



## How People Make Things Backgrounder

- **Funding to create the exhibit:** In Fall 2004, Children's Museum of Pittsburgh was awarded a \$1.5 million grant from the National Science Foundation (matched by a \$510,000 Grable Foundation gift) to create a new traveling exhibit *How People Make Things*, inspired by the popular *Mister Rogers' Neighborhood* Factory Tours.
- **Creative Partnerships and Collaborations:** The Museum brought together a unique set of creative collaborations with local partners to ensure the development, reach and impact of the *How People Make Things* exhibit achieved its full potential:

Children's Museum of Pittsburgh completed its \$28 million expansion campaign for a new 80,000 sq. ft. museum in the fall 2004. The Museum has produced five traveling exhibitions, including the award-winning *Mister Rogers' Neighborhood: A Hands-on Exhibit* with Family Communications, Inc. The Museum's exhibit design philosophy emphasizes 'Play with Real Stuff' - a belief that children, as well as adults, learn through concrete experiences with real materials and real processes. The Children's Museum is committed to rigorous, iterative prototyping and evaluation cycles to ensure production of memorable exhibits that delight, engage and inform young children and their families.

Family Communications, Inc. (FCI) and the Children's Museum share a long history of productive partnerships. Founded by Fred Rogers, FCI is a not-for-profit company that has led the field for over 30 years in communicating to children, families and those who support them. FCI produces a wide variety of materials in all media, including the *Girls, Math and Science Partnership* designed to encourage girls' interest in math, science and technology. The "How People Make Things" segments from the Emmy-award winning *Mister Rogers' Neighborhood* television series bring a trusted brand and a conceptual approach to the story of making things. *Mister Rogers' Neighborhood*, the longest-running program on PBS, continues to be seen around the country by close to three million viewers each week. FCI provided the Museum unlimited access to "How People Make Things" videos free-of-charge for use in the project. FCI's Director of Early Childhood Initiatives, Hedda Sharapan, and Director of Special Projects, Cathy Droz, worked with the Children's Museum to select media and shape developmentally appropriate learning messages that foster positive family interactions.

University of Pittsburgh Center for Learning in Out-of-School Environments (UPCLOSE), based at the Learning Research Development Center, has an ongoing partnership with the Children's Museum to help bring effective learning experiences to the museum floor. Under the leadership of Dr. Kevin Crowley, UPCLOSE provides a critical and objective research and evaluation component to our exhibit development and design process. The research team currently investigates the educational value of prototyped exhibits and makes recommendations for their further development. With NSF funding, Crowley has developed several innovative research and evaluation projects focusing on socio-cultural theory and museum learning (Museum Learning Collaborative), gender equity in informal education, informal science learning on the web and, in partnership with Family Communications and Carnegie Mellon School of Design, has developed signage to encourage families to talk about science in everyday settings like parks and playgrounds.

- **The Exhibit**  
Every object in our world has a story of how it is made. *How People Make Things* tells that story by linking familiar childhood objects to processes of manufacturing that depend on people, ideas and technology to transform raw materials into finished products. *How People Make Things* explores these processes with hands-

on activities, Mister Rogers factory tours videos, live demonstrations, outreach programming and take-home projects that extend learning and conversations beyond the museum visit. Before exploring The Factory Floor, visitors first have the opportunity to do some role playing by donning lab coats, jumpsuits, goggles and clipboards to become a factory technician, engineer or designer. Then it's off to the Factory Floor.

\***The Factory Floor** is divided into sections that highlight these four manufacturing processes:

**1) Cutting:** material is removed to create a new shape

**+Die Cutters** – Visitors place coated paper cardstock (similar to Chinese food containers) on the bed of the Die Cutter. They turn a large crank to send the material through a rolling press, cutting the selected pattern out of the material. Upon completion, visitors produce a cut sheet that once folded, forms a horse and a box to put their completed projects in.

**+Simple Cutting** – Visitors use simple cutting tools like clay shapers, chisels and rotary tools to carve away at large blocks of wax.

**+3-Axis Mill** – Visitors control the cutting head of a 3-Axis Mill by turning three cranks which correspond to the mill's X, Y and Z axes.

+ **Manufactured products** created via the **cutting process on display** include:

**Louisville Slugger** – showing the stages of Cutting a Baseball Bat from the Louisville Slugger Co.; **Baseball Glove** – showing the cut pieces of a Baseball Glove from Nokona Athletic Goods Co., Nocona, TX; **18 pairs of shoes** from Vans - Cypress, CA; and a **Carousel Horse**.

**2. Molding:** material is added to a mold to make a shape

**+Injection Molder** – Visitors manipulate a real injection molding machine to create a plastic spoon to take home. (Made from clear plastic pellets)

**+Mold Matching** – Match the made objects to their real industrial molds.

+ **Manufactured products** created via the **molding process on display** include:

**More than 10,000 crayons (90 colors)** from Crayola - Easton, PA; **more than 35 Toy Balls** from Hedstrom Plastics - Ashland, OH

**3) Deforming:** material is forced into a new shape

**+ Rolling Mills and Toggle Press** – Visitors stamp and deform metal with these complex machines.

**+Vacuum Forces** – A sheet of silicone rubber is molded around visitors' hands or small items of their choice with the application of vacuum suction.

**+Vacuum Former** – A plastic sheet is heated and deformed over small objects to take on their shape. Once the plastic is cooled, visitors get a useable bowl to take home.

+ **Manufactured products** created via the **deforming process on display** include:

**Quarters** –the **41 state-themed designs minted to date, and Bicentennial quarters**; **24 Radio Flyer wagons** from Radio Flyer Co., Chicago, IL ; **10 frying pans** from All-Clad Metalcrafters; **10,000 springs** from Diamond Wire Spring Company.

**4) Assembly:** two or more parts are joined together to create an end product

**+Build a Golf Cart** – Visitors can make, re-make and customize a real golf cart

**+Robot Arm** – A real industrial Robot Arm illustrates the role of automation in industry

**+Assemble a Trolley** – Assemble the manufactured parts to create a replica of Mister Rogers' Neighborhood trolley

+ **Manufactured products** created via the **assembly process on display** include:  
**"Exploded Bicycle" display** - a bicycle from Cannondale Bicycle Corp., Bedford, PA; **6 Traffic lights; more than 900 Toy Cars.**

- **How People Make Things National/International Tour**

June 16, 2007 – September 9, 2007  
Children's Museum of Pittsburgh

September 24, 2010 – January 2, 2011  
Imagination Station – Wilson, NC

September 29, 2007 – January 6, 2008  
Omaha Children's Museum

January 22, 2011 – May 8, 2011  
Minnesota Discovery Center - Chisholm, MN

January 26, 2008 – May 11, 2008  
Chicago Children's Museum

June 4, 2011 – October 16, 2011  
DaVinci Science Center - Allentown, PA

May 24, 2008 – September 14, 2008  
G.Wiz, Sarasota, FL

**November 5, 2011 – February 5, 2012**  
**Children's Museum of Pittsburgh**

September 27, 2008 – January 4, 2009  
Port Discovery, Baltimore MD

February 18, 2012 – June 3, 2012  
Minnesota Children's Museum - St. Paul, MN

January 17, 2009 – May 10, 2009  
Whitaker Center, Harrisburg, PA

June 23, 2012 – October 7, 2012  
Science Museum of Virginia – Richmond, VA

May 23, 2009 – September 13, 2009  
Children's Museum of Houston, TX

October 3, 2009 – December 31, 2009  
Greensboro Children's Museum, NC

October, 2012 - February, 2013

OPEN

January 23, 2010 – May 9, 2010  
TELUS Calgary, Canada

February 2013 – June 2013  
Montshire Museum of Science - Vermont

May 29, 2010 – September 6, 2010  
Boonshoft Museum of Discovery - Dayton, Ohio

June 2013 - September 2013  
Museum of Discovery – Little Rock, AK