawhorse and I heat shrunk it to match the skin of our wing. Like smartypants we decided to inspect the sheet for holes *before* painting and found none. Then we hit the plastic with many thick coats of summer squash. We even decided to hit it with some of the other colors I bought from Home Depot, including the very dangerous looking "sparkle turquoise." Coated in more paint than we would ever put on our wings, if this plastic sheet survived in the morning it would be our unholy message from the Flugtag gods that we could safely paint our wings. Finally we went home, and the neighbors put down their phones just before calling the cops.

PAINT OR TEST?

It's Friday August 19th, 8:30AM the day before the big launch. My plan is to do finishing touches and then test it at Danehy Park at noon before taking it to the Esplanade by the 1:45 deadline.

I am looking at it. It's a hot hardly-yellow mess. Sure, maybe an engineer could see past the fact that the wings look like an MIT project someone found in the trash and decided to test a few spraypaint cans on, but I couldn't. I needed to make these wings yellow, ideally with some sort of feathers. Luckily that morning at 7AM I bought $140 worth of spray paint from Home Depot. About 8 "summer squash," 6 "turquoise," and 5 "sparkle turquoise."

As it turned out, the gods showed us mercy in the form of our heavily painted plastic test-sheet completely lacking in holes. A less religious explanation would be that while some spray-paints contain chemicals like toluene which can melt certain plastics, our paint/plastic combo was not a problem, or at least "the problem." With that semi-satiating result we were free to paint all 160 sq feet of wing in the few hours we had before the hard at-the-Esplanade deadline.

But before I could lift a cap, Max and I felt the need to point out to our more cautions teammates that when spraying the night before, holes started appearing in the plastic. Were they caused by a chemical reaction with the paint despite the facts presented by our test? Were they created when

heat-shrinking and were simply missed? Or were they perhaps created by the heat shrinking and then exacerbated by the paint softening the plastic? As a compromise to Andy and J-lo, who rightly feared a perfectionism on looks could ruin months of engineering, we decided to go light and slow painting the rest of the wings. My dad showed up at this time and helped Max, J-Lo, and Andy (I was busy finishing the Lion's ass). To block the cloud of yellow paint from attacking the quaint nearby Porter Square neighborhood, we set up a giant tarp clamped between two posts like an illegal backyard auto-body shop.

BUTT PAINT

While the wing-spray team was diligently working, I turned to our blank lion-ass-shaped foam slab and faced a challenge the Egyptians also probably faced (though to a tad lesser degree)..."How do we make this giant tan slab look like a sitting lion?" I made a quick stencil on a piece of extra foam. I'd like to say I used some golden ratio or got my dimensions from the Egyptian gods of alignment (or aliens) like the History Channel supposes the Egyptians did, but really I just put the pen on the foam and pulled a sleek curve for the haunches and then a line for the long fore-leg to the paw. I cut it out, stuck it on the back of the lion's ass and traced it with a beefy sharpie marker. It looked ok, plain, boring, cartoonish. I put the stencil back and hit it with some brown spray paint I had lying around. I removed the stencil, meh not great. I tried adding some highlights with lighter yellow for the top of the lion and darker for the bottom as some mild lighting effects. I'm a digital artist which might suggest I should be good at this, but with no "Undo" option in spray painting, things weren't turning out exactly to my liking. In a final desperate attempt, I grabbed this special, faux speckled "stone" spray paint. I sprayed a test spurt and it was insane, throwing brown speckled snots everywhere and probably deadly chemicals too. But it looked kinda cool! I hit the panel from a distance and ended up liking the look. It was stone-ish, cartoony, a bit shaded, perhaps over shaded, but good enough.

Being the amazing Flugtag liaison that she was, Nicki spent the time actually considering the following requests from me before denying all of them:

"Can I use a green smoke flare as our creatures giant fart?" - "No."

"Can we use streamers and a fire extinguisher?" - "Nope..."

"Streamers and a leafblower" - "Sorry."

"Confetti launcher?" (I knew this one would fail).

Finally I just said we would make the fart out of flowy fabric and she seemed hesitantly ok with that. I happened to have about 2 yards of flowy green chiffon fabric (did I mention I'm into making costumes?) in my giant fabric bin and brought it that day to make the fart. But I needed the fart to fly. I wanted it to be actuated and not require the wind. My solution was to have a giant spring loaded tail that when pulled and released would fling the fart into the air. I went into my mom's basement looking for flingy rods and found a few options. I ended up combining a few of them for extra flignyness, shoved them into the back of the lion's foam ass, wrapped them in yellow lion's fur fabric and glued it. Then I glued the fart into the lion's butthole and then shredded it and hung it from the tail so it would constantly be in an outward display, rather than a droopy green spew. I gave it a test by pulling down the tail and releasing. Poof, up went the big chiffon fart! I was happy with our insane lion-ass slab of art.

Sure it ensured we would never get sponsors (as if we would've anyhow) and it made us the grossest weirdest team out there, but in hindsight (pun intended), I think this freak flag not only repp'd my inner child but also the true spirit of an event like Flugtag. Flaring flamboyantly in the name of art and the face of normal.

Speaking of repping, earlier that day a hefty package arrived at my apt. I opened it and was happy and humbled to see that my mom had gotten apx 20 team T-shirts made. For a parent age parent she did an awesome job with the computer graphics. She had grabbed the comical CGI representation I posted on facebook of us and our craft dominating the Flugtag stage, with our heads/names below. Like most team T-shirts it was far from "fashionable," but it was loud, it was proud, and it was practical. Considering most other team shirts sported only a small logo or team name, we once again stood out among the competition in flashiness. Thanks mom, you rule.

PLUMAGE

After I finished the Sphinx's butt I swapped my focus to the final touch that would turn this Sphinx from flat to fabulous: feathers. I saw it in my head weeks earlier like a sign from the graphics gods, probably the same ones that came to the CEO of nike, and creator of Star Trek, a swoop. The image I imagined looked like a gigantic fingernail clipping. Yes not much on its own, but when placed in a cluster, the filled portion of the swoop was one feather and the negative area behind it suggested another feather was layered on top. In other words it was a cheap trick that got us the illusion of way more feathers with less time, work and potentially plastic-melting paint. When the yellow spray team finished and the aerosol settled, there was a fragile satisfaction as though they had just completed a record holding stack of cards. Our delicate $400 priceless plane wing was covered in paint on the whim it wouldn't melt. There were no holes, so far, breath was released cautiously. That's when I show up with my swoop and my 5 can's of sparkle turquoise. The looks on their faces was like I walked into open heart surgery wearing a clown costume. "Go *super* easy" Andy said. To help ease their fear that sparkle paint might be more dangerous than normal, I decided to do the base coat of the swoop in normal turquoise and subsequently add only a pixie dusting of "sparkle turquoise." I began laying my feather pattern on their delicately prepared and possibly weakened wing-skin. The first feather was sprayed shoulders raised and faces clenched as the pattern was lifted...What was revealed was an icon of what was to come: fabulousness with such lux and twinkle to astound the eyes of the gaudy gods… a.k.a. Liberace.

Dazzled by the design (but probably also the heat and the aerosol) we had to wake up to the reality of time. We rapidly continued spraying feathers. Max and I gave the cockpit headdress and cart a few turquoise stripes while I tried to ignore that I would only get to see this baby fly ONCE.

It was already past noon and the time I reserved for testing was rapidly shrinking. As much as my imagination tried to make it seem Disney simple, getting this giant eggshell fragile craft safely onto a transporting vehicle, off again at the testing park, back on, and then off again at the Esplanade in 1 hour was truly daydreaming. Not to mention the biggest theoretical quandary: Are the chances greater that a test flight would teach us valuable lessons to make our final flight better? Or is it more likely that a test flight could damage the plane and ensure that our big show will be a total flop?...To J-lo and Andy's calculating minds this answer was obvious...Testing is dumb. I was punched right in the emotions. It felt so wrong, and yet I knew this day would come. Spending hundreds of dollars, hours, blood sweat and tears into something you will only see work once is so utterly counter-intuitive, painfully absurd, and exactly what Flugtag and other single use art events (Burningman) are about. These events exist to honor the process, the creations are testament to human capabilities, and the temporal nature is the powerful period on the end of this statement of what matters. Simply put, it's the opposite of the nihilist mantra, "Why do if all dies?"..."DO IT ALL THEN DIE"

As high-chair thou holier as I might sound, the honest truth is that it hurt so much to imagine never being able to fly the thing myself that there were many moments when I considered saying "fuck Flugtag let's just take this to some big hills and test it until it fails." Sure we won't get on TV but, hey, who knows, maybe we could get really good at it! We could give everyone a try, take short glorious glides down all the local hills, maybe make it a weekend thing!"....Annnd back to reality: this thing is huge, it's heavy, it's complicated, it's fragile, and it would dig infinitely deeper holes in our pockets to store this beautifully assembled pile of Home Depot parts and plastic somewhere local. I think about all the kites I've owned and where they are now (the trash or a tree) and the better future path switches back to the one where 50,000 people will be watching.

That's when J-lo arrives cautiously tugging the huge 16' U-haul cart behind his 12' Subaru. Like movers paid to move the Queen's dinosaur Faberge egg we are extremely thoughtful, planned and coordinated with our placement of the craft on the cart. With a combination of straps, saw-horses and trial and error we manage to devise a stacking orientation with such an efficient use of space that we once again are caught feeling oddly proud about something that will only be useful once.

MAKING IT FABULOUS - PHASE 2

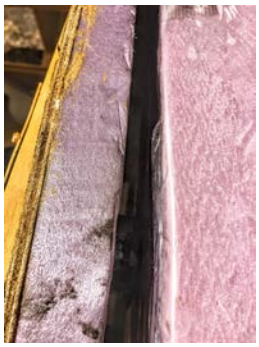
Andy and J-lo filled the front of the Subaru while we packed as much extra tape and tools as possible into his back seats. As I watched the What Sphinx? slowly roll off into the distance (making long slow awkward turns and almost get hit by cars in the intersection), I felt like a parent sending their child off to their first day at school… cliff diving school… without a parachute. It was beautiful and sad. Anyway I stayed back. I had a bike, a huge backpack, a bike-trailer, and secret plans.

With that final paint job, startling solid yellow and dazzling farty sparkly turquoise, I was proud, satisfied even, with the artistic outcome of our craft. But every detail of extravagance a pimp puts into their outfit is instantly lost if they step into a car pimped to any lesser a degree. What Sphinx? the beast was, if nothing else pimped out to the absolute fullest, but at this point with a simple two-tone paint job and awkward scaffolding shape in my mind, the cart was only semi-pimp. So as soon as Andy and J-lo rounded the corner I jumped to the sketching table.

First the cart needed side-walls, some surface to carry a consistent shape, a design perhaps. Aha! I remembered the basic shape of the horizontal rails intersected by the vertical stop posts. Hmn...if the front of the rails match the forearms of the sphinx, what if these “forearm rails” also went back to meet the rest of a sphinx shape? I sketched it out and sliced two armless sphinx shapes out of left-over foam. After a few uses of the original feather stencil we started to notice that the edges of the stencil were not only warping but even drooping. This as we found out is because styrofoam will melt when coated with most non-water soluble paints, including spray paint. So to protect these foam shapes for the cart I sealed them in painters tape. Now I had these blank sphinxish shaped canvases. Like a parent using telekinesis to get their child to come out from the inside of a circular coat-rack at Macy’s, I stared hard at the blankness until the solution emerged to my mind’s eye (a.k.a. I interpreted some hypnogogic hallucination that I liked). It was to be a combination of speed stripes, the stripes on a pharaoh’s hat, and sure, the American flag. I striped the panels a yellow turquoise pattern but left a clean yellow square in the lower front facing corner. This was where our sacred icon would go. A sacred What Sphinx? symbolic icon I had about 5 minutes to come up with.

I knew it would involve a question mark, it would be hieroglyphically angular, and that somehow stink lines would also be necessary. I came up with a few kinda awkward incantations until while cycling through possible ways to draw a question mark I came up with one that I think fit perfect. The triangular shape allowed for an easy symmetry of the icon and then all that was left was the stink lines. To keep in theme I made them angular, simple, but how many? I debated this until reason smacked me with a clock and I picked 6 stink lines. I drew our holy icon and carefully sliced it out of a piece of tape-protected foam. I liked it a lot. Eight years as a quasi-graphic-designer and this questionmark stink line combo is still my favorite work. I added it to those blank center squares and BAM...The great What Sphinx? style guide was complete. I threw these new side plates along with the holy stencil and as much extra paint and tools as I could fit into my cart and bag. After apologizing to J-lo and Andy for my lateness through a few texts I biked my ass over to the Esplanade.

It’s a rough ride from east Somerville to the Esplanade even without an overloaded kiddie trailer full of tools. Over McGrath Hwy, dodging pig-sized potholes and Lechmere traffic insanity, but I finally made it to the Mem. Drive home stretch. I was very happy to arrive in one piece at the Red Bull sign-in, even if it was an hour before we had to be off the property. I was completely awestruck by the bigness of it all as I passed huge scaffolds holding speakers, ads, and a mega-screen at the Hatch Shell. But what really got my heart thumping were the crafts I passed as I strolled slowly, wide-eyed and jaw-dropped at all the insanely high quality creativity put into these art-piece machines. To name my faves at this point would be unfair as it was all a blur of jaw-awe. I will say the giant paper airplane did strike me awesomely as it looked the least like the others and was also one of our nearest neighbors. Finally I came to our spot: 2 guys standing next to some odd large yellow parts like tiny elves waiting to assemble santa’s massive swedish furniture. I immediately parked the bike, apologized for my lateness and prepared to build our baby for the last time. We got into position, applied liberal amounts of grease to the extension tubes on the detachable wing and slid the wing tubes into the center frame connector tubes. Thanks to the wing tip we could safely shake the thing till it fit. Only then did it occur to us that rather than gingerly shoving from the wingtip we could much more easily bang outward against the inside of the cockpit to close the final gap. Then like a formula 1 service team we got the connecting bolts in (between the super small gap you see in the image) and tightened to just the right torque...or



like...really tight. Then I closed the “hood” of our cockpit by pulling the yellow fur/foam panel which was an extension of the headdress over the exposed cross beams and sealed it with some zip-ties and tape. Then we attached the lion’s body, holding it in position and securing it with some of those beefy wall-dog screws. BAM, it took about 10 minutes and we had our glider together. A rather rapid assembly even for a professional glider (a quality that would be much more useful on something we could assemble more than once [ok, ok, I’ll stop whining]). Next we prepared the cart to receive the craft. First we placed the metal support bar the craft could pivot on onto the rails. Then we placed onto the rails a second 8’ 2x4 which was for securing the front of the cockpit’s forearms and ensuring that it when not in flight mode it would not pivot backwards and break its ass. Then we carefully hoisted the beast up onto the cart. If I remember correctly we almost dropped it, causing an *almost* comical heart-attack. But with a crescendo of comments flashing back and forth “back, left, up, UP!, down” we finally got the plane into it’s safe resting position. We tied everything down with extra yellow fur and finally, as was the tradition, we took a moment to back up and soak it in. It was gorgeous.

That’s when I pulled out my new custom cart side panels to show off in hopes that it would impress away any resentment toward me being stupidly late. It wasn’t met with much of a response until I actually stapled them onto the cart. They fit perfectly. As a final little garnish I tore two long strips of leftover flowy fart fabric and tied them to the backs of these symbolic cart-sphinx’s. The cart was finally complete, fully pimped out, and worthy of it’s royal passenger.

In a perfectionist tailspin I went on to start patching holes and seams on the wing with packing tape. I nearly tore a huge hole in the wing when I tried throwing the tape over the wing. I was clearly obsessed and glad they stopped me. It was time for me to stop preparing our baby for the world, it was time to release it from the nest. It was time to let What Sphinx face the challenges of gravity and the public eye, to risk embarrassment for the chance to prove to the world that it can fly and be fly. The team was happy, probably all for differing reasons but one reason was certainly shared...it was here, in one magical piece.

Another magical little sign that fate, or at least the organizers of the event, were on our side, was the fact that our assigned spot was right next to the porta potty’s. While most of our neighbors probably considered it a negative feature, I don’t think there could have been a team more proud to rep in front of shit-smell than What Sphinx?.

We assembled our fluttering minds and our cargo-crap. We considered covering it all with a tarp the way many other teams did and we were suggested to do, but the thought of putting any pressure on our paper thin wings was too terrifying. Plus we were very satisfied with the strength of our cart, the strapping securing it to the plane, and the plane's ability to withstand anything...wind related. We did our best to shmooze with the other teams before soon thereafter being told to leave by the security. Interestingly, then the security left, so we stayed to schmooze a bit longer. Most of the teams had left, so I just ogled the crafts on my way out.

THE PRE-EVENT PARTY

At 6pm (about an hour later), we all met at a mandatory team meeting at Tavern in the Square in Allston. It pretty much met my expectations based on the first event and every other live interaction with Red Bull. 90% short cute peppy chicks in Red Bull gear kindly leading confused jocky nerds around while offering excessive amounts of earth's nastiest drink. On the bright side, we got free hats and custom VANS shoes (transforming us into peppy Red Bull / VANS human ads as well), and even got to ogle the trophies. I remember looking at them and thinking two things: "The only difference between trophies is the color?" and: "I wonder if I will get one of those?" Oh, and they were very nice in providing a free buffet while we listened to the Flugtag leaders give us the deets for the big launch day. Aside from all the inter-team nervous chatter and joking, one thing that kept distracting me from the speaker was the fact that every TV in the room (it's a sports bar so that means at least 1 TV per inch), was playing a looping promo for the VANS Flugtag team. The video was only 30 seconds long (I counted) which is a painfully short looping rate that already had me feeling like I paid for the shoes they gave us. I got to know VANS even more intimately when their Flugtag ambassador and ex pro skateboarder Tony Alva gave us one of the weirdest speeches I've heard. Looking like he woke up under a bridge, with his sunken face behind long natty dreads and a beard, he attempted to blend spiritual global embetterment with blatant VANS advertising and an anti drugs and alcohol message with the frightening tenacity of someone who definitely spoke from experience. After a few laughs, cheers, and complaints about the general rules speech the night wound down. There was however one rule that especially caught my ear: "Nothing can be worn over your helmets"..."Oh no he di'nt!" said a voice in my head as my memory pulled up distinct emails with Flugtag confirming that our hats on the helmets would be ok. There was no way I was going to simply ditch our signature bedazzled Pharaohs' hats without a fight. From all my correspondence with Flugtag, it seemed clear that their overworked minimal staff reserved the amount of attention and dedication to logistics and rules that a varsity football captain reserves for his chemistry homework. Anyway, I went up to the head of the Flugtag events, a sweet tall white dude with a baseball cap. Ironically he was the least preachy, least ad-centric, and most down to earth Red Bull person there. Upon asking about the hat rule he directed me to someone else who then basically confirmed the opposite, that our hats *would* be ok. If I had to pick one life lesson learned from my NY Jewish mom which has both embarrassed me and benefited me the most it's that you never take anything for face value. I've learned the system is rigged against those who do and that an immense number of discounts, deals, and doors magically open to those who know the secret language of the haggle.

It was about 7:15 when the team met outside the bar to chat in the weirdly late daytime (writing this in winter). I soon excused myself as I had one final creative trick up my sleeve and time was of the essence.

FINAL FABULIZING

Artist and Craftsman Supply in Central Square closed at 8pm so I pedaled my ass down Cambridge Street and got there just before they closed. I purchased a large yellow sheet of construction paper and high end green and yellow dry erase markers from the cute young artsy hipsters and sped home. What were these for? In all our rather hefty efforts to secure some sort of sponsorship not a dime was coming our way from this great public endeavor, so my plan was to advertise ourselves on this board. I stuck the yellow paper to the back of a 2x4 foot sheet of clear plexiglass I had lying around the house, taped the edges with some turquoise tape and grabbed a curtain rod to use as a kickstand. The plexiglass was too flimsy to stand normally and so a quick solution was to add one strip of tape across the back of the plexiglass forcing it bow into a semi-cylindrical shape adding vertical stability. All that was left was to use the markers to advertise that we, the great engineers, designers, filmmakers, and fart fabricators, were all for hire.

Ok, so I lied, there was yet one more thing I needed to finish to feel artistically complete and fully in fashion readiness.

The last time I had seen our wild signature sequin headdresses was two weeks prior when meeting up with Jeff and his girlfriend (now fiancé) Nicole at Sewfisticated Fabrics in Twin City Plaza, Somerville. A headdress was great, but there was no way I was going to let What Shinx be that guy who shows up to your costume party with a gorilla mask sans gorilla suit...whose favorite spot to hang happens to be near the keg. No, we were going all the way, and Nicole, amazingly offered to take our costumes from hats-only to full fashion blazing. After a few trips to fabric stores and many arguments over what flowy fabric "looked like a fart but didn't clash with the gold," we decided to make our Egyptian kilts out of turquoise and gold strips of sparkle fabric that kinda matched our hats. Then a faux leather fabric was picked for a good skirt belt and also held our rear-end flowy chiffon fart. With only two weeks to make 5 of these outfits on her free time, my fingers were crossed as I went to my mom's to meet Nicole and Jeff the night before the launch and exchange the goods. When I arrived at my mom's house I startled my Mom and Clara who were in the middle of finishing their surprise gift. It was an awesome giant What Sphinx? banner! It was definitely still a surprise and those big bold yellow and turquoise letters on that 12' banner totally nailed our theme, we were officially a team, and our two cheerleaders succeeded in warming my heart and filling me with what I can only describe as cheer. Just then Jeff and Nicole arrived with the goods. Nicole did an amazing job glue-stitching the skirts together, exactly how I had imagined, even adding some awesome faux leather wristband accoutrements. They also delivered back the pharaoh hats, all having been modified to fit over Flugtag helmets. We had now twice been told our hats were legally allowable (but I still had my doubts).

But now that we had these two-tone snazzy-ass skirts the pure gold pharaoh hats needed a matching two-tone upgrade. As the long day finally gave up to night I was just getting started masking-taping the hats for the striped spray paint design. Once the hats were all taped where I wanted

to keep the gold, I laid them down on the tarp and hit them with some of the leftover sparkle turquoise spray paint. I was down to the very last drop of the last can and there was still a can to go. I started pacing through my mom's house fretfully. "Alex don't forget I got turquoise fabric paint for the banner." Clara called out from the TV couch. "Aha!" It was just the trick and allowed me to finish the turquoise on the hats. I gave them a moment to dry "enough" and then took off the masking tape, revealing back that gaudy glamorous gold. With the gaudy gold pattern with bold farty turquoise the hats were now kicked up to psycho Egyptian style level eleven. But a team is nothing without a logo, and luckily I had already wasted previous precious time coming up with that logo when making the cart panels. The only thing left was for me to cautiously ink our zZ?Zz design into the blank spots I left in the front center of the hats. The emblem emerald looked awesome, I should've probably stopped there...but I couldn't resist drawing on the "back-side" of these hats too. Back-sides were our theme so I scrawled onto them some strange question mark anus combinations, trying something different on each hat.

Oh, and last but not least, we knew our torsos were going to be fashion-*ruined* by the stupid life preservers that we had to wear to preserve our lives, but for non-life preserving moments Jeff bought a bunch of long white wife-beaters. I totally understood the look he was going for, kinda a cheap dirty modern version of a white sleeveless robe. But they were just plain-belly sneetches So the very last thing I did that night was use the zZ?Zz stencil and the tiny bit of remaining paint to become sneetches with stars upon ours. After all the hats and shirts were What Sphinx'd to the max, I drove home and slogged through the aftermath of scraps around my house to find the bed and get a few zZz of my own before the big day.

ENTERING THE COMPETITION

It's the morning of the biggest spectacle I've ever been a participant in… the kind of moment you might expect me to be etching into the strongest memory centers of my brain. But that day was a total blur. Like a rushing whitewater river of adrenaline and frantic attention swapping, with only little islands of time where I got a moment to breathe and take it all in. Then I would continue blasting down stream until I was eventually washed up back on the shores of normal reality, soaked in Charles River water clinging to a trophy and not exactly sure why.

Luckily I still have an actual written schedule to help me remember what happened when. It states I was to arrive on site at 8AM. I am a freelancer, I never wake up at 7AM if I even set an alarm. But today I was a professional (pro-bono) idiot art-plane performer, 50,000 people were expecting me, I was up, I was ready. I threw on the shortest pair of swimsuit trunks I had, which serendipitously happened to be turquoise, and didn't wear much else other than a huuuge backpack. I filled this backpack with all the costume hats and wife beaters I finished the night before, along with any extra fabric, tape, and tools I might need. I also carried a giant plastic bag full of more supplies and the large plexiglass self-sponsor board I made. The great cart-pusher Bubba Hotep (Max) was groggily making coffee as I came back for the inevitable few things I forgot. I prodded Max with what I figured was the right amount of passive aggressiveness and said, "See you soon," and blasted off for the Esplanade.

When I got there I was immediately thrown for a loop by the confusing layout of the event. To their defense, the Boston Esplanade is a ridiculous series of thin islands and boardwalks connected by small footbridges and swerving splitting biking/running lanes. Hardly the ideal setup for an event designed to hold 50,000 people and thirty-three 20ft long airplanes. While the big tough older-white-dude Boston security cop interacted with this frantic shirtless man with a giant backpack and a big odd-shaped plastic bag there was a brief moment when it seemed clear to me that I fit their profile of a potential terrorist and he was about to call backup. I think he knew I felt this way which is why he said some joke to fuck with me like, "If you tried anything stupid I'd at least have your bike," and then let me in (probably because my skin color didn't fit the profile). All that tension only to find out I was in the wrong entrance and thanked the cop for being nice to me instead of what he was supposed to do, and then I biked to the real entrance. Over a few foot bridges and finally at wonderland where I was greeted by the blue shirted cute hipster "Red Bull Babes" (which I'm sure is what they called them if it were 5 or 10 years ago). I got my official wristband and ID and continued frantically forward.

The day before when I strolled past the competition I was in total awe, but this time there were about ⅓ more crafts, now fully unveiled, and I had to slow down to keep from accidentally biking over my jaw as it dragged on the ground. From the kindergarten craft-madness on steroids styles of teams like "CopeZilla" & "Swan Dive", to the impressive towny proud jock-art of teams like "Flight Orr Flight" & "TEAM Papi", to the "OMG why is this going into the Charles River instead of a museum?" aeronautic mastery of teams like "Flyin Ryan" and the Draper labs dragon "Possibilities are Coming," to all the other amazing manifestations of quirky punny memes and weirdo themes, aeronautic or not, including 90's Nostalgia, Murphy's Claw, Mass Instruction, Flying Selfies, and Breakdown Charlie, it was such a mind boggling display. Having lived 90% of it's 29 years in a world obsessed with logic, function and purpose, my common sense brain (yes it's in there) had to keep asking why these completely useless amazing alien incantations were created (which was soon overpowered by my engineering mind wondering how).

"WHY Flugtag?" - Alex rambles on about absurdist art and meaning

I think most art, especially absurdist art (my favorite), is designed to intentionally invoke that very question of "why," with the lack of any clear answer intended to leave the viewer in a state of blissful ignorance. This state only lasts so long before it becomes a test, a fork in the road. Some try find a way to "get" the art or at the very least "get" that the artist just wants attention (probably also true), and by "getting it" a viewer picks the path which leads back to where they came, where everything has a reason. Those who I personally believe "pass" the absurdist art test go further down the path of absurdity where things continue to make no sense, a Dali desert devoid of answers… the hairs stand up on the back of the neck, a primal response to uncertainty heightens attention and adrenaline starts to kick in. The mind starts squirming for sensible sustenance until just like a child does when realizing they are overpowered by a terrorizing tickler, a squirming brain overpowered by absurdity must release the unequivocal signal of submittance to the void in exchange for a sign that the perceived threat was all just for play…. Laughter.

The real test comes when, unlike your tickling aunt, the void doesn't respond…

Surely there's a reason for reason, but while the threat posed by someone jabbing a finger near the arteries in your armpit is immediate, the threat posed by experiencing life without reason is not. In this case FDR was right, the only immediate threat posed by a lack of understanding is the physiological response to fear itself. In my own opinion it is this fear of an imaginary abstract threat such as "not knowing" that drives a mind floating in existential emptiness to conjure an equally abstract imaginary comfort of "omnipotence," ideally one that feels good, triggers primal memories, of being held, taken care

of… maybe an imaginary father in the sky… or maybe you can ditch the daddy deity, extract just feeling, purify it in abstraction, chakra's, energy, love…. What is love? It's a feeling, it's in your head…. Want raw truth? Sorry, that's outside of your head… and a conscious being can never get there, but your body can when you're dead. So until then, I think the closest we can get to the truth, to the world outside ourselves is the laughter.

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All this from a bunch of oversized piñatas with wings? God in Flugtag? At the risk of being the most pretentious Flugtager in history, I dare say yes… at the very least it sure adds value to the nearly $900 we spent on our flying trash.

BECOMING TEAM WHAT SPHINX?

Anyway it's about 9:30, I've arrived with my bike and cart at the spot where our very own farty gaudy dada deity stands proud in its gold turquoise glory… and "Hey, no new tears in the wing!" We scurry to put on our outfits. This was one of the most awesome moments. After all the public stripping of slacks and finagling of skirts and wrist wraps we all re-assembled, star-bellied as fuck. Once we donned the hats, a gold-shimmering glow of ridiculousness burst out and the fully assembled What Sphinx? attire possessed us, giving us powers and allowing us to see the world through new eyes (much the way I imagine a furry costume does to a furry). First and foremost the outfits let us actually *fit* our craft, our theme, we *became* a part of What Sphinx? We were not just goofballs from nearby towns, we were superheroes (or villains) who demanded attention and had purpose. We were royal jesters from a strange and yet simple universe. As rumor foretold the royal court of Flugtag judges, would be wandering our way any minute to test those talents and etch our scores in history (a shitty clipboard).

This was one of the first times our entire team was together which was awesome, but it meant Jeff and Max had about 5 minutes to help us become a coordinated comedic dance troupe. We decided to practice before the judges came in case they wanted us to perform and also so, you know, we might be able to do it right when we went on stage in a few hours. Huge kudo's to Jeff and Max for actually coming up with a skit about as funny and thematically accurate as possible. Starting with a classic circle of ass sniffing, one by one each person would leave the circle to be investigated by the gang, "Is this man the cause of What Sphinx?" The group was supposed to shake their heads, "No this is not what Sphinx." Assuming we coordinate it right, up next for butt sniffing is our pilot Memphis Slim. One big whiff timed with a musical hit and BAM we all fly back from Andy's ass as the lion's tail (which Andy was holding down) releases and launches our large green fart flag flailing in the air. Then we were supposed to carry our Andy into the cockpit and push this stinky beast off into the skies…. Right, as this all starts to make sense to us someone notices, "Oh shit, I think that's them, those are the judges." A melancholy small group of fashionable middleaged hipsters with a clipboard is looking at the team next to us.

"Wait, if Andy goes last then he should start on the left, wait, no, which way are we facing, who's left? Our left or theirs. Stage left, ok start the song… wait, no, not that part… ok, yeah, there…go!" We hobble through our routine and finish with the big fart and dimpled smiles. The judges smile, the chick who looks like an anorexic Gwen Stefani says she likes the dance and asks us who made the outfits. We tell them a tad about the outfits and before we can begin sharing the saga of our team, they say, "Thanks," scribble on the clipboard, and wander over to our neighbors to the left. As the "Team Flying

Selfies" show off their interactive actual selfie mechanism built into their craft and take a flash photo with a laughing judge I turn back to us…"Oh man do we have to practice that routine." Just then the crowds start filling in.

DAZZLING THE FANS

They said 50,000 were expected, some even suggested that was an underestimate. I found it hard to believe more than a thousand people were going to come check out what these nerds had made. But man if there is one thing Red Bull does well it's getting people to show up to insane events. Somehow my dad snuck in (very my dad) before everyone else. Next my mom and Clara showed up with the giant banner they made. It was a super cool feeling to have my fam with me on this momentous occasion, feeling just as lucky and supported as the last time they cheered me on as a kid at battlebots. I remember thinking simultaneously, "Why haven't I grown up?" and, "Why haven't I been doing this every chance I had?"

I laid the banner below our craft and made sure we were in tip top showing off shape. At first it was just a few tourists, snapping a few photos from a safe distance. Then more people showed up. They pointed, laughed, and we were overjoyed to fulfill requests to pose. Before we knew it, there were more eyes and lenses on us from so many different angles and heights that it was a true struggle to respond to them all. Of course for me, having endless opportunities to show off our months of hard art-work was as much of a "struggle" as a kid would struggle to eat all the candy in a candy shop. I was smiling ear to ear, right arm around a fan, left arm making sure to hold up the flowy silk fart from my ass just in time for the flash. Yeah we were probably the weirdest of the performance/installation/planes and I'm sure almost nobody "got" what we were, but we were loud, proud, sparkly and fun to play with. At least one kid got that we were pharaohs, and it was a real heartwarming moment to put him up in the Sphinx cockpit and pose for his mom's photo. "He loves pharaohs" his mom said after she too got a photo. People were surprisingly shy (oh yeah that's right, there was no alcohol!), and in many cases I coaxed people in from behind a camera lens to pull the finger dangling from the sphinx's tail. When it was released and the fart went flying up in the air, responses ranged from, "Oh, hah, I get it," to doing it again and again, showing their friends, giggling and running off. The mix of affection and constantly switching attention filled my ego to the brim and then shook that glass spilling ego everywhere. By the time we got called for our safety briefing I was a giddy frantic mess, like that kid after eating all they could in the candy shop.

FLUGTAG FLATTENED FOR THE MASSES - A rant about intelligence- shaming in the media

While the life affirming-positive attention from strangers was distracting enough to push the 40ft TV and it's booming audio into a jumbled background mess, Red Bull was putting a lot of effort into making sure the attendees wouldn't get bored just looking at nerds and the things they made. Aside from the massive TV, sound system, and cameras, I'm guessing Red Bull spent a fair amount of money on *just* the right jock and blonde-chick for their "hosts." The jock, Jeff Barton, had your typical American rock radio raspy DJ voice blaring simple sentences for easy digestion. His voice and personality along with the arm tats and Boston shirt made him a pretty spot-on tough guy Boston mascot Red Bull assumed its audience would best associate with (though an actual Boston accent would've really helped). The blonde-chick, Will Christien, either genuinely or intentionally played the straight-(wo)man ignorant role, responding with as many, "What the heck is that?" and, "Well I certainly wouldn't do that" 's as possible. Also she is British, which is an accent most people find pleasing and respectful, but this is Boston. Unless they were intentionally giving her the scapegoat role, having her announce the team, "Two If By Sea" might not've been the best choice. Or maybe I'm the one perpetuating waning stereotypes.

Even with all the confusing contradictory rules, the denying of our initial name, and even the fact that we had to trash our baby at the end, I would say my least favorite thing about the Red Bull experience was how much the "culture" of the event was manufactured to the lowest common denominator. I know, I could've said the same thing by just reiterating the fact that we agreed to be in a giant ad for the world's largest energy drink but still it kinda grosses me out, and I don't see why it's necessary. Ok, fine, I do, advertising is all about targeting people based on their habits. Since targeting millions of unique individuals is hard, convincing masses into associating with the same simple persona makes them just one big easy target to hit. "WHO LOVES BOSTON? (crowd roars) BUY RED BULL!"

In defense of Red Bull, and the simpleness of event hosts everywhere, there is very little logical argument for an opposite approach. A host with an obsessive interest in the details of engineering and craft building would probably lose most of a general audience: "WHO LOVES HEAT-SHRINK MYLAR?!" *crickets. And this lack of general appeal for a nerd is a concept Red Bull took comic advantage of with the inclusion of "Dr. Dorky Labcoat Nerd" (I didn't catch his real stage name) on their judging board. Whether a real nerd or a comedian's character, his attitude, costume, and comments made it clear that he was there to be hated, and that's what made me hate his existence. He stood to be the punching bag with which the "general Boston public" got to shit on intelligence in the name of ignorance… just so backwards it makes one wonder why it's encouraged. Did he represent MIT? Was he there to make blue-collar Boston feel less ashamed for not being in MIT?

Shaming is a powerful social phenomenon and in many cases the cause of repression, revolt, and often a flip-flopping of populations being shamed (i.e., the "culture wars" surrounding a Trump president). While shaming unintelligence may have been the norm throughout comic history (3 Stooges, Laurel and Hardy, clowns, etc.) today it seems the shame game has flipped. Unintelligence is now cool, with most simpleton characters becoming icons which the public proudly reflect: i.e., every father character in a sitcom, every jock rock DJ. On the other hand nearly every depiction of intelligence in popular media is blatantly negative: i.e., every nerd in every sitcom. Each time a host puts on a dumb persona to associate with the masses I believe they are participating in encouraging the masses to associate with them. Just as dangerous as it is to build a population proud of dumbness, encouraging people to see engineers as strange alien weirdos, be it temporarily funny (or, in cases where the engineers are dressed as aliens, rather appropriate), this attitude strengthens a wall between most people, and the very field that allows them to understand their world and, oh yeah, have jobs in a post-industrial economy.

Playful shaming (a.k.a. poking fun) in entertainment / comedy can be healthy, making sure no perspective goes un-checked. This happens in my favorite childhood shows surrounding nerds in labcoats: Beakman's World and Bill Nye. But, in my opinion, the key to the success of those shows lies in finding a healthy balance between encouraging and making fun of intelligence. Butthurt blue-collar or not, the solution to the shame game in culture and entertainment is this balance of perspectives.

As maker-sports increase in popularity (Battlebots, Drone racing, etc.), I think the entertainment industry needs to find this balance. They need to learn how to land a few jokes about the strangeness of the art-form and the artists but to then show an unabashed and un-satirical interest in the engineering involved. There is absolutely nothing keeping this from being a possibility other than building the desire. Whenever a sport gets fans, fans get nerdy, i.e., all die-hard football fans, baseball fans, and every dork in a suit on ESPN who talks in numbers. It's time events like Flugtag stop framing the scientific perspective as the out-of-touch comic-relief in a lab-coat and bowtie, and start giving the intelligent perspective to the icons we respect, to the guy with the raspy voice and tattoos and the attractive blonde chick. Let the dumbass be the comic relief the way it was before someone or something (insert conspiracy theory here) decided dumb should be the norm.

Also I would like to note that everyone representing Red Bull who I interacted with was nice, this is more of a complaint about their choice of imaging and subtextual messaging… I spent 4 years getting a pointless communications degree and I guess I'm making use of it. Oh, and as a young teen going to Battlebots I can't say I was equally as critical of the imaging portrayed by their choice of host, Carmen Electra. But as I giddily watch Battlebots now I find myself asking "Why the hell did they pick these glitzy jocky hosts? WHERE ARE my favorite entertelligent icons JAMIE AND ADAM???" [RANT OVER]

BRIEF RUNWAY MOMENT

We were about 45 minutes into the fan-schmoozing and showboating when someone came to get us. We were a bit all over the place but we somehow managed to come together and make our way to the entrance of the runway. We had been told at the bar the night before that we would be briefed at some point by the safety person. We were pretty sure this was that, but were surprised to see the team before us being briefed along with a camera crew, my stage legs got a bit wobbly.

The previous team gets off the ramp and we go up, dressed in full sparkling green and gold garb and a life vest in case we fall off. I'm trying my best to soak in everything as we get higher and closer to the same runway I've been thinking about for months. We get up to the top of the ramp as the previous team finishes joking with the jock… "Shit, now I gotta be extra funny," is just one of the frantic bad ideas fluttering in my head. We are finally addressed by Mr. Jock and his partner Mr. Camera with legs. I expect him to ask me something, but if I remember correctly he doesn't. Currently the show director has the live switcher focused on the chick host talking to someone else, so our entertainment value is currently not needed. Instead he just says something like, "Ah, fart joke huh, cool...so ummm. Got any good fart jokes?" I say, "umm yeah, we can come up with some for sure." He looks at his cue card, "Great, so I'll ask you for the joke when you get up there before takeoff." "Umm...Ok." I say, and we're handed off to the other red-tan buzzcut white dude, who I happen to know is the safety guy (I met him at the bar and asked about the headdresses being cool). He

rushedly shows us what will happen: “So you’re gonna start back here, you’re gonna do your skit here, then you’re gonna get in the craft, you’re going to push… slowly… now remember it doesn’t take much to get it going--” My mind stopped him there… ”Fuck that, nobody’s telling me not to push as hard as I fecking can--” Back to him: “Then once your pilot is in the water he will tap his helmet 3 times to signal he’s ok, *then* the rest of the team can jump in, NO BACKFLIPS, just straight down…. got it?”

“Yes sir.” I grab a few photos as we walk off stage and get back to HQ. The place really starts to fill and I continue happily hamming it up with guests (the other guys seem a bit hammed out by now) while the last few teams get their briefings and the show gets ready to start.

WAIT HOW DOES THE SKIT GO AGAIN?

In the last 30 minutes or so before the show begins I’m really starting to get stage panic, mainly surrounding our skit which we’ve gone through all of 1 time. I suggest we all practice it again, Jeff agrees, and then somewhat begrudgingly the others agree too. We go grab some of the free lunches provided to teams by Red Bull and sit in the awkward fenced-in corner near crew tents. We discuss the skit a few times as Max plays the custom timed Buddy Guy song on his phone. “Can you smell it baby?...Can you smell the funk?... can smell it baby can you smell it too?... I can smell the groove… When I’m next to YOU!!” - Yeah, “Smell the funk” it’s a real song, a good song, and amazingly the lyrics sound just fine in blues language. Anyway, at the start we understand about as much as I explained earlier, sniff buts in a circle, at some point we smell Andy something big happens and then fly. We try it out, this time trying to assume we actually have a stage left stage right and stage audience. Hmn… it’s now clear that from a distance a butt sniffing circle just looks like a confusing bunch of bent over people. Someone chimes in with the good idea, “Oh how about we all sniff one person at a time, the group is to one side, the person we sniff is to the other side, we sniff, decide the smell is not coming from him and cycle people out until Andy.” “Yeah great idea. Ok...sooo.. Who first again?”...”How about Alex, J-Lo, Max Jeff then Andy…” “Ok”...“So what should we be doing before the music kicks in?”.. “Oh I know we should all stand posing in a line like egyptian hieroglyphs”...”Yeah!...ok so what’s the order again?” “Alex, J-Lo...Jeff, no Max.” “Which way do we face?”... It slowly becomes clear that dancing directors deserve to be paid a lot more than I bet they are. We finally get the order right, but the direction we’re facing is wrong, so then we have to reverse the order to reverse the direction and after about 3 tries we finally get one run that works. I suggest we do it right at least twice before going in front of 50,000 people. The enthusiasm coming from

the team is not strong. I can tell J-lo's mind has already left the moment. I feel a mix of guilt, for trying to get our genius engineer to sniff my butt at the right time and frustration because he's not fucking sniffing my butt at the right time which will ruin everything the skit stands for! We do again but it sucks more than the last time, we're all starting to feel a bit stressed, then Max chimes in with a suggestion which is unfortunately the only thing that ends up saving us an iota of skit points from the judges "Hey, how about when we all sniff Andy, instead of just waving our arms in disgust, Alex you do a backflip?" "Ehhhh, I mean… it seems kinda unnecessary and like just showing off, I mean...really?" Everyone agrees it should be tried. My tired legs hobble out a shitty backflip, they all dig it…"Yep, that's what we're gonna do." If only all dancing director's knew you could just patch a poorly-practiced dance number with a single backflip.

"Oh shit, I forgot, what should the joke be when the host asks?" Ok, I'll semi-publicly admit it (tho I'll bet no more that two people get this far in this insanely long novel about nearly nothing), I've had a short lived maybe 1.5 year attempt at stand-up comedy….This fact only made me that much more tense and desperate to nail what was going to be an opportunity to perform 10 seconds of comedy to a larger audience than most aspiring comedians ever do. Like a great comedian I Google "fart jokes"... most are as lame as could be expected. I call my brother Jacob who actually does standup comedy in NYC. I expect him to somehow roll his eyes at me over the phone since being my brother for 24 years has given him very impressive eye-rolling capabilities. He does a bit of ho-humming and then we both agree fart jokes are a bit below his brow as not many self respecting comedians have fart jokes anywhere on their quick-list. Back to Google: "What do you call an emperor's fart?...A noble gas." Hah, heh, ehhh, not bad. Maybe we could change it from emperor to pharaoh. Yeah that could work. As immature as I am, and considering it was *my* idea to make an anus themed aircraft, I tend to think of my sense of humor as being unexpected, odd, able to catch the audience off guard, unlike fart jokes found on Google. So I figure one simultaneously safe and risky comic thing to do would be to play a character, switch it up on the audience's expectations (that's all comedy is). If they expect a silly-goof, I'll play the most serious man wearing a sequin miniskirt and a fart emblem on his head *ever*! So I think up a quick little response to "Got any good fart jokes?" "Actually, no, we take our religion very seriously…… Hail Sphinxtor!" *Makes fart noise and bows. Jeff, my comedic soul mate, not surprisingly approves. The 30 minutes is almost up, time to get to our horse before the race starts. We have an improved skit, we have a backflip, we have the weirdo joke response and the backup google joke. With some solid plans my nerves are a bit calmer… the only way things could go wrong is if I/we, just completely fuck up…. Oh yeah we also have to do this whole flying a homemade plane thing, which we've also never done.

PEOPLE AND THINGS START FALLING INTO THE CHARLES RIVER

HERE IS A VIDEO OF THE WHOLE EVENT

And here is a google chart I made with tons more info, links and videos about the teams

The first moment anyone has reason to look out at the giant runway/ barge is when a Red Bull skydiver is suddenly and rapidly approaching it for landing. The host announces what we are all cringing about, the fact that the parachuter looks like he's gonna overshoot the edge of the barge…. annnd he does! "Landing straight in the drink" as the other announcer mentions. While the guy is well buoyant (good to know in case I ever parachute into the water) with a big stupid smile to reassure us everything is ok, it is a bit of an unnerving event which turns out to be just a hint at how unpredictable the wind over the Charles really is.

Before we know it there is a giant VANS shoe up on the runway with a giant upside-down skateboard/wing above it. Actually in terms of wings that make things fly it's really quite small, only about 16 ft wide. It sure looks nice, and thanks to the looping promo video VANS brainwashed us with at the bar, I know exactly how 30 seconds of the build process went. I felt the same way about the VANS team as all the others, simultaneously wanting to see low budget DIY flying (A dream of mine since I first strapped little DC motors to a cardboard box as a kid) and also wanting to see my enemies fail. Considering this enemy probably had a budget that could've built a real airplane I'm leaning more towards the looking for failure. The announcer announces, the music is pumping, my heart is pounding, and the shoe starts to move! They get a good push from all the way at the back of the runway, at full speed by the end and AHA! The moment everyone was waiting for comes! As the shoe falls instantly to the water below the little man riding in the shoe clings on to the support bar attached to the skateboard/wing and soar/falls about 30 ft out from the runway and at a speed clearly slower than gravity would've preferred. DIY denial of gravity!!! The crowd roars…"Man if that shitty shoe ad went that far, I can't imagine how well MIT and Draper labs will do." Then someone on the VANS team does a backflip into the water. Rules are whatever you can get away with.

Team "Mass Instruction"

FLIGHT VIDEO :: MORE TEAM INFO

The first team was Mass Instruction, distinguishable from the other giant paper airplane craft by it's pencil on top (and the far more "home-built" looking construction). We actually got a chance to meet this team at the Artisan's Asylum. The same AA artist and temporary Flugtag assistant, Matt, who helped us seemed to play a pretty significant role in their team. While we were welding our main spar they were near us getting their massive and honestly rather dangerous looking giant steel bike frame cart welded. We offered to help them paint their pencil but they seemed covered. We also prodded them a bit about their design asking how they welded their cockpit or if they had concerns around airfoils. Then we got into a bit of a tiff with Matt again about the importance of airfoils in general. Eventually we got the hint that we might be annoying them slightly and backed off, but they were definitely nice folks. If Flugtag was way less of a jocky advertisement and put any effort into promoting the science and education inherent in building airplanes, they would've offered a "Good Samaritan Educator" award and I would've given it hands down to Mass Instruction. They were a team of Boston Public School teachers, advertising for funding of public education, and yeah their captain was in a wheelchair. My guess is they all went to the same martial arts bo-staff class because their skit was a pretty impressive choreographed staff & crutch spinning display. They got a really good push, and things were looking good up until the nose of the craft stuck out over the edge of the platform. The wing got its first hit of upward moving air and the craft tipped backwards into an instant stall. For better or worse it was too late for the pilot to land on solid ground and instead landed in the water directly below the edge of the ramp, almost landing on top of their craft. The host chuckles out something about having "never seen a craft actually go a negative distance!" Little does he know how common and often un-funny this will be.

12” OFF = DEADLY BACKFLIP

Part of the reason why Mass Instruction stalled was because their center of gravity was too far back, like a drag racer easily pulling a wheelie because all the junk is in the back. But unlike in drag racers, the center of gravity in airplanes is much more important and *much* more sensitive. It was the night before launch, tired and worn, when we used some approximated lengths and bathroom scale measured weights to calculate our center of gravity and mark it on the cockpit with a little black line. Watching Mass instruction practically do a backflip because they were probably off center by about 12 inches lead Andy, J-lo and, I to wonder if that little black line wasn’t also dangerously off. J-lo was the genius math-man. To us his brain was a bit of a black box, calculations went in, decisions came out. Without any calculations to offer, Andy and I simply gave J-lo the data “we don’t want to backflip” via our scared faces. His face went into calculation mode… a few moments of churning mysteriously…. and...The marker came out and drew a line 2 inches in front of the previous one. No MIT aeronautics calculating program, no tape measure, no real explanation, just plain J-lo calculation intuition. Good enough for me!

Team “Boston Pours Swan Dive team”

FLIGHT VIDEO :: MORE TEAM INFO

Their team was from the Boston Pours beverage distributors and their craft was inspired by the Boston Common Swan boats to build a gigantic foam swan. I’m guessing distributing beer requires lots of insulating foam because it looked like they carved the body out of a 4x6 foot chunk of foam. It definitely passed the artsy test, I don’t remember their skit, and nobody was surprised when it instantly dove into the drink.

Team “Possibilities Are coming” - The $80K Draper Dragon

FLIGHT VIDEO :: MORE TEAM INFO

The magnificent dragon airplane was by far the most gorgeous craft on The Esplanade, and one of the prettiest I’ve seen ever. According to an inside source Draper labs spent nearly $80,000 building a 20’ long 22’ wide sleek as hell dragon/airplane. The frame must’ve been built out of carbon fiber with the fuselage and wing tightly wrapped with red mylar and somehow meticulously patterned with scales. The dragon’s head was also gorgeously sculpted and painted, probably out of foam. Their skit was quite amazing, a mini ballet representative of a scene in Game of Thrones, complete with 360

princess flipping, swordfighting and fake blood. Everything was going great for them until it really really wasn't. As soon as they untied the straps the dragon looked like it wanted to take off, giving no shits about the pretty skinny princess trying to weigh it down in the cockpit. In fact as they gave it their very

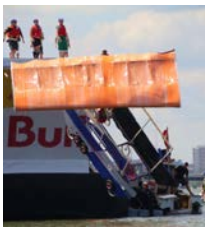
first little push the plane got enough lift to rise off the support cart and push back about 10ft. The crew immediately responded and just barely managed to save it and reset. I have no idea what gave them the cocky confidence to continue without much adjusting of strategy "Let's just give tossing this unstable $80,000 towards the edge another try." But that's what they did. By not making any serious changes it wasn't as surprising when during their final big push the left wing started to take off and tilted the plane at a 30 degree angle until the right wing hit the ramp. They kept pushing the rest of the 10 feet until the plane left the cart completely but still at an ever increasing right turn. The right wing dug strongly into the safety net on the right edge of the runway and became an anchor. This threw all the momentum of the plane outward and around its new fulcrum forcing the plane, and the tiny little lady still amazingly clinging on, into a full 180 degree swing before the wing came loose and the plane toppled to the water. The crowd gasped, many of them still with the image of the pilot tossed like a ragdoll burned in their recent memories. Was she alive?...YES! A review of the footage shows she actually popped right up with a big smile. I have no idea where she found that smile. A near-death experience and $80,000 shattered and backward, if any team deserves a reward for least bitter losers, I would give it to Draper Labs.

Finding out their pilot was ok was a huge relief, not only because it meant the show would go on, but that all competitors could now guiltlessly gloat over the fact that they had an amazing chance at beating the team with the most engineers who spent the most money. But the show didn't exactly go on as it had gone on before. As much as the hosts went on joking about "planes going backward" the safety guy clearly noticed the potential safety issue. From this point on every team pushed their planes off the ramp at a suspiciously slow speed.

Team "The Bullstonians"

FLIGHT VIDEO :: MORE TEAM INFO

I'll be honest, I have nothing good to say about this team. Their concept was a mashup of the two biggest and safest concepts to promote (Red Bull and Boston) and a craft that looked like a bunch of cheap billboard ads in the vague shape of a duck boat. They marched around with some sports trophies and an American flag and fell in the water.



“Team 90’s Nostalgia” - A random Russian birthday party and my new best frienemy

FLIGHT VIDEO :: MORE TEAM INFO

Next up was team 90’s nostalgia. FLASHBACK *wavy lines suggesting time travel* --> About 2 weeks after first submitting my application to Flugtag I went to a random birthday in party in Brookline of a guy my girlfriend met at a ballet show. There were Russians and singing and merriment and the expected general pleasant awkwardness appropriate for a meeting of such distant connection. But when I mentioned my having just entered into Flugtag one of the merrymaking men jumped up with a wide open face and said “Me too!” We continued freaking about how weird it was we shared this fact and then found other weird similarities which meant we had to be friends. That man is Eugene and he built the amazing craft 90’s nostalgia. Eugene operates at 2X normal human speed which somewhat explains how he was able to build that airplane in his backyard in roughly 6 weeks while holding a 9-5 day job as an engineer.

Anyway their craft was made of mostly PVC with the most technical focus on CNC’d airfoils (similar to ours but more). Rather than freaking out about fancy mylar wing-skin they wrapped theirs in packaging film from Home Depot and then spray painted the whole thing blue. I’m still not exactly sure how he rigged it but their tail wing had actual elevators which could be controlled by a pvc control handle where the pilot sat.

Having control surfaces in Flugtag deserves a badge of courage and honor as it’s a rather risky use of time and effort. The potential advantage of controls being the dip and pull out approach where the plane gains speed by tilting itself down and then converts that speed to lift just before hitting the water by pulling up and gliding a good bit further. The risk of controls being mechanical failure and this------> (which as I explain earlier is why J-lo did not think it was a good idea).

Aside from the marvel of their engineering-complexity-to-time ratio Eugene and his team managed to absolutely nail the look of the plane. Eugene is far too goofy to be a true hipster, but as a professional moustache maker, artisan woodworker, and megafan of the 90’s he sure loves to roleplay the part. The plane he built is an almost tit-for tat scale replica of the cartoon version built by the characters Ed Edd n Eddy on the show Ed Edd n Eddy in E8 S5 “Cool Hand Ed” (a ridiculous amount of info on this fictional plane here). When I first saw their craft in person and laid eyes on the *actual* trashcan they used as a nosecone I immediately gave them another badge of honor for authenticity. Who spends all that time and effort building an airplane to fly and then puts a trashcan on the front? Eugene does.

It was weird building a friendship over those few months sharing fears, notes and playful taunts, and then randomly meeting at parties where we instantly ruined conversations by jumping to Flugtag talk. Finally the day came and my new frienemy and his craft stood confidently ready to show me up on the big stage.

Interestingly that's exactly what they did for the first 5 minutes they were on the runway, stood around on a big stage. Will Christien kept talking to them even after the usual 30 second schmoozing period the host is supposed to do. She was clearly trying to buy time. I also noticed their plane was parked halfway down the runway rather than back at the usual start point. As the audience grew bored watching Eugene anxiously answer increasingly dumb questions it occurred to me that Red Bull was stalling to consider safety concerns. Did the jaw dropping pilot flinging crash of Draper Labs startle their lawyers? But then why did they let the Bullstonian's go? Anyway suddenly they're given the go-ahead and the Ed Edd n Eddy theme music starts. The team all don their cutout Ed Edd n Eddy character masks and dance around to the basic actions in the show's real intro, definitely not bad, but rather specific. Then Eugene hops on top of the craft behind the trash can with a firm grip on that handle which also actuates their elevators. The team pushes suspiciously slowly until the last second when they give it a pretty good haul. The plane leaves the deck and Eugene immediately pulls up on the controls and the elevators go up. This is the exact opposite of what I would've expected. Usually Flugtag pilots dive first then pull up, but it Eugene attempted to pull the nose of the plane up to get lift first rather than down to gain speed. It seems to have had a very slight effect on their angle keeping him fairly level for about 5 feet. But then rather than reaching a stall which would require Eugene to reverse the elevators, the plane goes into a steady 45 degree falling angle. Since the elevators are already up as far as they can go, Eugene has no way of correcting this angle so he leaves them up until he crashes into the water. As you can see if you play this video slowly, upon landing the plane flexes and then returns to a fairly intact state, floating fine. So far they land the furthest of any plane, obviously beat draper labs and I am very proud of them.

Team “2Flug 2Furious”

FLIGHT VIDEO :: MORE TEAM INFO

According to their page they are just a group of friends doing stuff who either “go all in” or don’t. I think they went pretty in on actually making it look like a comical muscle car, somewhat in on building airfoil wings, and not really in on originality. I can’t remember or find footage of their skit. Their launch was also suspiciously slow up until the edge of the ramp at which point gravity and wind completely dismantled it before it crashed into the water. My guess is they spent a very “appropriate” amount of money on their Flugtag trash-craft.

Team “MIT Monkey Ballers” - Easily the most hated team in the hangar.

FLIGHT VIDEO :: MORE TEAM INFO

Everyone at Flugtag including myself wanted MIT to both break a record we could “ooh” and “awe” at, and also wanted them to fail miserably. Apparently MIT spent apx $15,000 on their “silly banana themed” hyper aerodynamic carbon fiber glider. But as the makers will tell you in this video “a lot of airplanes are really quite simple” and “a lot of it was home building materials” (sure if your home is a space-station). They’re whimsical, adorable, oddly super tall and buff, and rich… minus the whimsical they’re the bad guys from every kids movie in the 90s. In my opinion their skit was dumb, just dancing around in banana outfits probably the same way they did at frat parties. Finally the moment of truth, they’re pushing, gaining a bit of speed, then suddenly, nothing we’ve seen before, the plane takes off just before getting to the edge of the runway. Unlike Draper labs it takes off with a stable and even lift as if god tugged on it’s string. It floats effortlessly for about 10 ft laughing at gravity and the competition...the perfect time for a cosmic comedic reversal. The plane then takes an immediate 90 degree nosedive into the water. The crowd goes wild, 50% “Ohh!!” and 50% clearly yelling “Haaa Haaa” fuckin smahty pants. As the genius plane builder from Flite Test mentions in this video, basically the lever and or string they used to control their elevator just broke under the pressure. Not only should their smarty pants math and testing have been able to predict this possibility but even a quick review of the Flugtag top 10 biggest fails clearly points to the need for re-inforced elevator cables. But I guess their cocky confidence got the better of them, and cost them $18,000 and an embarrassing placement behind teams who only used pocket cash and brute force to fling their backyard jock art.

Actually they *would’ve* placed behind these teams if they weren’t DISQUALIFIED from the event for later trying to steal back their craft from the claw & dumpster disposal crew. Haha, so much for being the confident jocks, at least Draper pretended to be good sports about it.

This fact was such a sweet little laugh for all the other teams like myself who would've loved to do the same for their own crafts but didn't out of respect for the rules and in honor of the zen-like non-materialistic attitude of the event… also unlike MIT we didn't have a crack team of boats and jet-ski's ready to try stealing it.

Watching the two teams who most represented the snobby tech-hipster-ification of Boston fail was a joy to watch and a gift to all their competitors (other teams and anyone trying to afford rent in Boston/Cambridge). But this laughter and joy slowly faded into another more boring thought,

"Soo.. the best teams in this competition went a combined distance of 0 ft, and it's only ⅓ of the way into this event… are we going to see anything fly today?"

After MIT crashed Andy, J-lo, and I all glanced at each other. So, this is like, good right? We're gonna beat MIT and Draper! We're gonna beat MIT and Draper! We're not gonna crash like MIT and Draper… right?

Team "Murphy's Claw"

FLIGHT VIDEO :: MORE TEAM INFO

Next up was Murphy's Claw. The initial design sketch they presented at the initial meet and greet was very impressive. A 20ft lobster with wings, I couldn't wait to see that. Either they never intended to meet that goal or their attempt to balance between crafty humor and flyability tipped toward flyability much like most teams did including ours. In their case went so far toward the flyability scale that the lobster fell off the plan completely. It was a pretty aerodynamically designed airplane with the standard 20' flat wing and a somewhat unique use of a rear V tail stabilizer. The only lobster thing about it was the red color. To their defense the cart was a big silver pot and they put a ton of effort into their skit. The man dressed as a chef and the other crew chased the lobster pilot around with big comically sized knives and forks until they killed him and put him in the plane. They started to push and low and behold the plane started lifting and tilting just like Draper Labs. The announcers poked fun at how it "badly wanted to crash" while the deck crew ran to keep it stable and helped *walk* the cart to the edge. They ended up with about 2 feet between them and the edge to suddenly give it a push. Without any real forward speed the downward angle was really intense and the cart flipped up just barely hitting the plane in the ass as it did its best to fly. It probably would've done alright if they had more speed on the ramp. I wonder if they experienced the same tilting issue as draper labs in part because both of those teams had completely flat wings. We chose to give our main wing the V-shape because it allowed the wings to counter this naturally. So it was either our genius design that saved us from this fate, or more likely, the wind was stronger in the earlier part of the day.

Team "Something Wonderful"

FLIGHT VIDEO :: MORE TEAM INFO

The next team up was the glittery shiny team "Something Wonderful." Their craft was essentially a giant delta hang glider made of PVC tubing with a semi-rigid membrane (possibly corrugated plastic) with shiny plastic on the top. The team wore the same shiny plastic cut with frills to fly behind them as they pranced and swooped

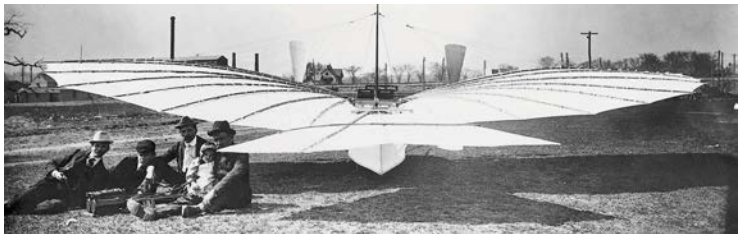
in their interpretive dance skit. They all wore hearts on their helmets and the craft had big hearts on the wingtips. It was a bit eerie to hear all these dudes talk about love and romance and wear these hearts, much like it might feel to hear the same thing on a date, they seemed to have an ulterior motive. That motive turned out to be selling their product, a romantic custom greeting card company called lovepop. Eww. What made the romance story even more icky was that their initial design had a giant "popup" cutout of a Red Bull logo on it's top. Supposedly it "broke off before their flight" but my theory was they cared a bit more about flying/winning than kissing ass and just removed it.

I wanted to see them fail but with a fairly good push their plane was up, it was level and the crowd gasped. Unlike MIT it didn't instantly plummet! The pilot clung onto the PVC undercarriage arms and thanks to a perfectly positioned center of gravity stayed level as the plane slowly and gracefully tilted down to gain speed and descend. As it did the pilot intelligently leaned back to tilt the plane more level and maybe added an extra 5 ft in distance. After watching the video more closely or by looking at this photo --->, you can see that a few seconds after launch the main support strut for the left wing disconnected. The wing tilted up slightly which probably lost them a bit of lift but surprisingly didn't do any further harm as one might expect. One thing I learned about flight (perhaps wrongly) from this Flugtag experience is that wings really don't need as much horizontal rigidity as I thought. If they had more speed and that arm hadn't broken, this cheap flat glider might've even gone the farthest. The crowd was very pleased as they indeed witnessed something that looked like flying.

Team "Gusdave And The Whiteheads"

FLIGHT VIDEO :: MORE TEAM INFO

The next team up is "Gusdave and the Whiteheads." While whitehead may conjure thoughts of racism or zits, it just so happens to be the last name of the man whom many believe invented the first successful plane, two years before the Wright brothers. Thanks to their team and this wiki article I've come to learn more about this man who truly did pioneer flight using a similar fly by the seat of one's pants attitude as us Flugtaggers. In fact Gusdave actually did steer his plane by simply leaning left or right.



As you can see in this compilation build video, the Gusdave team spent a lot of time designing this rather elegant craft. And as much as I hate to say anything nice about Connecticut, they seem like real nice Connecticuters having shown of the plane to public before taking it to Boston.

Their skit was kinda dorky and kissed up to Red Bull by feeding the giant Gusdave head a can of Red Bull but their costumes were neat and the head was a well made prop. Like the teams just before them they had a suspiciously slow launch at walking speed up till the last little push. The glider looked like it would've flown alright, maybe a 45 degree angle but since it was moving so slow the cart falling behind it knocked up the tail of the plane tilting the nose down to about a 50 degree angle which it continued along for the second before it hit the water. Being that the pilot actually sat on top of the craft, as Gusdave might have, as soon as the plane hit the water we got a clear view of the pilot plunging face first into the water. The crowd cheered and "ooh'd" at the sight and sound of the pilot faceplanting. The plane did pretty good, and seemed unharmed by the landing. I really do appreciate the simplicity and artistry of their design, even if it wasn't original ;) One beef I had with the team was that they used a fair amount of wire rigging to keep the wing from folding up or down. We were told this wire rigging was prohibited or would at least require a drag causing foam covering. Maybe they got a special pass because they're craft kinda looked like it belonged in a museum.

Team "SpaceWolf"

FLIGHT VIDEO :: MORE TEAM INFO

I honestly don't know what this team was aiming for concept-wise. I feel like they just got high on something possibly hallucinogenic and finger-painted the idea on craft paper. Then, like nearly all the teams, they eventually decided to just build an airplane. They must've had someone engineer-minded on the team or really did their homework because the plane came out rather plane-looking, airfoil and everything. It looked like it had a PVC frame and foam airfoils with a legit heat-shrink skin (possibly boat heat-shrink). They finger-painted Spacewolf on the wingtips and called it a day. They were really enthusiastic kids which I think won them some points and airtime but their skit was just them dancing around in circles. They pushed at slow jogging speed and glided down at about a 40 degree angle. Considering the teams before them it wasn't half bad. I give them a 7/10 on gliding, 2/10 on creativity (because I guess coloring outside the lines counts for something).

Team “Flyin Ryans”

FLIGHT VIDEO :: MORE TEAM INFO

I don’t think I’ll ever forget this this team, for the gorgeous construction of their plane and the fact that their team leader was a middle-aged man with a buzzed haircut died in leopard pattern gold and black (not to mention their team name is sadly similar to that of the worlds worst movie about heelies). Yeah, his hair was a leopard print, even the day I met him at the launch party event in Boston. We got to schmooze a bit, he was a really nice guy, ran a bar or something in Boston. We talked construction a bit and then went into the rather heavy conversation about their team concept. Essentially their friend Ryan died a tragic death and they wanted to honor him. I thought that was super sweet and touching and that Flugtag was an odd place to attempt sweet, touching, and honorable. I think he and his haircut suggested they understood that, but that Ryan would still have appreciated it. His teammate then showed me his phone that surprisingly had a candid photo of our very own Andy on it and asked if I knew the guy. I said yes, he’s my teammate, our pilot, he’s right there. Apparently his friend was a big fan of Andy via his association with Stompy.

The next time we met up again was at the Artisan’s Asylum. While we were in a messy rush trying to bend and weld our steel tubing they were in an even less developed mess to begin cutting their metal tubing. While I didn’t envy their level of completion I did envy their square aluminum tubing (read about how much I tried to get aluminum 30 pages earlier). I asked where they got it and they mentioned the metal supermarket in Woburn. I had researched it but for some reason didn’t look into it. It turned out a lot of the teams went there to get good prices on aluminum. Dang! I had just missed the place (checking that other place in Woburn instead). What the Flyin Ryan’s planned to do with this metal seemed very ambitious to me. The structure of their craft was essentially the same ribbed wing design as Gusdave and The Whiteheads chose but based on a Davinci design which seemed to require even less rigging, more elegance. The design seemed simple to the point that I figured it might fall apart. But I wished them the best and didn’t meet again until flying day.

Their craft was absolutely gorgeous, a close second place to Draper Labs in looks. It was exactly as they designed it except now flushed out with a vibrant red wing skin pulled taught with a sexy black corset string. It was definitely the aircraft of a vampire, a sexy sexy vampire. I congratulated them on their craft, talked shop for a bit, found out their plane surprisingly weighed more than ours, and left them to argue over whether the tail should have 2 or 3 speed stripes.

Their skit was what you might expect, heavy, solemn, slightly silly, a bit awkward, intense. They paraded around a giant image of their friend Ryan dressed as superman. It was moving for sure, now to toss their beautiful shrine-craft into the Charles River. They had an alright push especially at the end and the plane went out about 15ft before even really starting to fall. I think this was a case where their center of gravity was only slightly too far back, probably because the wings had the greatest surface area up front. This placement of the CG along with the fact that a ribbed kite creates a fair amount of drag caused the plane to turn into a bit of a parachute. But it was a darn good and attractive parachute as it slowly fell down and slightly forward. It’s elegance in falling matched its elegance in theme and design, all around a solid performance.

Team “Boston Creme Flies”

FLIGHT VIDEO :: MORE TEAM INFO

During the event I wondered why the Boston Creme Flies plane had a big blue “C” on it. I later found out that team is from the company Motus who, according to their website, is a “curious, brave, and exceptional" startup that tracks car mileage and for some reason has a blue C as their logo. According to the almost painfully cute videos they posted on their company's youtube page, they put a lot of design work into the wing, and even paid a dancer. This explains to some degree why their airplane came out looking really good, but it doesn’t explain why their skit was a pretty lame 80’s hair metal dance (possible explanation: men aren’t good at admitting they might be good at dancing). The plane actually looked a lot like the plane from Flite Riot which was built by professional aircraft designers. How would a software startup make such a good airplane? Maybe I’m just being a spoiled sport with my suspicion, but personally I wondered if the dancer was the only person they hired.

Anyway they got a good distance, medium speed push (I think the wind was starting to die down) and the plane went down at a 50 degree angle. Interestingly it stayed at that angle until it hit the water a second later. I say interestingly not only because the plane looked good enough to convince the audience it would fly better, but because upon close inspection they had not 2 but 4 control surfaces! They not only had movable ailerons to counter for left-right yaw or tipping but also elevators on the tail which are designed to make the plane pull up out of such a downward angle. If you watch the video closely those elevators do not budge an inch. Why would a team with an understanding of aeronautics strong enough to add more control surfaces than the winning team not use them?... Unless perhaps whoever helped build it was not on their team…. I rest my case your honor. Either way, it sure would’ve been neat to see it pull up at the end and fly.

Team “Live Free or Fly”

FLIGHT VIDEO :: MORE TEAM INFO

Being the first Flugtag in New England this pun just had to happen. I can’t seem to find any information about the team so I’ll relay what I remember and see in their video. I’d say they rank #3 in terms of artistic creativity among the whole lot. While their initial craft description doesn’t even mention an airplane but again, like most teams, they added one. But unlike most teams they didn’t let the temptations of gliding grangure drive out all artistic endeavors. No I’d say they did just the right amount of airplane: a fabric skin covering pvc tubing (I never would’ve expected PVC to work as well as it did)

and just the right amount of art: a giant painted eagle head cutout and the rest of the glider covered entirely in plastic feathers. They didn't even let it cross their minds that fewer or no feathers might significantly decrease drag and increase their distance. No it was full feathered freedom and or fly. And to much surprise, it did fly! This giant floppy eagle float flew just as good as every other covered PVC delta glider on the esplanade, about 26 feet out over 20ft down...flight-looking!

The fact that planes with such simple and cheap construction actually fly is perhaps one of the most painful lessons Flugtag teaches. It laughs in the face of logic not just playfully, but literally. The painful part comes when you realize you could've spent $79,800 less, or maybe $600 less, exchanged aluminum for steel, steel for PVC, painted feathers for trashbag feathers, and in the end gone almost just as far, if not farther.

Team "Barstool Pirates"

FLIGHT VIDEO :: MORE TEAM INFO

If I didn't know better I'd say the barstool pirates were a bunch of jocks who scrambled together a pirate ship because pirates are kinda funny and they're going in the water. Now that I do know better by visiting the home of their team, barstool sports, I can definitively say that they are a bunch of jocks who scrambled together a pirate ship. I'll give them credit for actually building something resembling a pirate ship that the pilot stood on. They could've totally half-assed it and just made it a cardboard cut-out, but no it was legit, 3 dimensional and held their pilot dressed as a parrot. It even stayed in tact as it careened off the edge of the platform (they pushed hard despite what the safety crew probably said). The ship dove off at the same arc as the wingless humans immediately jumping after. Actually their pushers jumped at the same time as the craft which is a Flugtag safety rule they broke but led to a really cool looking photo. I doubt they will be allowed in another Flugtag, kinda the same way they were told by the mayor of Boston to stop hosting public "Blackout" drinking parties.

Team "Copezilla"

FLIGHT VIDEO :: MORE TEAM INFO

This crew from the MIT Earth, Atmospheric Sciences and Planetary Sciences dept. built a craft that was probably the most mis-understood. Everyone passing their giant multicolored one-eyed sesame street looking corn-dog with wings probably just thought it was the embodiment of crafty creativity, as I did. But upon hearing their teammate explain that it was actually a massive scale replica of a real organism called a copepod that lives in the Charles River, the colored balls as eggs, the wings as its "oar-feet" (what copepod literally means) and the giant eye all made sense. The craft deserved mega credit for the creative and eye-popping construction. If they could've managed to get their message

across better they would've gotten even more points for demonstrating something perhaps more locally relevant than the Red Sox or the Bruins.

Their skit was cute. It involving waving large red instruments and a net which were all probably representing something scientific understood by none of the distant audience. Then their cowboy hat strapped pilot got on top, they gave it a fair push and dropped just like the bomb in Dr. Strangelove splashing to meet its microscopic relatives.

Team "Flite Riot" - The winnerest team

FLIGHT VIDEO :: MORE TEAM INFO

Yep, they took first place, and you may have heard me mention them a few times because as the winners they not only get a trophy, but the attention and ogling of all the other nerds. But up until the day of launch I hadn't noticed them. In fact I don't even remember if they were on the original roster, but it could be that their very plain plan just didn't stand out among the crazies. While perusing through the other crafty monsters on the day of the event, the only thing that did catch my eye about their craft was the bright red color and the highly professional looking build quality. They were the only team that just straight-up built an airplane, no joke, no gimmick. This makes sense when you learn that they are a team of two professional airplane building companies, Flite Test and Rotor Riot.

Before all the planes ended up in the trash I took a moment to talk to some of the guys about their specifics. The questions I generally asked fancy looking teams were "How much does it weigh?" "What materials did you use (steel vs. aluminum)?" "Where did you get said materials?" "How much did it cost?" and "How did you pick your airfoil shape?" The answer that usually surprised me the most was the weight, I'm pretty sure Flite Riot was the only team I asked whose weight came in under ours (though I'm sure MIT and Draper did too) but only by a little bit. I asked how they got it to be so light and yet strong. The leader of the pack and owner of Flite Test, a tall kinda baby-faced sweet dude named Josh Bixler, was happy to show off their custom fabrication formula. Their main wing support was not metal but in fact a long rectangular slab made of wood. This rectangular shape makes sense because when placed in the taller orientation it allows for maximum resistance to flexing, but wood? Isn't that heavy? That's when they pulled out their specially made presentation sample. The sample looked like a 1x2ft plank of wood but when they handed it to me weighed practically nothing. When they asked me to try and flex it I was totally unable to, it was rigid as rock. When looking at the end of the sample they explained what I saw. The bulk of the plank was actually lightweight foam, then on either side of this foam they fastened two long strips of super thin plywood with copious amounts of Gorilla Glue. I asked them again…"Gorilla Glue?" I made sure Andy and J-lo were nearby to hear these experts gloat about a glue A and J refused to consider. They said "yeah, Gorilla Glue is unbeatable, it's by far the strongest way to create these composite boards." I caught myself shaking my head in disbelief and total understanding as I handed the piece back. To make myself feel better I guessed that these guys spent a ton of money. When I asked they replied with, "Well we budgeted $500, and we came in right under $500." Fuck you, I thought...how? They explained that when looking for a main fuselage bar

they just got lucky and found someone selling a giant aluminum tube on craigslist. It weighed a bit more than they wanted but it worked. They then went on to explain how their tail functioned with its fancy controlled rudder and elevators. I thanked them for their time, they said “no problem” with the stage politeness of someone used to the ogling, kinda the way JK Rowling might at a book signing. As further proof of their professional approach to sharing themselves, they made an awesome how-they-built-it video and released it within a week of the event.

I liked Josh Bixler, but to be honest, the other guys who were all dressed in black, wearing backpacks packed with drones, and wearing tons of logos, kinda put me off. Flugtag is a mix of art, chaos, comedy, character and aircraft, and Flite Test seemed to be lacking in all but the last. As I walked away they finished putting the pokeball “art and character stand-in” stickers on their perfect plane.

In my opinion their skit was lame, 90% of the credit went to their pikachu costumes which were some of the first costumes loud and boring enough for the audience to actually understand from a distance. They ran around randomly, then threw rubber pokeballs at one team member to suggest they were catching him. They kicked the balls off the ramp and called it a sketch. The audience liked it, things happened that were big, noticeable, and yeah, Pokemon Go was just getting big so it didn’t take much to tap that bulging pop reference.

They got a medium strong push, the cart fell out from below and the plane hardly changed course. It glided straight forward with a modest 30 degree downward angle. The pilot pulled up on the elevator, the line didn’t snap, the elevator did what it was supposed to and tilted the plane up about 5 degrees getting it about another 10 feet before gliding to a wet stop at about 65 feet. The crowd went wild. For whatever reason, be it the lower height, wilder Boston wind, or the will of the people who magically knocked MIT out of the sky, thanks to Flite Riot who landed at about 200ft from the world record 65 feet is now the Boston record for furthest flown Flugtag glider. Needless to say the judges approved.

Team “Five Fold Flyers”

FLIGHT VIDEO :: MORE TEAM INFO

I wouldn’t be surprised if every Flugtag in history had a “paper airplane” team, but these guys took it to eleven. Even up close it looked like a paper airplane. My guess would be at least one member of their team is in woodworking and or canvas-making. They had a beautiful

wood frame that held the two folded halves in rigid formation at the center fold. The skin was a tightly taught canvas wrapped around this frame stretching in all directions to the fullest allowable 20x24 feet. I don't remember their skit. They got a kinda slow push. It was very Flugtag appropriate surreal fun to watch a very realistic gigantic paper airplane travel across the sky with a little man riding in it. It didn't matter how fast they pushed, even with a massive surface area there was nothing the canvas could do to keep all that wood from returning to earth with speed. In fact the plane fell just as fast as the cart, all toppling and splashing, little man, cradle and all.

Team "Greased Lightnin"

FLIGHT VIDEO :: MORE TEAM INFO

Their Red Bull page literally says it all "Our craft is A 1932 Ford hot rod. The skit/music will be based on the Grease movie. Will be dressed in greaser mechanics overalls and will play the song "Greased Lightning" on the ramp as they prep the car for launch." They nailed Americana, and they pretty much nailed the look of the craft too. It was a very simple but clean construction, inflatable goodyear tires, red-painted wood frame, shiny dryer vent tubes as external exhaust leading from the engine consisting of two large inflatable Red Bull canisters. Why so Red \Bull-y? Just to get points from the judges? Nope, turns out the existence of their team is predicated on another Red Bull allegiance, the actual MLS club soccer team "The NY Red Bulls" owned and named after Red Bull. All in all I give them some points for a clean creation.

In honor of their speedy looking car they pushed that thing with all their might. Gravity and the lack of real wings sent the car off the cliff in the same trajectory of a real car, down. But this launch included one thing we hadn't yet seen or expected. About a third of the way down their pilot leapt like a frog off of the car and soared through the air like superman. He was the first person to actually dive into the water head-first. The car landed at about 10 ft, the man at about 30ft, very impressive.

Team "Flying Franks"

FLIGHT VIDEO :: MORE TEAM INFO

This group of Northeastern students were one of our close hangarmates. They had a decent aircraft, full size 24ft wingspan with a concave airfoil and wingtips. It's important to note that their airfoil had a much more aggressive curvature than ours. This intense downward curve is designed for increased lift, but it also increases drag. Their wingtips were also rather large, to help trap even more air and generate more lift. These wingtips may have also been large to hold the large Kayem Hot Dog sponsor logos we were both disdainful and jealous of. The wing was largely skinned with a semitransparent plastic (perhaps mylar) and the wingtips and all other

highlights were red perhaps to suggest the plane was a hot-dog. The cart was well decorated as a bun and their crew dressed in minimalist representations of catsup mustard and one guy wore what looked like a puffy fat suit--oh! a bun! Their skit was cute, chasing the guy dressed in red (hot dog) to the tune of Blondie's "one way or another" until they "got" the hotdog, put him in the plane and slowly started pushing. Immediately the plane started to lift up. It was windy, and their plane was designed specifically to ride that wind upward. The announcers and everyone else kinda held their breath as the team steadied the plane and the pilot positioned himself far more forward. Either propelled by nervous energy or perhaps instruction from the flight crew they did not wait for the wind to die down and just gave it one more go. As they neared the end of the deck the plane did it again, rising straight up just like MIT did (interestingly their wing shapes were kinda similar). The audience "Ooohed" as they thought they might actually see flight. But what we all learned that day was that when something goes up, and only up, not only must it come down, but it comes down rather uncontrollably. The increased drag created by their wing kept the airplane from gaining any forward momentum. In fact there was a moment where it looked like the plane might land exactly where it took off on the edge of the flight deck...But, no they *just* missed it. As the plane slowly fell on the cushion of air, the left wing tip caught the corner of the deck and crumbled. In a reaction, the rest of the plane angled and lost its hold of the air, tumbling to the water just below the deck… another MIT style failure but this time for way less money. The lesson of lift-to-drag ratio which seemed so abstract in the designing phase was starting to make much more sense to me. Either you design a wing with a high lift meaning high drag, and include reliable controls to keep it from teetering, or you shape the wing more thinly creating less lift but allowing the lower drag to help you easily slice out your forward path through the airstream.

Interestingly I was at the Somerville Y a few weeks ago and played basketball with strangers as the Y so awesomely promotes. In the locker room I talked to one of the players named Braiden. He mentioned he was in engineering so I mentioned I was in Flugtag. Braiden perked up and said "No way I was in the Flying Franks!" "We were neighbors!" It was a hilarious moment of small worldyness. It turns out they didn't get the major bucks I figured from their sponsors, so perhaps it wasn't such a big deal we didn't get labels. Go to the Y, that's the moral here.

Team "Fight ORR Flight"

FLIGHT VIDEO :: MORE TEAM INFO

For all the crap I give to jocks in this thing, I really need to take time to make fun of how dumb I was for not getting this reference until embarrassingly close to launch day. I think it was the gathering event before launch where I suddenly went, "Wait, that's not just any hockey player, that's that hockey player who was in that photo where he dives and looks like that. And that guy's name is something like… Bobby Orr! Oh man." What makes this one million times worse is the fact that I happen to own an autographed version of that very photo. As a kid someone gave me that photo assuming I might one day grow to be the kind of honorable Bostonian who would cherish and appreciate it. They were wrong in so many ways and I had just proved it. Anyway these engineers/jocks seemed very nice.

They built a huge paper mache rather proportionally accurate horizontal hockey player, painted it and then I guess spent the leftover time building something plane shaped. Honestly their Bobby Orr was pretty good, their plane looked like they watched some youtube videos or saw wing designs online and tried mimicking them with PVC and boat heat-shrink covering. The wings sagged under their own weight, not a good sign.

As if being a giant symbol of the Boston Bruins wasn't playing the home team advantage enough, most of their skit was just them trying to get the entire audience to sing "Sweet Caroline" with them... "Bum Bum Buhhhh." I still have no idea what that song has to do with Boston or sports, it was kinda lame. Then they saved the skit by tearing off their pants stripper style, throwing their little hockey sticks in the air and having one of their members run and jump into the interlocked arms of the rest of the team posing just as the famous Bobby Orr photo. Then they put Orr in the cockpit and pushed the jock-sculpture/plane off the ramp fairly fast. To the surprise of everyone including myself the plane went straight, gaining about 30 feet before the left wing simply warped and sent it in a leftward dive into the water. I can't really figure out why their plane worked. Perhaps it was the large kite-like surface area of the wing, the strong push, good wind, or perhaps just like it did for the Flyin Ryans and *didn't* for MIT and Draper, people just wanting it to fly made it happen.

Team "What Sphinx?" - 4 months of my life = 30 embarassing seconds + 3 to make it all worth it.

FLIGHT VIDEO :: MORE TEAM INFO

As each team fell off the end of the line we marched our giant cart/contraption one spot closer. It was a bit of a struggle making sure to dodge any nearby tree branches that could tear lethal holes in a single scrape. Alongside the fear of pre-flight collision I had horrible images flash in my head of the thin ¼ threaded axles holding our wheels sheering off. I kept those fears secret from the rest of the team all the way till our runner up spot. Apparently Red Bull only paid for about 15 life vests and helmets, so we had to wait for the team 2 in front of us to get out of the river before their soggy safety gear could be handed to us. My fingers and mind squirmed so fast I just barely managed the dexterity needed to duct tape our shiny pharoah hats to the helmets. One last look at ourselves, a few high fives and nervous jokes (I'm pretty sure Jeff kept mentioning how Andy was going to die) and just as Fight Orr Flight finished their skit we were given the go ahead to ascend the ramp.

Keeping a 200lb cargo with 4 steering-less wheels moving up a ramp in the right direction required just enough attention to stave off the bubbling mania that the moment, the open air, and the thousands of eyes were stirring in me. By the time we got to the top, my mind was about 90% adrenaline which is why the memories begin to fade to a blinding white. Pushing the plane was going to be self-explanatory, there was no time to practice our skit, so the one thing I kept manually refreshing in my head was the joke. "We actually don't have any fart jokes, we take this seriously, it is our belief system, this is serious. Hail Sphinxtor Pfff"... oh yeah and then the backup joke...something about a pharaoh's fart… well I probably won't need that... We get into position, Mr. raspy-voice host-man asked for the leader to interview. I stood forward and presented myself with forged pride. His began his first question… it was supposed to be, do you have any fart jokes?... I was prepared for that… the words that come at me are, "So, tell me, what was your inspiration for the team." My mind scrambles, "Well you know it was about 10% inspiration and 90% emanation, but you know we actually take this really seriously, this is our

life, this is our religion “HAIL SPHINXTOR!” The audience is clearly confused. But that’s just when then the hailstorm of failure really begins. Thinking I’m done I then hear him ask “Do you have any fart jokes?” My brain is freaking out… wait, I just did my response to that, why do I not have an answer? Ummm, shit, backup joke Go Go Go! “What do you call a pharoahs fart?” “What?” he says… my brain is a complete blank…. feel the heat of a thousand eyes melting my face and turning it red, the ticking time exponentially crushes my confidence into a tiny ball that dies a giggling death. I bend over, laugh, and say “Bomb…” The audience boo’s, I “Booh” with them. The host does the right thing and says something like “Well that was a bomb...” I get up and we run out to do our skit. I’m like bambi out on the ice except my mental legs are even more wobbly than an infant fawn.

We just barely manage to form a line when the music kicks in, it’s good, it’s loud, it’s funny, this may be our chance to redeem ourselves. Way before cue I start sniffing buts, I ruin everything. My brain is frantic, it’s remembering vague instructions we came up with before we decided to do the whole one person at a time thing. The other guys notice I’m ruining it and like good sports try to look like they know what they are doing. With all the random nose holding, hand waving and ass sniffing we somehow manage to look even dumber and more confused than our theme and costumes might suggest. Then the music starts to lead to that one big cue I actually do remember, I point to Andy to try putting the rest of the team on track. Andy doesn’t seem to really know what’s going on. Then the cue hits: “When I’m next to YOU!!” Andy kinda waves his ass fabric, the rest of us kinda pretend we are hit with a smell, it’s a pathetic end to a pathetic skit so I do the backflip, the audience gives us a gracious 3/10. One host politely suggests the backflip may have saved the skit. The other host says he’s not sure if it can be saved but at least gives us credit for the “pull my finger” on the back. “Here they go” he says as we frantically untie our craft from the support bars, remove the 2x6 wooden safety plank and get into position. I give the finger one last pull as the fart flies up a bit and the host gives the move a shout-out.

The camera crew surround us, the safety guy reminds us to push slow… that last sentence goes in one ear and we emanate it out the other. We scramble into our pushing order and then magically push at the same time. We push as hard and fast as we fucking can (at least I do). As you can see in the video Andy is as stoic as ever. As much as I make fun of Andy for being a bit of a robotic evil-madman, I couldn’t possibly have appreciated his robotic acuity and stoicism or his kamikaze-like bravery any more than that moment. He doesn’t even flinch upon his feet suddenly leaving the ground. I watch as Andy is whisked

off into the distance by our Stinky Sphinx lord and I am immediately proud. The cart falls and as you can see in this image and video clip it angles up. The back push bar gets closer and closer to our lion's body, threatening to give it a knock and point us down as was the fate of so many crafts before us.

FLASHBACK to 3 days prior at 10:30 PM (page 18 in bold) when I'm fussing about the importance of the height of our rear push-bar, for fear it might hit the tail. It's late, we're tired, Andy and J-lo just hold it up to a level they figure would work, I screw it in.

FLASH FORWARD… that very push bar angles just enough to either miss our tail by a hair or just barely tap it, maybe losing a degree of upward tilt. But the plane continues unhindered by wind, wings refusing to flex, holding its strong 45 degree angle till Andy smashes powerfully into the water and the craft goes ass up at roughly the 45ft distance marker.

The audience is very pleased. The hosts mention how well we did with phrases like "We may have saved the best for last!" and "They did place their pilot far in front of the craft which is the point where judges consider distance flown" "we may have a contender." As it turned out, the professional skateboarder turned beach-bum sobriety crusader and Flugtag judge, Tony Alva, gave us the highest score for having "clearly put a lot of work into our project." Thanks Tony! We did!

None of this I hear, it is all drowned out by the inflush of dopamine and adrenaline swirling around in my head, tugging my face into a huge open smile and pulling my arms up in the air. I try to initiate a synchronized final fart maneuver with the other guys still on the ledge with me but they too are deaf from

joy, plus we fuckin suck at synchronizing things. So I bend and do a last flailing of my fart fabric. Before I jump the safety guy grabs me with his glare and says “DON’T BACKFLIP.” Understanding that we’ve already tempted his wrath with my previous hardly safe-looking backflip and directly went against his request to not push hard I smile and confirm I will jump safely. So I do a boring pencil dive, the wind whooshes up, I’m weightless for about 1 second, then SPLOOOSHSLLFHFHTH I’m in the Charles River for the 3rd time in my life. I float-swim to the surface. I emerge as if I’ve been baptized, cleansed of all the tension, and fear of fucking up, and of the guilt for having fucked up what I did. We went kinda far! We did it! Andy isn’t dead! I confirm this by looking around at the other shiny soggy hats bobbing near me. I see Andy’s upon his head as he lies like a beached siren sparkling in the sun and glory upon the back of the Red Bull jetski. The jetski comes over to get us. We grab hold of the large floating platform the jet ski tows behind. Rather than letting us climb on he just starts revving away and it’s a bit of a struggle to resist the tug with one arm while my other keeps my hat on and I laugh with the other soggy cargo-mates. The jetski drops us off at a small exit ramp near the big entrance ramp. We climb out and release gallons of Dirty Water and copepods from our floppy synthetic rags. I squeeze another half gallon out of my hat as I schlomp onto the grassy perch where another reporter meets us.

The reporter is a nice lady who again strangely has a British accent. She and her camera man seem ready to soak in the frantic excitement we’re dripping with. We nervously joke about the Charles water. In fact before the interview we make sure to douse ourselves in a bit more grass and water to make it “realer” looking for the camera. Then Max has the bright idea to hold our hero pilot Andy in a horizontal plank across our arms. As we continue to joke and answer questions the burning in our forearms soon explains why this cheesy pose is only seen in still photographs. We say the final dumb thing and the interview ends, we put Andy down, arm workout done for the day. We schlep further onto land to meet our adoring fanmilies. My girlfriend, mom, and dad, all wearing our custom shirts, hug my wet self. Max’s dad and sister greet him, Andy’s mom, dad and bro do the same with him. Jeff’s girlfriend and family are there too, and so is J-lo’s mom. Despite all our grossness we are one of the cutest fucking teams around.

We are then called in for our post flight interview. We decide that Andy and I get the two chair seats next to the host and the rest of our crew get to stand behind. With a clear knowledge that my most recent public performance left much to be desired I decided to attempt to redeem myself a tad by remembering the punchline to my joke. I ask the host if I can say it right after the camera cuts to us. He agrees. The media director cuts away from the runway hosts and send off to the interviewer, I suddenly see myself in the monitor in front of me and say “A NOBLE GAS…” Whether anyone got what the fuck I meant by that or not I didn’t seem to care. It was like a stuck fart I just had to release. The interviewer asked us some questions, I think Andy answered most of them in a fairly robotic form, mentioning our center of gravity and the use of steel. I was super proud of Andy for many reasons, but in this case I was actually proud of his pure science in the face of what was clearly a call for more goofy entertaining material. Go science.

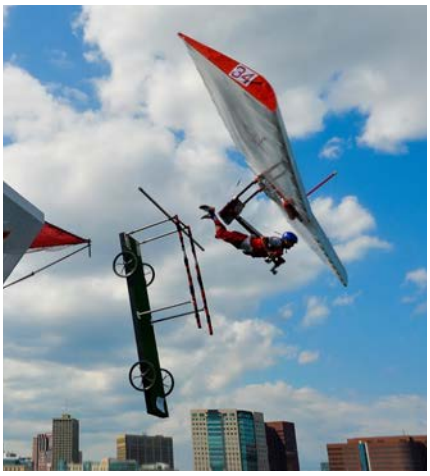
I assumed that would be our final chance to embarrass ourselves in front of a Flugtag audience. Even if we didn’t go the farthest, I was super proud of our team, the whole experience, not catastrophically failing, and even beating MIT and Draper Labs. I was delightfully surprised when a Flugtag rep came over to us and said, “Don’t go anywhere, you guys might be in second place.” “WHAT?!” Another round of jumping and hugs commence. This was truly turning out to be a huge return

on our investment. Like a good son of my mother I very opportunistically tried to see if I could get the ultimate return, and asked the guy if we could get our craft back. To my utter surprise he said “I think so, hold on, just don’t go anywhere.” I knew it was too good to be true but I let the glow of optimism surround me as my family, crew, and I watched the rest of the show.

Team “Papi”

FLIGHT VIDEO :: MORE TEAM INFO

I just barely caught a glimpse of their launch in between soggy interviews. My strongest memories of these guys was as our immediate neighbors. Right off the BAT (lol lol lol) I kinda didn’t like them for the shameless fact that there was nothing more simple, obvious and boring to do than a Red Sox plane. But of course there had to be at least one, and to their defense, these nice older dudes made what looked like a kickass plane. The wings were rigid, tightly heat-shrunk onto a simple but clearly airfoil shape. The cockpit was super simple, just like ours and many others, the old forklift L shape. Interestingly I think they were the only plane-shaped plane with no tail whatsoever. They were just one big white and red wing with a dude hanging below. I remember their pilot was super psyched, even more than we were, as he practiced his hanging position in the runner up spot. He was so set on it working out, which made it that much more painful to watch as he and the craft face-planted into the river at pitching speed. They had an ok push, not too fast, and just as the ground left them their center of gravity became the clear issue. I think they put their pilot too far forward, which caused the plane to tilt down. With no tail or elevator to counter this, the wing went above a 50 degree downward angle at which point it was no longer carving a forward path and instead became a pickaxe pivoting along the weight of the pilot into 90 degree downward angle before slamming him flat against the water.



Watching the video you can see that the pilot is super pissed. I’m just speculating but perhaps this un-sportsman-like (very sports man like) attitude explains why they didn’t end up on the official score chart at all. Either that or they're currently suing Flugtag for face-plant related injuries.

Team “Flying Selfies”

FLIGHT VIDEO :: MORE TEAM INFO

These kids, (and I can call them kids cuz they looked young and made me feel old for not knowing what the rainbow vomit meme was) were our second neighbors and I’d say they definitely won the interactive-craft contest (if there was one). Aside from being a clearly visible pop-culture reference, this gigantic selfie stick had a built in camera and “stage-spot” where fans could pose and get photographed and instantly posted to twit-app, I mean tweeter, I mean, that thing the kids/president use to

talk with now. I thought that deserved some serious creative technological foresight and their creation was a rather convincing selfie stick, though nothing about it convinced me it might fly.

After their unsurprising skit where they all pranced around taking selfies, the front of the craft where the giant phone was bent downward and flat. Aha! What does that do? They put their pilot atop the mini stage gave the craft a good push. As the craft left the platform that downward facing phone surfed the wind! For about 1 impressive second, before veering into the inevitable depths. Meanwhile the pilot had lept from the seat and launched himself high into the air, wowing the crowd before almost landing on their own launch cart.

Team "Breakdown Charlie"

FLIGHT VIDEO :: MORE TEAM INFO

Here's a perhaps lesser expected Boston meme to manifest at Flugtag, a giant Red Line train car! You'd think my only beef with Boston memes must be sports related since I actually like these guys, but really I just love that they went all the way with it. They didn't make an airplane, slap a logo for the tech company they all work for (Rapid7) on the side and paint it train colors, no, they made a giant train car. At some point they must've come down with the same maybe-we-should-just-make-it-fly-flu that afflicted most other teams because they did ad fairly well constructed wings, but honestly they shouldn't have. The wings didn't enhance or match the design at all, and at best just kept the train a tad more level as it careened off the platform.

The train sat poised and train-like before beginning its maiden trip to Charles (the MGH was conveniently left off of the front destination sign). They had a good push, and as soon as the train left the earth, the pilot leapt out massively far, a good 10ft farther than the train which had landed and was humorously floating quite well in the charles. If Duckboats are any hint as to the success Boston gets when it converts out-dated public vehicles to boat tours, I think the Breakdown Charlies have provided a great hint at what we can do if/when we finally replace those ancient train cars.

Team "Dinosoar"

FLIGHT VIDEO :: MORE TEAM INFO

These guys are probably not the first in Flugtag history to pull off that pun, but as a man who almost submitted Sphinxsoarus Rex I can't really talk. Their craft was a hang glider. Of course the rules prohibit using actual hang-gliders, so theirs was a cheaply home-made and sloppily painted

hang-glider. The cart however was a giant well carved foam T-Rex which they deserve most of the creative points for. Much like my backflip, most of their team score was saved by a gimmick: inflatable T-Rex costumes. They had those adorable costumes that give the wearer little fake legs to look like they are riding a smaller creature, in this case a T-Rex. One of the team members wore a cowboy hat and wielded a rope as the T-rex wrangler. I might actually give these guys the best skit award because their hilarious costumes, however un-artistically purchased, were complimented by awesome martial arts fighting choreography. The cowgirl Rex wrangler beat up, knocked down and roundhouse kicked all the goofy T-rex teammates in believable almost overdone splendor.

With the crowd riled up they put their wrangler in the cockpit and pushed her off. As she left the support of her falling T-Rex the plane seemed to have two large poles loosely dangling off the back. I don't know if those were support struts that came off or some sort of stabilizers for when it was on land. Whatever they were they didn't help and might've even added to the backward tilting motion when the glider hit a stall soon after takeoff. The plane and the pilot almost went 90 degrees backward as they fell into the water.

Team "Mass Mavericks"

FLIGHT VIDEO :: MORE TEAM INFO

There have been a few Top Gun planes proposed to Flugtag including one suggested by our very own pilot Andy. It seems the Top Gun obsession runs deep and timeless, appealing for its own reasons to many populations including war-vets, hipsters, homosexuals, and apparently Masons (who could also be any or all of the above). These masons did a Top notch job making the craft look like an F14 Tomcat yet with minimal design and cost. They did, as they claimed in their Boston Mag interview, built it out of Home Depot parts: long 2x4's for the main frame supports, cardboard concrete forming tubes for the bulky jet-like body and foam insulation for the skin/armor. They didn't bother giving the wing an airfoil, instead focusing on encompassing it in shiny metal plastic complete with decals and humorous signatures.

Their sketch was just an awkward bad lip sync to the song "You've lost that lovin' feeling," which turns out is an almost exact replica of the bad awkward lip sync in that movie. So while it was awkward to watch, I guess they nailed it. They pushed the plane off at a moderate speed and, just like a real F14, the wings were more there to point it in the right direction, while the speed kept it going in that direction (about 50 degrees downward). Surprisingly it didn't break and even sat floating shiny and pretty as the pilot was rescued on jetski.

Team “Flying Dead”

FLIGHT VIDEO :: MORE TEAM INFO

Another not super original concept as the 2013 Miami record holder was a team with the same name/concept (albeit a better airplane). I would excuse this fact if they seemed to have put visible effort into other aspects of the craft/concept. The plane itself didn’t really make sense to me as it wasn’t really representative of anything iconically zombie-related, nor did it represent much of a plane. The construction was PVC and might’ve been more plane-like if they covered the entire main wing rather than leaving a rather large open space in between. The cockpit was an undercarriage type where they sat a stuffed zombie in place of the pilot before launch. The PVC fuselage stuck way out behind the wing to the 20’ allowed length where they affixed a horizontal tail. The whole thing was painted kinda creepy brown/gold and the crew (minus one), big surprise, dressed like zombies.

The sketch was zombies going after a non-zombie. They put the pilot in the craft and the zombie stand-in on a cross on top of the plane. They got an all right push and the plane was going down at a fair 60 degree angle until disaster really struck. While we had been worried about the back of our tail touching the cart by an inch and throwing us off, these guys were off by meters. The tail stuck out back so far and they had such a low start height and slow speed that before the plane flew its own length past the edge of the ramp the front of the plane fell while the back was still over the ramp. This offset in pressure not only tilted the plane at a deadly downward angle but the PVC fuselage separated completely, breaking the plane in half like a ragdoll...zombie.

Team “Two If By Sea”

FLIGHT VIDEO :: MORE TEAM INFO

These guys were the all-time biggest Boston meme team, the Revolutionary War… ship… plane. I remember meeting these nice fellows at the Artisan’s Asylum build days. They even offered to potentially get us a hookup on boat cover heat-shrink as they knew a guy who had access. The funny thing was that while we desperately panicked over featherlite skin to surf on air, they were looking for skin to basically just skin their boat. These guys and the Boston Pours giant Swan were the only two teams who had absolutely no wings. Well, kinda. With some of their leftover heat-shrink and some pvc tubing they made a large skateboard sized banner/wing that the “pilot” held above his head as he leapt off the bow.

They were the final team and their skit succeeded in keeping people around till the end. Old military marching music played as a man in old British Revolutionary War uniform waived a british flag and proudly marched to the end of the ramp. The crowd’s hatred successfully brewed while the 4 other crew members dressed in American Revolutionary military garb (looks almost identical) waved a big 13 colonies flag and loaded their weaponry. The Brit turned around comically shocked and the audience laughed. The Americans fire! The laughter turns to brief confusion as the brit is hit

but doesn't fall. In accordance with proper comedic timing this confusion is replaced with more laughter when we see the American man and the British man charge at each other and get into a flag swordfight. The son's of liberty defeated the British (for probably the thousandth time in this general vicinity) and the crowd roared like it was 1776. The American stood a proud foot on the chest of the brit and held the American flag as the audience chanted "USA USA USA" (a term that was hilariously not in period taste). With their remaining 15 seconds, the song switched to "I'm on a boat" by Lonely Island and the team danced and the audience cheered as the weight of war turned to party. To cherry-top this giant Boston masturbation cake, the pilot stood up holding his little red "glider-board" and written along it's length are the words "FREE BRADY." The crowd roars as the team pushes their boat off the ledge. It plummets immediately. For comic appeal, or perhaps safety, the captain of the ship walked to the bow and took a step off, like a cartoon stepping off a ledge without looking, and landed about 3 feet in front of the boat.

WINNING SOMETHING!

Despite my regular nagging of any Flugtag rep I could get my hands on I never got any further towards manifesting the impossible feat of recapturing our craft (it was probably in two pieces by then anyway). By now the show had ended, the MC's thanked everyone for being part of the event and then told them all to make their way to the DCR Hatch Shell for the award ceremony. One of the chipper female Red Buller's escorted us specifically. The team exchanged giddy glances as we weren't exactly sure what this meant, but guessed an escort was a good sign. Aside from the glimmering hats and giant grins our team and family fit into the hoards of people also being fed over the maze of bridges towards the Hatch Shell, and or general exit. With the potential of our bodies being in front of hundreds more eyeballs for longer than 20 seconds I made sure to grab some of those custom tank tops to cover us in fart-branded modesty, and shield the Irish of us from any more deadly sunlight.

The crowd at the Hatch Shell wasn't huge, probably about 100-200 people, kinda sprawled out sitting on the lawn watching the replay videos on the jumbotron. We were escorted to the front of this sprawl, right up next to the stage. In the ego-fed franticness one of the few clues I could gather was that we were standing next to about 4 other teams, Something Wonderful, Flite Riot, and MIT Monkeyballers. Could this be it I thought? I remembered there being only 3 trophies, the people's choice, second, and first. Plus there was an Olympic-style 3-tiered stage thing, assumedly for only 3 teams. But maybe they were going to do some hokey "most Boston team" or honorable mention… by this assumption being one of these four teams meant we were going to win something!!...Then, as it got closer to announcement time, I looked around, there were now almost 8 teams around us…. the suspense and doubt remained.

Raspy host man got on the mic and started crowd-rousing. The usual thanks, props to Boston, Red Bull, everyone who attended, their co-sponsor Vans, and then the moment everyone was waiting for. The first award was the People's Choice Award, the one supposedly chosen by the tweet-votes of attendees. In other words, the subtext of this award was "the team with best social media following." But if this award truly was rigged in any direction, the winner would've been one of the many suck-up teams with Red Bull in their name or on their craft. But it wasn't, the winner was Team Flite Riot. The

audience cheered, the black hat/backpacked crew and their picachu proudly accepted the blue winged trophy and went back to join the ranks of the rest of us.

Next up was not second place as we expected but a lesser expected, VAN's "Off the Wall Award" for totally rad nonalcoholic off the wall lifestyle bro. I don't know, they gave it to Lovepop, either because their all love attitude vibed with the VANS dredded-man mascot, because their original plan was to have a giant Red Bull popup as part of their plane, and/or because they flew pretty damn decently. Somehow they managed to get their entire team up on the small 3' round platform.

Next they announced the second place winner, in slow motion. "FOoor theeeiiir creeaaaatiiiiviiiityyy annnnd." just kidding I'm not gonna do that, anyway I couldn't have been happier to hear that rad dude's raspy voice end with "What Sphinx!!!" We leaped in excitement. One by one we jumped up to our throne-like elevation of about 2 feet and just barely managed to cram us all on that small circle platform. The trophy was then handed to Andy. It was What Sphinx yellow, fitting us so damn perfect that in photos we look as though we were the kind of cocky color-snobs who had planned it. Nope, fate decided we would look that badass. The crowd (mainly our parents) cheered and everything was exactly as it should be… like beating any racing video-game; pedestals, trophies, cheering, so simple, so symbolic, yet so fucking corporeal.

Yes, then they announced the winnerest winners, “For their skit, and a bit of higggh flyin… FLITE RIOT!” The team of smart airplane makin drone flyin’-dudes somehow managed to all get on that stage while holding at least 3 different selfie recording devices (I’d make fun of them more for filming every moment out of genuineness but then again I totally understand the urge and plus they turned that footage awesome videos in 1/20th the time it took me to write this). They were handed champaign which they popped and sprayed to complete the essential award ceremony scenery.

Operating as one 5-headed blob of yellow and green dorky white-dudeness we were a mess of grins as we passed our trophy among our 10 arms, using the other arms for shaking hands with the winners (while their other hand was still filming things).

We got down off the pedestal still glowing. Then we were instructed to go back up, one team at a time for our media photo-shoots. We posed like idiots for all the 2 magazines and 10 remaining fans who weren't our parents till the glow of glory turned into a redder cheek-glow of "too much?" We stepped down as the afterglow faded just barely enough for mild awareness of where we were, what happened, and how fucking tired we were. Two perky ladies in shirts branded BOSTON, from some magazine, perhaps "Boston.com" asked me a few questions.

I think the first question was "Is this your first Flugtag?" To which I said "yes." Then she said "How awesome was it to have your first Flugtag be IN BOSTON?"...This was a question I wasn't prepared for, and it's clear loadedness led to my releasing of an anti-Boston messy essay I also didn't see coming. I told her something to the tune of:

"The event being in Boston specifically didn't mean too much other than that I could easily get there and had been waiting for Flugtag to come near me. Personally I'm surprised they did come here, and that it did happen, not only because of Boston's propensity for red tape and safety precautions as such a dense and famous place, but moreso because the culture is not particularly Aht friendly."

I saw their smiles flatten out, I'm a bit surprised they didn't pull away the audio recorder.

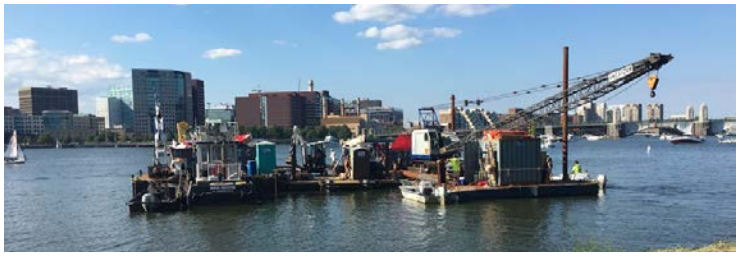
"Boston culture is all about sports and dunkin donuts, there is a pride in anti-science, anti-nerdism, and being dumb… But Flugtag coming here is hopefully a sign that things are changing. We need more events like this, like Figment on the greenway, more openness to expression and creativity. I loved this event, how much it promoted that, and I want to see more of it in Boston when it leaves."

They said thanks and left. I'm pretty sure those words were never considered for anything. Oh well.

DISSOLVING BACK INTO NORMAL

We said goodbye to J-lo and his sweet mom, Jeff went with Nicole and her family somewhere other than a semi-trashed now empty Esplanade. Andy and Max were sprawled out on the grass in the summer sun. I sat to relax with them. It was too late to talk shop and too soon to reminisce, it was quiet, #blessed. Then, well, it was time to go home. My family and I walked back to go get our stuff. We were one of the last teams that hadn't fully evacuated and my bike and little cart crammed with tools stood alone. I struggled to combine all the tools, signage, soggy costumes and other yellow/turquoise paraphernalia I could find into this little cart. Using advanced crap-strapping origami organization skills I packed it all as dense as a neutron star, and yet I couldn't escape the feeling that I was leaving something huge behind.

I turned around and saw in the distance a giant dumpster. THE dumpster. More insane than a 20 ft swan or one-eyed copepod was how quickly and easily months of blood, sweat, tears, time, passion and creativity were crammed into a single dumpster.



It could've been a more abstract sentiment if I didn't see a giant gold turquoise wing reaching out calling for me. It was like a punch in the gut but really like a swat in the back of a bamboo chute, swung by the master. Hiding in the waste-full mess of the advertising industry Buddha's message couldn't be clearer. "Do not cling to the past." The past does not exist, there is only the moment. I stand slunkenly soaking in the pain of our dead child, no matter how imaginary it is. Every one of the millions of moments over the past months sacrificed for a fantasy future of Flugtag flying... and now every moment sacrificed to experience a memory, like being on a train going 100 miles an hour toward its 10 minute destination, on a track with no end and no way to put on the brakes. This is true of all goals, all aspirations, all moments we make or encounter… we encounter them on the track of time in the train of human lifespan, blasting through moments. Just like the tractor claw that crushed What Sphinx, the force of time tears through moments which we can never carry away in tact.

But, as we crash through these moments we are colored by their splattering, shattering, covering us, sticking into us, burning into our eyes, ears, noses, and notions of reality, and ourselves. A momentary experience lives on in it's changes to us. So in a way we do carry moments with us, often in ways we aren't even aware of. The way that building up and then splattering through Flugtag leaves me, is an awesome proud and refreshing mess of yellow and sparkle turquoise, with a strengthened faith in the power and purpose of pointless art.

During the moment where I stared at our crushed plane I felt sad, it was the death of something I loved. Then I turned around, and Clara and I biked home. The ride home continued to feel amazing and righteous and surreal and a tad sad.

That night there was a dance party at a club in Boston. It was fun, we danced our asses off but kept our pharaoh hats on.

If I may briefly return to my existential rant about the purpose of pointless art, I'd like to offer one final argument that actually lives in the realm of realism. Going "against" instinct or current logic is a practice that one could argue breeds innovation, skyrockets human evolution and separates us from other animals. Risking a shard in the eye when smashing a nut with a rock out of anger, risking death when going towards fire because it feels good, and sacrificing months and hundreds of dollars to build a giant glider because… why not?… are all seemingly random counter intuitive leaps that led to humans harnessing the power of tools for food access, the flame for surviving winter, and lots of normal citizens

paying for their own 6 week intensive exploratory in art and engineering. Even if the personal motivation is mysterious I'd bet the result of hundreds of participants and thousands more they inspire gaining a greater appreciation for art, engineering, teamwork, and fearless innovation offers lot more of a potential reward for our society than Flugtag might let on.

THANKS

Finally I want to thank Red Bull for the amazing one-of-a-kind opportunity to express an innate creative drive and for the much needed kick in the ass and carrot on a stick that maker-sports give to artists, to propel their dreams out of heads onto ramps and into reality. I urge anyone with dreams of making anything to apply to contests festivals and open mics. If there's a platform for this giant flying fart lion, there's got to be one for yours. Make that ridiculous magical moment happen even though you will inevitably blast through it.

Thanks!

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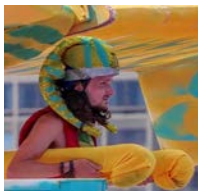

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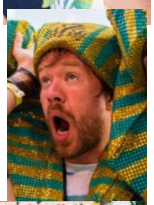

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  - Boston Inno
  - PhotoVideoSamplesETC youtube channel
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