



# Developing Methods and Tools for Online Experiments

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## Overview of Talk

- Background
- Our online experimental tool and methods
  - Experimental Web site
  - Data collection tools
- Future areas of research

## Background

- Interdisciplinary student research group at University of Washington
- Research related to Web site design's effect on use

## Research Area

- Effect of hyperlink wording on browsing behavior, comprehension, and perception of a Web site

**Generic:** The Manu'a Islands are famous for [local culture](#) and spectacular

VS

**Informative:** The Manu'a Islands are famous for [traditional Samoan culture](#) ar

VS

**Intriguing:** The Manu'a Islands are famous for [the Samoan Way](#) and specta

...and how do we test this online?

## Experiment Requirements

- Must be online, naturalistic browsing study
- Record user behavior
- Deliver a survey
- Format collected data in multiple ways
- Keep data anonymous yet give participants reward

## Challenges of Online Experiments

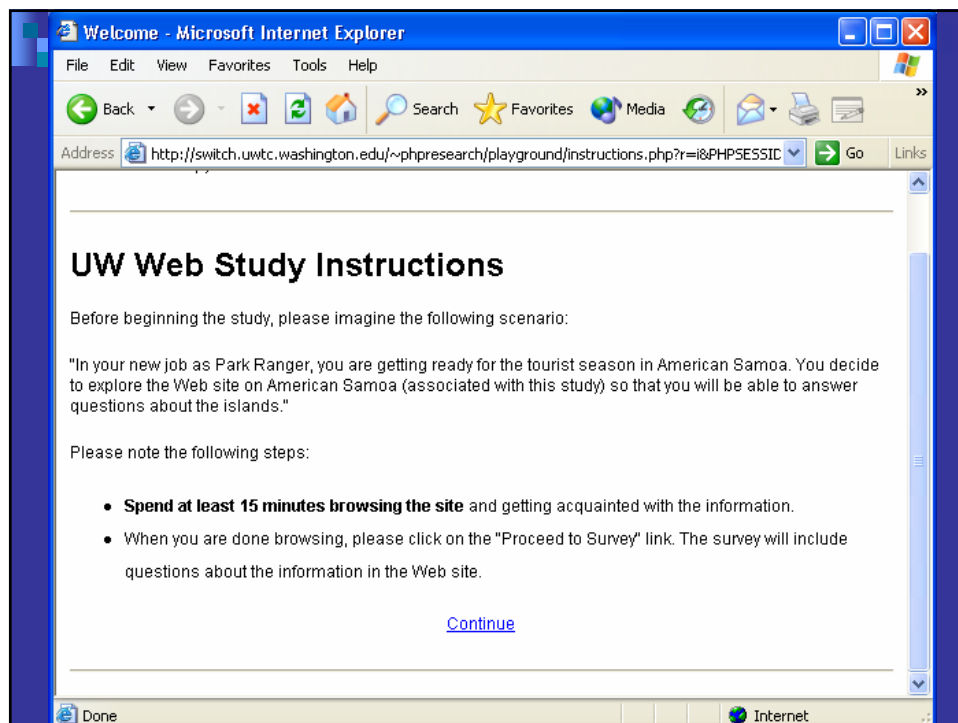
- Reliability of collected data
- Recording user behavior unobtrusively
- Capturing all desired information
- Ease of use for the non-technical

## Our Method

- Participants: engineering students
- Materials: experimental Web site
- Procedure: students browsed site where and when they liked
- Pilot test (spr. – sum. 2003) and then “real” experiment (aut. 2003 – spr. 2004)

# Creating the Experimental Web Site

- Naturally occurring site (slightly modified) about American Samoa
- Single code source, with dynamically generated hyperlinks
- Controlled presentation of 5 conditions
- Usable from everywhere



**Informative link wording**      **Intriguing link wording**      **Generic link wording**

**Natural History Guide To American Samoa**

**Marine**  
 Damaged coral reefs  
 Overharvested giant clams  
 Long-lived reef fish  
 Fagatele Bay Marine Sanctuary  
 Reef-dwelling sea worms

**Birds**  
 Many-colored fruit doves  
 Insectivorous birds and bats  
 Unique native birds

**Terrestrial**  
 Aerial-rooting banyan trees  
 Fruit-eating bats  
 Samoa's volcanic origins  
 Native animal diversity  
 Wildlife food sources  
 Non-native pest species

**Insects**  
 Blood-borne disease  
 Mosquito-borne virus  
 Insect repellents

**People**  
 American Samoa's history  
 Traditional Samoan culture

[Proceed to survey \(after having browsed for 15 minutes\)](#)

**Natural History Guide To American Samoa**

**Terrestrial**  
 Otherworld invaders  
 Tropical menagerie  
 Flying foxes  
 Strangler figs  
 Samoa's fiery past  
 Nature's picnic basket

**Marine**  
 Secluded sanctuary  
 Ancient reef-dwellers  
 Solar-powered clams  
 Tasty worms  
 Snow-dusted reefs

**Insects**  
 Insidious blood worms  
 Bug busting  
 Jungle fever

**Birds**  
 Samoa's royal birds  
 Tiny forest jewels  
 Deadly predators

**People**  
 The Samoan Way  
 The Samoan Saga

[Proceed to survey \(after having browsed for 15 minutes\)](#)

**Natural History Guide To American Samoa**

**People**  
 Local history  
 Local culture

**Insects**  
 Insect avoidance  
 Dengue  
 Filariasis

**Terrestrial**  
 Bats  
 Banyan trees  
 Volcanoes  
 Animal foods  
 Biodiversity  
 Introduced species

**Birds**  
 Manu'an birds  
 Insect eaters  
 Fruit doves


**Marine**  
 Giant clams  
 Coral reefs  
 Marine sanctuary  
 Sea worms  
 Reef fish

[Proceed to survey \(after having browsed for 15 minutes\)](#)

**Manu'an birds**

The Manu's Islands are famous for [local culture](#) and spectacular beauty, and they are an important part of [local history](#), but the wildlife is also special. There are four kinds of birds living in Manu'a that do not occur on Tutuila.

The most beautiful of these is Samoa's only parrot, the *segavao*, or blue-crowned lory. This is a tiny jewel of a bird, only 7 inches long, but colored with emerald green back and wings, ruby red face and throat, and a sapphire blue crown. *Segavao* often come in to villages to feed on the nectar of coconut (*niu*) and coral tree (*gatae*) flowers, but they are not easy to see in spite of their bright colors. Your first clue to their presence is often their high-pitched whistles.



Blue-crowned Lory (*segavao*)

Another special bird of Manu'a is the *sega o le vau*, the lesser (Fiji) shrikebill. This is a charcoal-grey bird with tiny white corners on its tail. This bird is found nowhere else in the Samoan islands. *Sega o le vau* are usually heard before they are seen, as they often make a loud chatter as they poke through dead vines or 'ie'ie leaves. These birds often ignore people, and if you sit very still they will sometimes feed within arm's reach.

The spotless crane is a small black bird that is extremely rare and has

**Natural History Guide To American Samoa - Microsoft Internet Explorer**

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media

Address <http://switch.uwcw.washington.edu/~phpresearch/playground/bats.php?r=n&PHPSESSID=dca18b4cc206>

Local history  
 Local culture  
**Marine**  
 Giant clams  
 Sea worms  
 Reef fish  
 Coral reefs  
 Marine sanctuary

**Birds**  
 Manu'an birds  
 Insect eaters  
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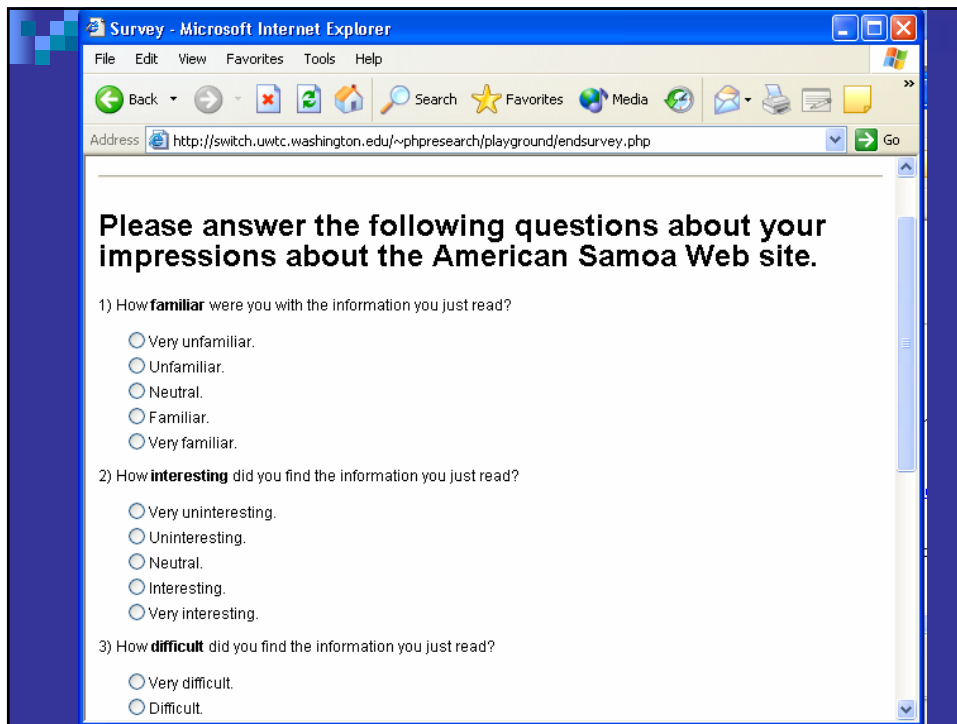
[Proceed to survey \(after having browsed for 15 minutes\)](#)

the only native mammals in the Samoan islands (an indication of [American diversity](#)).

Flying foxes can be seen flying, soaring, feeding, or just hanging in trees. When two species overlap in size (adults weigh 300-600 grams), there are very little differences in appearance. When silhouetted against the sky, the *Pteropus samoensis* has a more rounded shape, with wings that are slightly scalloped and relatively dark and often relaxed, usually with slower wing beats and deeper wing strokes. It is soaring in the air in the day, taking advantage of rising currents of warm air to float up and about without flapping their wings.

In contrast, *Pteropus tonganus* (*pe'a fanua*) has a more cross-like appearance: the neck and head appear more pronounced, the wings are narrower and more scalloped, and the hind legs stretch out like a tail. In flight, *pe'a fanua* tend to have faster wing beats and shallower wing strokes. They are less likely to soar in thermals





## Collecting Data

- Answers from surveys and link-clicking recorded
- Combination of PHP scripts and standard Web server logs
- Data collection was transparent to user
- Data in multiple formats possible

## Examples of Collected Data

- Specific links clicked
- Link location on page
- “Back” button use
- Multiple browser windows use
- Sequence of pages browsed
- Time on page

## Some Results from Pilot Test

- Tools worked!
- But some problems:
  - Participants had misperception about their browsing purpose
  - Participants tended to click from top to bottom of navigation menu

## Redesign of Web Site

- Reworded the experiment's scenario to encourage browsing for learning
- Randomly ordered the navigation menu's sections and links

## Some Results of Final Trial

- Generic-Informative and Generic-Intriguing link wordings increase number of links clicked
- Gen-Inf increases number of pages visited
- Gen-Inf increases comprehension of material

## Future Work

- Study other online experiment tools
- Use our tool to study other research questions
- Continue developing experimental tool

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