HISTORY

The Pixar RenderMan Walking Teapot is a limited edition toy created by Pixar to promote their industry standard computer graphics rendering software, RenderMan. Each year since 2003, when Pixar employee Dylan Sisson designed and pitched the first walking teapot, it has been a recurring theme at the ACM SIGGRAPH conference, sporting a new finish and tin box every time, each one coming with a numbered certificate proving its authenticity.

OBSERVATIONS

Attending ACM SIGGRAPH in 2010 I was amazed about the buzz for “teapots”, I wasn’t quite sure what they meant, I certainly didn’t think Americans were into tea! Even after someone explained it to me I couldn’t quite grasp the big appeal. That was until the first day that the exhibition hall opened. I saw people starting to queue up an hour before Pixar started to give them away at their booth. Not wanting to miss out on what was seemingly the hot item of the conference, and after some cajoling from more experience friends, I too joined the line which went on to wind its way through the exhibition hall, in some cases completely blocking off other companies booths.

As the Pixar staff started to hand out the Walking Teapots there was a palpable excitement throughout the hall as people waited to see this year’s design, and every year I have attended since it has been the same. There’s now even a Facebook fan club set up for the teapots. More than just being a novelty toy, it’s become part of the SIGGRAPH culture, a badge of honour, a way of saying “I was there”.

The Pixar RenderMan Walking Teapot is a limited edition toy created by Pixar to promote their industry standard computer graphics rendering software, RenderMan. Each year since 2003, when Pixar employee Dylan Sisson designed and pitched the first walking teapot, it has been a recurring theme at the ACM SIGGRAPH conference, sporting a new finish and tin box every time, each one coming with a numbered certificate proving its authenticity.
As part of the initial stage of this project I have identified and selected a number of words that can be associated with the Pixar RenderMan Walking Teapots and supplied definitions to aid understanding:

**Walking Teapot:** a clockwork mechanism toy in the form of the Newell teapot that when wound will walk across a flat surface

**Toy:** an item designed for play

**Collectible:** an item that holds value for an individual or group, this may be intrinsic, monetary, aesthetic etc.

**Tin:** metallic cube container used to store the teapot, with a painted design to compliment the teapot itself

**Design:** the “look” applied to the teapot, influenced by the most recent Pixar release or latest developments in RenderMan

**Pixar:** animation and software development company founded in 1986. Have created such films as Toy Story, Up, and Brave

**RenderMan:** Pixar’s suite of software tools that have become the industry standard in rendering 3D computer graphics and visual effects

Other words that were considered included limited edition, wind-up, novelty, Utah, Newell teapot, fun, teapot, feet, winder, John Lasseter, Ed Catmull, Steve Jobs, play, ACM SIGGRAPH

These words fall broadly into two categories; those that further describe the teapot:

- limited edition
- wind-up
- novelty
- fun
- teapot
- feet
- winder

and those that give historical context:

- ACM SIGGRAPH
- Newell teapot
- John Lasseter
- Ed Catmull
- Steve Jobs
- Utah
Walking Teapot

Toy: Wind-up mechanical toy made of plastic, formed in the shape of a teapot.

Collectible: People collect the different teapot designs from across the years. Teapot comes with a certificate showing it's number in a limited run.

Tin: Container in which the teapot is stored, styled to match the teapot. The design of the tin is related to the toy design and identifies itself as a "novelty item".

Design: Based on CG mesh teapot created in 1974 by Martin Newell, used in testing CG rendering techniques. Has a number of variants on theme (e.g., red, green, blue hats) and is styled to reflect annual teapot design, promoting RenderMan software.

Pixar: Started giving the teapot away at ACM SIGGRAPH conference in 2003. Original toy was made by Pixar employee and toy maker Dylan Sisson. Tin carries the Pixar website on the base. Expression of Pixar's playfulness and creativity in the application of their technology.

RenderMan: Used walking teapot as a promotional item. Toy created to market RenderMan. Large RenderMan branding on sides and top. Rendering engine capable of stylized outputs based on art direction of projects. Developers of the industry standard rendering tools for CG and VFX.
# Interaction

<table>
<thead>
<tr>
<th>Continuum (Years)</th>
<th>Design (Teapot)</th>
<th>Category (Parts)</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>silver</td>
<td>winder</td>
<td>Pixar fans</td>
</tr>
<tr>
<td>2004</td>
<td>red, green, blue, alpha</td>
<td>mechanism</td>
<td>RenderMan users</td>
</tr>
<tr>
<td>2005</td>
<td>bronze, glow in the dark</td>
<td>feet</td>
<td>CG industry pros</td>
</tr>
<tr>
<td>2006</td>
<td>flaming, thermal</td>
<td>spout</td>
<td>VFX industry pros</td>
</tr>
<tr>
<td>2007</td>
<td>chef (white, black)</td>
<td>lid</td>
<td>game developers</td>
</tr>
<tr>
<td>2008</td>
<td>20th anniv. (blue, gold)</td>
<td>handle</td>
<td>students</td>
</tr>
<tr>
<td>2009</td>
<td>glasses (stereo, mirrored)</td>
<td>glasses</td>
<td>ACM SIGGRAPH</td>
</tr>
<tr>
<td>2010</td>
<td>potato head (r,g,b,a)</td>
<td>helmet</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>roadster (red, black), canada</td>
<td>eyes</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>cloudy, clear</td>
<td>mouth</td>
<td></td>
</tr>
</tbody>
</table>
Content maps are a sense-making tool that connect large numbers of ideas, aiding us by giving us a picture of our understanding of a given topic by showing the relationships between concepts.

The process I undertook in creating this map was to first create a list of words connected to my topic, then selectively edit that list down, define the terms and indentify the terms based on perceived importance.

I then used these terms to identify what I believed to be the core concept: “Pixar makes a toy shaped like a teapot, with new designs every year, to promote RenderMan while at ACM SIGGRAPH”. Using this core concept I then framed my remaining words around this, indicating the relationships between the different elements.
PIXAR makes a TOY shaped like a TEAPOT with new DESIGNS every YEAR to promote RENDERMAN while at ACM SIGGRAPH.

Co-founders
- Steve Jobs
- Alvy Ray Smith
- Ed Catmull

Utah Teapot
- common 3d test model
- inspired by
- Utah Teapot

Martin Newell
- Cornell Box
- inspired by
- Martin Newell

Dylan Sisson
- University of Utah
- Co-founders
- Inspired by
- Dylan Sisson

Association for Computer Machinery Special Interest Group on Computer Graphics and Interactive Techniques
- International Conference and Exhibition on Computer Graphics and Interactive Techniques

Industry standard
- 3d animation
- 3d rendering engine

Java
- visual effects
- Inspired by
- Java

3d animated feature films
- Toy Story
- A Bug's Life
- Toy Story 2
- Monsters, Inc.
- Finding Nemo
- The Incredibles
- Cars
- Ratatouille
- WALL-E
- Up
- Toy Story 3
- Cars 2
- Brave

Features
- ray tracing
- caustics
- ambient occlusion
- motion blur
- depth of field
- hair and fur

Inspiration
- inspired by
- inspired by
- inspired by
- inspired by
- inspired by

Utah Teapot
- inspired by
- Utah Teapot

3d rendering engine
- 3d animation
- Inspired by
- 3d rendering engine

RenderMan Studio
- RenderMan Pro Server
- RenderMan on Demand

renderfarm tool
- image tool
- shader tool
- Slim
- Tractor
- cloud based rendering

University of Utah
- founded by
- inspired by
- University of Utah
Personas are a descriptive model by which we can humanise our designs allowing us to consolidate common attributes of users into profiles that are easy to empathise with, giving us context of use, and helping us to communicate how users behave.

Ideally personas are created from user research; however the three personas here are an amalgam of people whom I have encountered at ACM SIGGRAPH and reflective of those I feel would be most likely to be interested in the RenderMan Walking Teapots.
Sam is a Technical Motion Capture Animator working for EA Sports, based at their Vancouver studio where he spends his time processing motion capture data for games like the FIFA and Tiger Woods games, as well as developing new tools and ideas to increase the studio’s flexibility and data output quality.

While working in games, Sam’s real ambition is to transfer into the VFX industry as a Technical Director, one of his most prized possessions is a book on the VFX of the Lord of the Rings films signed by Andy Serkis.

While studying for his degree Sam was responsible for leading the university motion capture studio team and developing the pipeline and toolset of the studio.

After graduation Sam became a Researcher with the Intelligent Systems & Biomedical Robotics Group Research group within the Creative Technologies department, as well as an Associate Instructor for a number of classes.

Sam also spent four years as a SIGGRAPH student volunteer. For Sam the RenderMan teapots are not just a promotional item for one of the many softwares he has come into contact with; they are also a reminder of all the hard work he has put in to go to SIGGRAPH, the talks, the contacts, the parties, and all the experiences he has had there.

After work Sam likes to head to the bars with colleagues and friends, go for runs and working on one of numerous side projects.

Location: Vancouver, Canada
Originally from: London, UK
Age: 30
Education: BSc (Hons) Computer Animation
Employer: EA Sports
Occupation: Technical Motion Capture Animator
Salary: $48,000

“PARTY HARD, SIGGRAPH HARDER!”
Andrew is a Freelance Animator working from his home office, based in Hartford, Connecticut where he spends his time working on character animation for games, post-production for advertisements. While working on games and advertisements.

Prior to becoming an animator, Andrew had a varied career as a puppeteer, TV actor and animation voice actor, which eventually drew him into the field of animation and itself. As the field evolved eventually into computer animation.

Sean has been attending SIGGRAPH since 2001 when he was introduced to the conference by a colleague. Since becoming a freelance, Andrew attends SIGGRAPH both to keep up with advances in the field so he can maintain his competitive edge, and to network with other attendees to generate potential future contracts.

Sean has been collecting the RenderMan teapots since the first one was released in 2003 and sees them as a way of showing his time within the industry and as a sort of bragging rights within the SIGGRAPH community.

Outside of work Andrew spends time with his son, Chris, and wife Stephanie and likes to act in local productions.
A double major from Indiana University, having attended the Kelly School of Business, Miki took every available internship on the west coast, interning at companies such as Dreamworks and Disney Animation Studios, who as a result of her sterling performance, offered her a position as a Production Assistant after graduation.

Until now Miki has attended SIGGRAPH as a Student Volunteer, using the opportunity to talk face to face with people from the industry she wanted to join and intends to stay involved with the conference now she is part of the industry through one of it’s many committees.

Miki spends her day scheduling meetings, emailing department leads and generally assisting in the smooth running of the feature to which she is attached.

The RenderMan teapots sit on Miki’s desk at work as a way of showing to her colleagues that she is “one of the club” and that although she hasn’t been working in the industry for very long she has been around it for a while.

With Los Angeles and Hollywood on her doorstep, when not working, Miki spends a lot of her spare time taking in what the area has to offer in terms of tourist attractions and nightlife. She also takes advantage of the friendships she has made through SIGGRAPH to attend as many premieres and pre-screenings as possible.

Location: Burbank, California
Originally from: Pittsburgh, Pennsylvania
Age: 22
Education: BS Business BA Telecommunication
Employer: Disney Animation Studios
Occupation: Production Assistant
Salary: $32,000

Skill set:
Left brain (logic) vs. right brain (creativity):

Use of RenderMan:
A system map is designed as a means to experience content. From the elements within the concept map I isolated those elements I felt would be of greatest importance to users identified through the personas.

I then took those elements and established entry points and user paths for a digital experience based on those elements and framed in terms of user statements. Following this I identified sections as areas to explore further using scenarios based upon my three personas.
Scenarios act as a narrative through which we can explore an application from the point of view of the user, examining their likely means of engagement with the product.

Scenarios were based on the numbered areas within the system map, one allocated to each of the user personas as a means of contextualising the system, helping to humanise the personas and show the use of the digital application.

The scenarios chosen were then expanded on further by means of high detail storyboards visualising the application as though it were an Apple iPad app.
Sitting in a coffee shop on her lunch break from work, Miki is thinking of the shaders the lighting team she is attached to are working on, they showed her the work in progress for shaders that would approximate the way that light behaves when passing through jelly like materials and they tested the shader on a 3d model of a teapot. She wonders why they use a teapot but doesn’t want to ask and show her inexperience.

Sat at a table absent-mindedly playing with her phone, she opens up the walking teapot app and decides to explore the “So Why A Teapot?” option. Selecting the it from the menu she reads through a potted history of Martin Newell and the Utah teapot.

Now that the teapot mystery has been solved Miki turns to more important matters like figuring out how hurry the team up so they don’t fall behind schedule.

Sam is interested in the different teapots that Pixar have released since they first started giving them away at SIGGRAPH. He has a number of them but wants to be able to have a look at the teapots he hasn’t yet been able to add to his collection.

Having navigated to the Teapot Turntable area of the app, he browses through a number of thumbnails on a timeline dating back to 2003, the year Pixar first released a walking teapot.

Selecting a teapot Sam reads the information about the year it was released, any film or RenderMan association it has, whether it was from the Pixar booth or the RenderMan group and how many of that type were produced. He then rotates the teapot to be able to see it from different angles and appreciate the interesting and novel design.

Andrew has been collecting the walking teapots since their first release in 2003, he’s always had a fascination with how they come up with the designs for them and fancies being able to create one of his own without having to spend time modeling, texturing and rendering.

Having a spare fifteen minutes between meetings and after seeing some of the trailers for Monsters University, Andrew fires up the walking teapot app and starts playing around with it.

Adding extra spouts, handles and a bright colour to the teapot template, Andrew is really pleased with his results, closing the program and spending a final five minutes going over his notes before his next meeting.

“I want to be able to pick a teapot and get a closer look at it”

“I want to design a teapot”

“So why is it a teapot anyway?”

SCENARIOS
The storyboards for this scenario sees the user able to swipe to view the walking teapot from multiple angles, view and browse a timeline of when the teapots were released, select a teapot from the timeline and get additional information about the teapot selected.

The timeline for this scenario was limited by the walking teapots I had at my disposal but serves to illustrate for the purposes of the storyboards. Were this design realised it would naturally include all teapot designs and design variants.
This scenario illustrates the teapot creation functionality I envision within the application. Similarly to the teapot turntable shown in the previous scenario, users can rotate their teapot to view it from different perspectives.

Selecting from one of the options on the left hand side they will be presented with a submenu with the options for the aspect of the teapot they intend to manipulate.

The options at the top level in the hierarchy would be extensible through updates to the app to reflect for example features reflecting the most recent Pixar film releases.
This scenario is aimed at those users who perhaps are uncertain as to the history of the teapot within computer graphics and offers a brief overview of the origin of the teapot.

Represented in a style reminiscent of a scrap book, this section of the application was inspired by Pixar’s Up, specifically the scene showing Carl flicking through the scrapbook created by his late wife Ellie.
The teapot model was created in 1975 by early computer graphics researcher Martin Newell, a member of the pioneering graphics program at the University of Utah at the same time as Pixar Animation Studios' president and founder Ed Catmull. Sitting down having tea and looking for a simple model to create for his work, Newell's wife Sandra suggested their tea service. Newell grabbed some graph paper and a pencil, and sketched the entire teapot by eye. Newell's wife Sandra bought the teapot from ZCMI, (a department store in Salt Lake City). The actual teapot is skinnier than many of its computerized images because the data was created for the rectangular pixels of early displays.
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The teapot shape contains a number of elements that made it ideal for the graphics experiments of the time including that the hole in the handle can project a shadow on itself, and that it looks reasonable when displayed without a complex surface texture. The original teapot, from Martin Newell's PhD thesis, consisted of 28 Bezier patches.
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This study has introduced me to a large array of principles, theories and strategies for interaction and user experience design that I had previously not been exposed to. These tools have helped to develop my knowledge of typography, visual form, and how to visualise represent my concepts and designs significantly over the course of creating this book I have no doubt will enabled me to create IX/UX designs that are better able to visually communicate to the user.

I would also like to take the opportunity to thank Gary Dickson and the students of 5552: Graphic Design for Non-Majors for their critiques and feedback throughout the creation of this book, and to Peter Moxom at Pixar for all his help with the teapo.