Modelling with Paper: Getting the Architectural Details Right

by Matthieu Lachance, architect

PART 1



October 24th Hindsight 20/20 Virtual RPM

# How things got started...

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# Why Paper?

- Fast and easy to work
- Cheap & Affordable
- Readily available
- Variety of textures
- Custom-made details
- Prototypical thicknesses
- Sturdy & Long Lasting
- Realistic look, less « perfect » than styrene
- No specialized tools needed
- Less health hazard, more environment friendly



# Inspiration

- L'Encyclopédie de la Jeunesse (1927)
- Trains électrique en modèles réduits (Daniel Puiboube, 1978)
- Modelling Grassland and Landscape Detailing (Gordon Gravett, 2013)
- French & British modelling websites
- Model Railroad Craftsman, April 2010



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créant des circuits d'éclarage partier. Commence par la gare et ses abords immédiats, continuez par la gare de marchandises, le dépôt, le triage et terminez par les paysages et la ville. ions sont extrêmement facilies à assemb par exemple. D'autres beaucoup plus fu Vollmer, Kibri) nécessitent plus de soir Pour bien coller les pièces, verser d

 2 - Deux maquettes originales particuli première représente la gare de La Bauk fidèlement la construction en granit, avec volets.

La deuxième est une réalisation plus mod mais particulièrement soignée dans les Alain Pras).

 3 - Ici, dans un paysage alpestre, le bâtin sous la neige,



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# **First Attempts**

- Made from recycled material
- Poor understanding of structural property
- But already exploring the possibility for finer details



# **First Attempts**

Coopérative agricole de Ste-Anne-de-Beaupré, 1950s (circa 1998-1999)



# **First Attempts**

Grange-étable in St-Augustin-de-Desmaures, late 19th century (circa 2000)





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Grange-étable in St-Augustin-de-Desmaures, late 19th century (circa 2000)





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# **First Attempts**

Église Sainte-Famille, Île d'Orléans, 1734 (circa 2000)



# Tools

- Hobby knife (#11 blade)
- Metal point (awl, scribing tool)
- Pencils (graphite & color)
- Rulers, squares & compass, etc.
- Masking Tape
- Glue (PVA, carpenter's glue, CA)
- Primer & Sealer
- Sand paper
- Cutting Machine (optional)



# **Materials**

- General purpose paper (copy, etc.)
- Thick cover paper (business cards, files, etc.)
- Card stock (notepad backing)
- Illustration board (Peterboro, Strathmore, Canson, etc.)
- Scrapbooking papers
- Fine corrugated papers
- Cereal & cracker boxes
- Tamiya Masking Tape
- Foamcore

# Paper / Card Stock

- Characteristics
  - Almost free if recycled (old document, ads, business cards, etc.)
  - Various textures and thickness
- Pros & Cons
  - Prototypical thicknesses
  - Can be layered to create relief
  - Can be scribed
  - Easy to cut, keeps it's edges
  - Easier to work than thin styrene sheets / won't melt
  - Easy to seal / paint
  - Flimsy: always need a backing



# **Regular paper / Card Stock**

### Uses

- Cladding (boards
- Door, window and cladding trims
- Paneled doors
- Roofing
- Fascias
- Signs
- Roofing (tin roof, tar paper, diamond scale, etc.)
- Hinges, steel braces and small details (structures and rolling stock)



# **Peterboro Illustration Board**

### Characteristics

- 0.060"/ 1.4mm thickness
- Various dimensions (30 x 40", 10 x 15", 15 x 20" & 20" x 30")
- Nominal cost compared to styrene (about \$1.50 per sq.ft.)
- Smooth or textured face / several colors & grades
- Pros & Cons
  - Nominal cost compared to styrene
  - Easy to glue
  - Easy to scribe / can be gently sanded
  - Narrow strips can delaminate
  - Requires several knife passes to cut



# **Peterboro Illustration Board**

### • Uses

- Structure cores
- Internal bracing
- Structural roofing
- Support for other materials
- Road pavements
- Concrete slabs
- Hand-scribed stonework
- Foundation



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# Cereal boxes (paperboard/chipboard)

- Characteristics
  - Brownish single layer cardboard
  - High-gloss printed face
  - Cost almost nothing (post-consumption)
  - Various thicknesses from 0.022" to 0.032" (0.55mm to 0.8mm)
- Pros & Cons
  - Easy to cut
  - Flexible / must be braced or supported
  - Easy to scribe
  - Glossy face must be sanded prior to gluing



# Cereal boxes (paperboard/chipboard)

- Uses
  - Hand-scribed cladding (wainscotting, clapboard, Vgroove boards, novelty siding)
  - Soffits & fascia
  - Roof decks
  - Doors
  - Curved surfaces (roofs, silos, water tanks, reservoir)
  - Not recommended for trims



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# **Corrugated Paper / Cardboard**

- Characteristics
  - Corrugated paper: very thin with 1mm corrugations
  - Scrapbooking corrugated paper: 1mm to 3mm corrugations
  - Various colors available
- Pros & Cons
  - Easy to glue and cut due to flat backing layer
  - More economical than corrugated styrene
  - Corrugated cardboard often have manufacturing « ridges »
  - Finer grades hard to source in North America
  - More choices at European scrapbooking webstores
  - Coarser grades need to be sanded after primer



# **Corrugated Paper / Cardboard**

### Uses

- Corrugated Steel roofing and wall sheating
- Modern industrial structural cladding
- Corrugated steel seawalls



# Tamiya Masking Tape

- Characteristics
  - Self-Adhesive
  - Slightly textured
  - Various widths (from 3 to 18mm)
- Pros & Cons
  - Easy to stick on most materials
  - Won't peel off over time
  - Can be primed and painted
  - Easy to cut complex shape



# Tamiya Masking Tape

### • Uses

- Layered cladding
- Clapboard
- Asbestos shingles
- Tar paper roofing
- Concrete foundation
- Steel braces and applied details





- Cyanoacrylate Glue (gel type)
  - *High initial tack*
  - Useful to glue different materials
  - Reinforcing construction joints
  - Improve self-adhesive materials
- Cyanoacrylate Glue (liquid type)
  - Brushed over frail paper and cardboard details to reinforce them
  - Almost no working time
  - As a sealer on multiple-ply card edges
  - Can be sanded down to a smooth finish



# Glues

- Carpenter's glue (yellow glue)
  - Weapon of choice: an all-purpose glue
  - High initial tack
  - Impervious to water once dry
  - Less buckling
  - Can be sanded down
  - Stronger than PVA
  - Can be diluted with water to various consistencies
  - Can be used to seal material edges and surfaces



# Case Study #1 : Gare de Beaupré

- Prototype built in Beaupré, QC circa 1889-1890 by QRL&PCo
- Demolished circa 1980
- Bill of Materials:
  - Cereal boxes
  - Peterboro illustration board
  - Copy paper
  - Cover paper
  - Tichy Windows & Doors
  - Styrene
  - Paint



September 1954 (credit: unknown)

## Case Study #1 : Gare de Beaupré



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