

# *Introduction to Web Engineering*

## *SENG2050/6050*

Lecture 2b  
Web Site Design

# Producers' Perspective

- Anybody who creates a Web site does so with some goals in mind.
- Web sites should have well-defined goals.
  - Example: **[www.newcastle.edu.au](http://www.newcastle.edu.au)**
    - **Goals:**
      - attract new students by promoting our courses and research
      - provide our teaching materials to current students
      - provide our research results to the research community
      - provide administrative information to university staff
  - These goals reflect the overall job of the department/organization. All of these goals have specific consumers in mind.

# Consumers' Perspective

- Where users come from (marketing view)
  - ✓ Non-professional
  - ✓ Changing from a pioneering group of enthusiasts to a more mainstream mass of early adopters
- User cares about
  - ✓ What does this site do
  - ✓ Where is the thing I am looking for
  - ✓ Where have I been
  - ✓ Where can I go
- Poor success rate, poor usability

# Matching the Two Perspectives

- The key to good web system is to match the two perspectives:
  - give the user enough information - navigation & search schemes - to help them in known-item searching
  - provide ample cross-linking to help them in browsing

# Understand the User

- Users get frustrated when they lose context:
  - ✓ getting lost in a complex hyperlinked structure (perhaps literally going round in circles)
  - ✓ being unable to judge how relevant, up-to-date, or accurate information is
- User's behavior- summarized
  - ✓ Scan
  - ✓ Short term memory
  - ✓ Impatient
  - ✓ Always “assume”

[Your Gateway to Census 2000](#) • [2000 Census](#) • [Census 2000](#)  
[EEQ Tabulations](#) • [Secondary File 1 \(SF-1\)](#) • [Secondary File 2 \(SF-2\)](#)

Estimates • American Community Survey • Projections •  
Housing • Income • State Median Income • Poverty •  
Health Insurance • International • Geography • More

[Economic Census](#) • [Economic Indicators](#) • [Get Help with Your Form](#) • [NAESB](#) • [Survey of Business Owners](#) • [Government](#) • [E-Stats](#) • [Export Trade](#) | [Export Codes](#) • [Local Employment Dynamics](#) • [More](#)

## Mads • TIGER • Oskaver • Mads

[Releases](#) • [Earth Engine Features](#) • [Monthly Links](#) • [Broadcast & Photo Services](#) • [Entrance Request](#) • [More](#)

[Hurricane Data and Emergency Preparedness](#) • [Current Calendar](#) • [Training](#) • [For Teachers](#) • [Statistical Abstract](#) • [FedStats](#) • [USA.gov](#)

## NEW - Annual Capital Expenditures Survey 2005

## Population Clocks

World 6,584,760.029

10:45 GMT (EST + 5) Mar 26, 2017

### 3. Results and Findings

City/Town/Country or ID

08 12 2019

Select a stay

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

### Test An Area Profile with QuickFacts

Select a state to begin:

Select a state

Latest Economic Indicators

- [Kenny Rogers Song](#)
- [Hollywood Sign in Los Angeles, California](#)

## Economic Trade-offs

Select an index set  $\alpha$ 

Select an industry

# Mental Models

- People have mental models of how things work:
  - ✓ how does an ATM machine work?
  - ✓ how does your computer boot?
- This allows people to make predictions about how things will work

# Mental Models

- Mental models are built from
  - ✓ affordances
  - ✓ constraints
  - ✓ mappings
  - ✓ positive transfer
  - ✓ cultural associations/standards
  - ✓ instructions
  - ✓ interactions

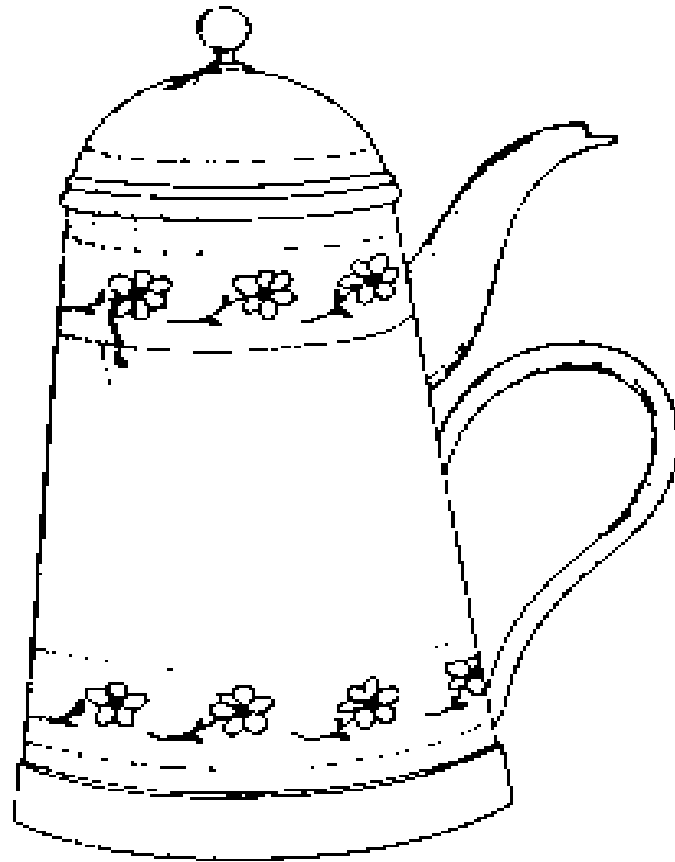


# Affordances

- Are the *perceived properties* of an object that determine how it can be used.
  - ✓ Knobs are for turning and buttons are for pushing etc.
- Some affordances are obvious, some are learned.
  - ✓ Glass can be seen through.
  - ✓ Glass breaks easily.

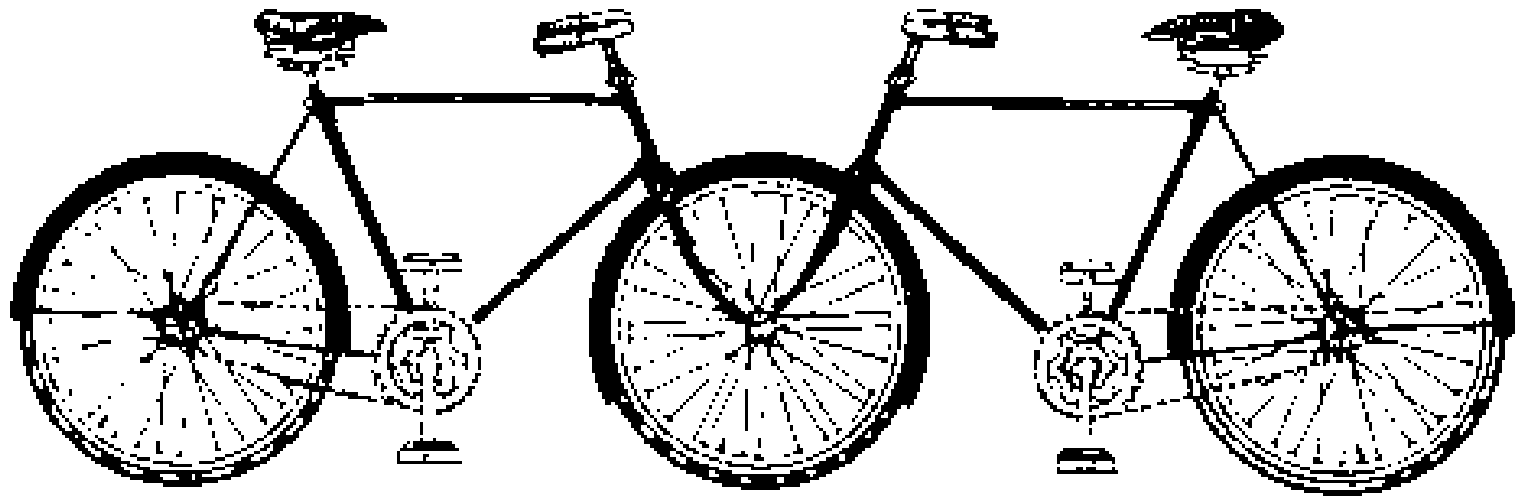
# Affordances in Screen-Based Interfaces

- In graphical, screen-based interfaces, all that the designer has available is control over perceived affordances
  - ✓ Display screen, pointing device, selection buttons, keyboard
  - ✓ These afford touching, pointing, looking, clicking on every pixel of the display.
- There might be a gap between the real affordance and the user perceived affordances
  - ✓ does the user perceive this affordance? does the user recognize that clicking on the icon is a meaningful, useful action?



*Something wrong here?*

*Mental models are often  
wrong!*



We have mental models of *how* bicycles work  
We can “simulate” this to know it *won’t* work

# Visual Organization

## ➤ Proximity

- ✓ Locate Related items close together

## ➤ Alignment

- ✓ Place related items along an imaginary line

## ➤ Consistency

- ✓ Make related items look the same

## ➤ Contrast

- ✓ Make different items look different

## ➤ Have some common sense

# Other Issues

- *Browser Issues*

- Each browser has differences in:
  - the range of HTML/CSS features handled
  - the precise interpretation of ambiguous or unspecified HTML/CSS features
  - deviations to standard HTML/CSS (and bugs!)
- A “hard line” view is to follow the W3C standards and encourage users to upgrade to compliant browsers.

	Chrome	Opera	Firefox	Edge	Safari
Upcoming	68 528		60 497	18 496	11.2 477
Current	66 528	45 518	59 491	17 492	11.1 471
Older	65 528	37 489	58 486	16 476	11 452
	64 528	30 479	57 486	15 473	10.1 406
	63 528	12.10 309	56 478	14 460	10.0 383
	62 528		55 478	13 433	9.1 370
	61 526		54 474	12 377	9.0 360
	60 523		53 474	Internet Explorer	8.0 354
				11 312	

# Response Times

- 0.1 second

- ✓ The limit for having the user feel that the system is reacting instantaneously

- 1 second

- ✓ User notice the delay, but user's flow of thought remain uninterrupted

- 10 seconds

- ✓ Limit for keeping user's attention focused on the dialogue

# Art versus Engineering

- Two basic approaches to design
  - ✓ The artistic idea of expressing yourself.
  - ✓ The engineering ideal of solving a problem for a customer.
- Fundamental errors are common on all levels of web design



# Useful Resource

- **Highly recommend the book “Don't Make Me Think: A Common Sense Approach to Web Usability” by Steve Krug**
- **Also, the book by Jakob Nielsen “Designing Web Usability: The Practice of Simplicity” and “Prioritizing Web Usability”**

**THE END**

**QUESTIONS??**

**THANKS!!**