

Building Better Aircraft Models

(Ain't Rocket Science)

Dave Koukol

October 15, 2010

DAYTON AREA PLASTIC MODELERS



What Are Your Modeling Motives?



- Fun?
- Relaxation?
- Addition to Your Collection?
- Sense of Accomplishment?
- Bling from Competition?
- Sustained, Respectable Results?
- Continuous Improvement?
- Impress The Ladies?

Stack the Deck In Your Favor

Plan ahead to satisfy your motive

- Set a standard for yourself
 - Example: IPMS Judging Criteria
- Establish a set of standard practices
 - Repeat the ones that work well
 - Experiment with others until you find ones that work...then repeat those
- Establish a standard set of tools and materials ... then master them
- Learn from your mistakes
- Interact with other modelers of all skill levels...and learn from them

IPMS Judging Criteria

- Basic Construction
- Details
- Painting and Finishing



Basic Construction



1. **Flash** and other similar molding flaws eliminated
2. **Seams** filled if not present on the actual aircraft
3. **Contour** errors corrected
4. **Restore** any detailing removed while correcting errors

Basic Construction



4. Alignment

- A. Wings/tailplanes
- B. Multiple fins/rudders:
- C. Engine nacelles/cowlings:
- D. Landing gear:
- E. Ordnance items

5. Canopies and other clear areas:

- A. Clear and free of crazing
- B. Gaps between windscreen, canopy, or other clear parts eliminated where applicable.
- C. All clear areas scratch-, blemish-, and paint-free.

6. Decals must look painted on if depicting painted markings (conforming to surface contours, no silvering or bubbling, no decal film apparent).

Details



1. Thin to Scale:
 - Thick parts should be thinned to scale or replaced; e.g., wing trailing edges and similar surfaces, ordnance fins, landing gear doors, edges of open panels, etc.
2. Block-Off Voids:
 - Wheel wells, intakes, scoops, etc. should be blocked off to prevent a "see-through" effect.
3. Open Up:
 - Gun barrels, exhaust stacks, intakes, vents, and similar openings should be opened.
4. Detail In Scale:
 - Details added to the model should be in scale or as close to scale as possible.

Details



5. Don't Skimp on Stores:

- External stores should be built to the same level of quality as the model to which they are attached.
- Stores/weapons combinations on a model should represent only those combinations actually carried by the real aircraft.

6. Aftermarket Integration:

- Aftermarket parts (photo-etched, white metal, resin, etc.) should integrate well with the basic model.
- Photo-etched parts that require forming should be precisely shaped and any surfaces that require building up to a thicker cross-section should be smooth and uniform.

Painting and Finishing



- The model's surface, once painted, should show no signs of the construction process
 - glue, file, or sanding marks; fingerprints; obvious discontinuities between kit plastic and filler materials; etc.

Painting and Finishing



- Finish should be even and smooth. If irregularities in the actual aircraft's finish are being duplicated, documentation of such irregularities is required.
 - No brush marks, lint, brush hairs, etc.
 - No "orange-peel" or "eggshell" effect; no "powdering" in areas such as fillets or wing roots.
 - No random differences in sheen of finish caused by misapplication of final clear coats.

Painting and Finishing



- Paint edges that are supposed to be...
 - ...*sharp* should be sharp (no ragged edges caused by poor masking).
 - ...*soft* or feathered should be in scale and without overspray.
- Framing on clear parts should have crisp, uniform edges.

Painting and Finishing



- Weathering, if present, should
 - show concern for scale (e.g., size of chipped areas),
 - be in accordance with the conditions in which the real aircraft was operating
 - be consistent throughout the model (a factory-fresh interior would be unlikely on a 100-mission aircraft).

Painting and Finishing



- Decals:
 - Aligned properly. (If the real aircraft had a markings anomaly; e.g., an inverted U.S. insignia, the model builder should provide documentation to show that he is deliberately duplicating someone else's error, not inadvertently making one of his own.)
 - Some modern aircraft use decals rather than paint for standard markings.
 - If the real aircraft suffers from problems with decal application, such anomalies should be documented if duplicated on the model.

Painting and Finishing



- Colors.
 - Paint colors, even from the same manufacturer and mixed to the same specs, can vary from batch to batch.
 - Different operating environments can change colors in different ways.
 - All paints fade from the effects of weather and sunlight
 - and viewing distance alone can change the look of virtually any color.

Painting and Finishing



Colors

- Poor initial application and subsequent maintenance compound these problems.
- Therefore, aside from gross inaccuracies such as a light green "Red Arrows" aircraft, color shades should not be used to determine a model's accuracy or lack thereof.
- Again, models with unusual colors should be supported by confirming documentation.

Establish Repeatable Processes

- Objectives
 - Minimize variation in the modeling process



- Establish your own “best practice” techniques and repeat them over and over again
- Establish a core set of preferred tools and materials and master their use
- Identify where you need or want most improvement
- Learn other modelers’ “best practices”
 - Incrementally try new techniques, tools, and materials
 - Keep and repeat what works best for you

Flash and Other Blemishes

Standard	Practices	Tools and Materials
Flash and other similar molding flaws (ejector pin and sink marks) eliminated	<ul style="list-style-type: none"> • Cut parts from sprue with sharp clippers, hobby knife, or scalpel, • Sand residual flash and raised ejector pin marks with sanding stick. • Monster ejector pin marks may require power tool to grind away, then smooth with sanding stick 	<ul style="list-style-type: none"> • X-Acto knife and plenty of replacement blades • Sanding stick (320 or 400-grit) • Rotary motor tool with milling bit or bullet-shaped sanding bit
	<ul style="list-style-type: none"> • Identify which ones need to be filled, and which ones don't • Fill ejector pin and sink marks with putty and liquid cement or with specialty concoction • Blend filled marks with model surface 	<ul style="list-style-type: none"> • Squadron White Putty • Tamiya Extra-Thin Liquid Cement • Mr. Dissolved Putty • Toothpicks • X-Acto knife or putty applicator • Sanding stick (320 or 400-grit)

Seams

Standard	Practices	Tools and Materials
<p>Seams filled if not present on the actual aircraft</p>	<ul style="list-style-type: none"> • Liberally flow liquid cement into seam • Clamp or tightly tape the parts together to get the melted plastic to squeeze out of the seam area • Smooth out the melted plastic with the (wet) cement brush • Sand or adze with the sharp edge of a knife blade as needed once dry • Smooth with Mr. Surfacer and sanding stick as needed. 	<ul style="list-style-type: none"> • Tamiya Extra-Thin Liquid Cement • Clothes pins or clamps • Masking tape • Mr. Surfacer 1000 • X-Acto knife • Sanding stick (320 or 400-grit) • Squadron White Putty • Toothpicks
	<ul style="list-style-type: none"> • If above practice is insufficient, apply putty to the remaining visible seam area • Allow to dry, then sand and smooth with sanding stick and Mr. Surfacer 	

Contour Errors

Standard	Practices	Tools and Materials
Contour errors corrected	• Remove material to achieve proper contour	• Hobby knives • Rotary tool with sanding and/ or milling bit • Files • Sanding sticks
	• Add/shape material to achieve proper contour	• Sheet styrene • Hobby putty • Hobby knives • Rotary tool with sanding and/or milling bit • Files • Sanding sticks
	• Replace kit part(s) with aftermarket parts or parts from other kits	• Hobby knives • Hobby putty • Rotary tool with sanding and/ or milling bit • Files • Sanding sticks

Restore Detail

Standard	Practices	Tools and Materials
Restore any detailing removed while correcting errors	<ul style="list-style-type: none">• Rescribe or clear out recessed panel lines and rivet detail with the back edge of a hobby knife or a scribing tool	<ul style="list-style-type: none">• Hobby knife• Scribing tool• Tamiya Extra Thin Liquid Cement
	<ul style="list-style-type: none">• Recreate raised panel lines and rivet detail using Mr. Surfacer 1000, Tamiya tape, and a toothpick	

Canopies Clear Parts

Standard	Practices	Tools and Materials
Clear, blemish-free canopies and clear parts	<ul style="list-style-type: none">• Remove ridges and polish smooth (not a frequent occurrence – usually seen on F-16's, and some other modern jets)	<ul style="list-style-type: none">• Sanding sticks (320, 400, 600, 800-grit)• Fingernail polishing boards Brasso and cotton swabs or cotton balls
	<ul style="list-style-type: none">• Add protective, crystal clear coat by dipping or brushing (I ALWAYS do this, and try to do it as the very first step – even before starting the cockpits)	<ul style="list-style-type: none">• Future Floor Polish (undiluted)• Wide, soft artists' brush

Decals

Standard	Practices	Tools and Materials
<p>Aligned properly</p> <p>Look like painted on</p>	<ul style="list-style-type: none"> • Establish smooth, glossy base for water slide decals using Future floor polish • Apply unthinned at 15 psi • May also brush-on using wide artists brush • Allow to cure 24-48 hours 	<ul style="list-style-type: none"> • Airbrush or wide artists' paint brush • Future floor polish
	<ul style="list-style-type: none"> • Apply decals using Micro Scale system, repeating Micro Sol (red label) as many times as needed • Work out air bubbles with damp swab or paper towel 	<ul style="list-style-type: none"> • Micro Set • Micro Sol • Clean Paintbrush • Cotton Swabs • Paper Towels
	<ul style="list-style-type: none"> • Score / pierce bubbles with sharp pin, needle or hobby knife, then treat with MicroSol and swab 	<ul style="list-style-type: none"> • Pin or needle • Hobby knife
	<ul style="list-style-type: none"> • Overcoat entire model with flat, semi-gloss, or gloss clear coat to blend decal and aircraft sheen 	<ul style="list-style-type: none"> • Airbrush • Appropriate clear coat

	Techniques	Materials	Tools	Cats.	Aftermarket
2008	Preshading Sludge Washes Inkjet Decals Colored Pencil Instruments Postshade Restore Raised Panel Lines Photographing Stretched Sprue Antennae Silver Pencil Chipping Future on Clear Parts White Putty/Tamiya Extra Thin	Future Decal Base MM Acryls Tamiya Extra Thin Cement Tamiya Tape	Iwata Airbrush Sanding Sticks	Ships	Resin Seats Eduard PE Zooms
2009	Painting Markings Pastel Chalk WX Hairspray Chipping Overshading	Frisket Film Tamiya Acrylics Mr. Liquid Putty		Biplanes	Big Ed PE Sets
2010	Acryl Flat/Future Semi-Freehand Dazzle Camo Layered Shading Brush Painting Basics Drybrushing Exterior	Alclad Automotive Lacquer Vallejo Acrylics Tamiya Primer Testors Rattle Cans Snap Kits	Micromesh Optivisor	Armor Figures Sci-Fi	

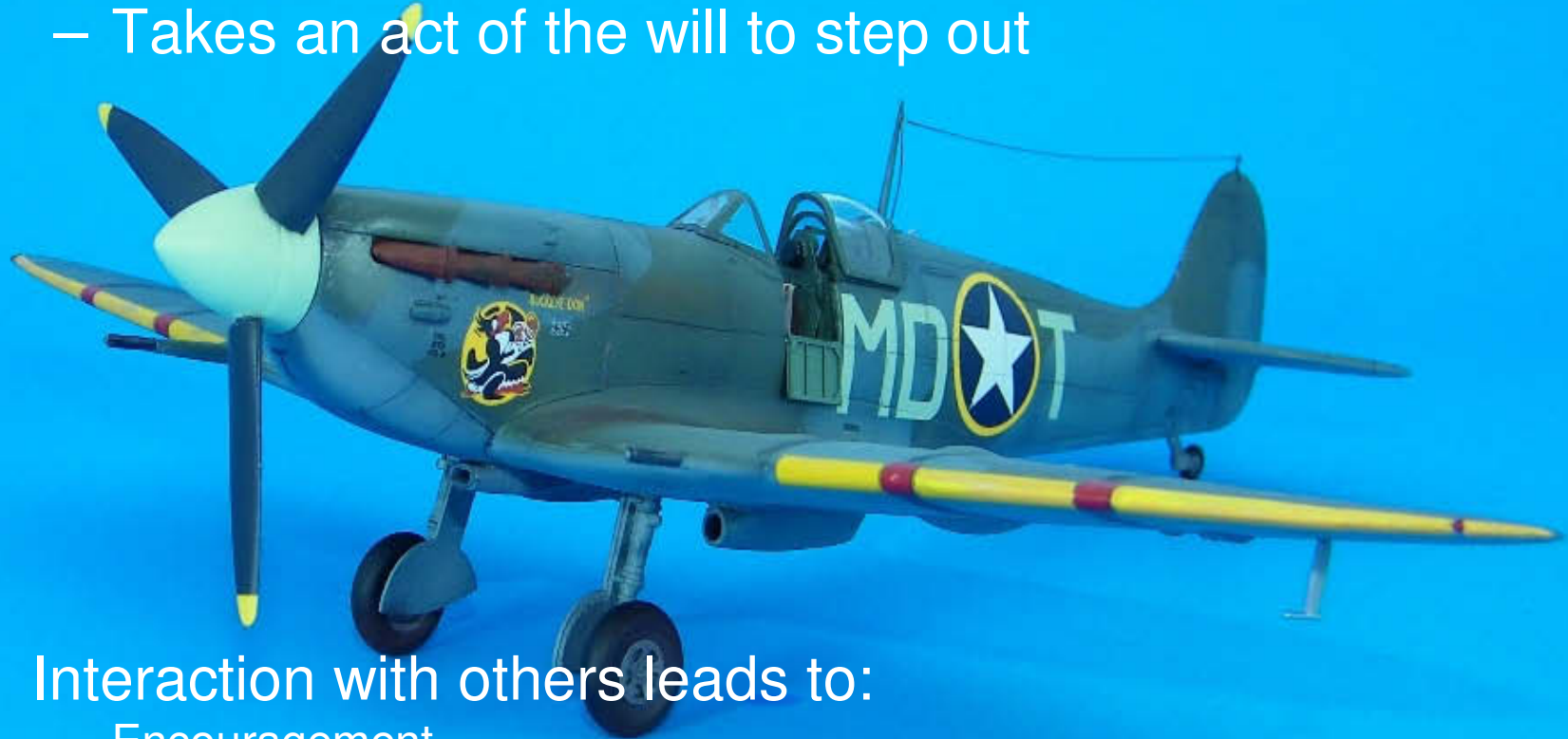
Learn from Mistakes



- **Mistake:** Hazy appearance after flat coating black F-117A with Model Master Acryl Flat
 - Result: Shameful finish which would draw pity
- **Next Opportunity:** Underside of DH.98 Mossie night fighter
 - Experiment: Mix MM Acryl Flat 50/50 with Future, airbrush in light coats until effect achieved
 - Result: Multiple-award-winning finish
- **Validation:** SR-71 final coat using 50/50 mix
 - Result: Award-winning finish

Interaction

- Many modelers are introverts by nature
 - Takes an act of the will to step out



- Interaction with others leads to:
 - Encouragement
 - New Solutions to Old Problems
 - New Techniques to Raise Your Game
 - Exposure to Other Rewarding Aspects of the Hobby
 - Lasting Friendships (with other nerds who will understand your styrene addiction)

Summary



- Set a standard for yourself
- Establish a set of standard practices
- Establish a standard set of tools and materials
- Learn from your mistakes
- Interact with other modelers

HAVE FUN!!!