Laws of UX

A Note By
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1. Jakob's Law

Users spend most of their time on other sites, and they prefer your site to work the same way as all the other sites they already know.

Jakob's Law (Jakob Nielsen, 2000)

Key Takeaways:

- Users expect familiarity - They transfer their expectations from familiar websites or apps to new ones.
- Match mental models - Design interfaces that align with what users already know to reduce cognitive load.
- Minimize unnecessary friction - Use common design patterns (e.g., navigation, layout, search placement) to help users complete tasks easily.
- Support transitions - When changing designs, allow users to use the old version temporarily to avoid frustration.

Jakob's Law doesn't mean all websites should look the same—it encourages starting with familiar design patterns to help users feel comfortable and confident from the start.

2. Fitts's Law

The time to acquire a target is a function of the distance to and size of the target.

Fitts's Law (Paul M. Fitts, 1954)

The faster and more accurately a user can interact with a UI element depends on two things:
1. How far it is from their current pointer position.
2. How big the element is.

Fitts's Law Formula

$$ID = \log2\ (\frac{2D}{W})$$

Where:
ID = Index of Difficulty (in bits)
D = Distance from starting point to the center of the target (pixels or cm)
W = Width of the target (pixels or cm)

As a UI/UX Designer, What We Need:

We don't always need exact physical measurements — you can use pixel distances in your design tool (like Figma, XD, or Sketch).

D (Distance): Measure from the center of the user's focus point (e.g., center of screen, previous button) to the center of the target.

W (Width): Width or height of the clickable object (whichever direction you're measuring along).

Example in UI Design

Let's say we have a "Submit" button:
It is 200 pixels away from the form field the user just filled. The button is 100 pixels wide.

Now Calculate:

$$ID = \log_2\left(\frac{2 \times 200}{100}\right) = \log_2(4) = 2 \text{ bits}$$

Lower ID = faster + easier interaction.

3. Hick's Law

Formulated by: William Edmund Hick and Ray Hyman in 1952.

Purpose: To study how the number of choices affects reaction time.

Finding: As the number of options increases, decision time increases logarithmically.

Formula:

$$RT = a + b \log_2(n)$$

RT = Response Time
n = Number of options
a, b = Constants depending on the task

Example Scenario:

Suppose in a user interface (UI), a user is presented with 8 buttons to choose from.

Let's assume:

a=0.5 seconds (base reaction time)

b=0.2 seconds (scaling factor based on task difficulty)

n=8 (number of choices)

Calculation:

$$RT = 0.5+0.2 \log 2(8)$$

$$RT = 1.1 \text{ seconds}$$

The user will take approximately 1.1 seconds to make a decision when presented with 8 options, assuming the given constants.

4. Miller's Law

Miller's Law comes from a study by psychologist George A. Miller in 1956. He found something interesting about how much information people can hold in their short-term memory.

Most people can remember about 7 things at once — sometimes a little more (9) or a little less (5). That's why it's often called:

The Magical Number 7, Plus or Minus 2.

What is "Chunking"?

Miller noticed that we don't always remember individual pieces, but we group things into chunks.

Example:

Hard to remember: 9 1 7 4 6 2 5 3 8 0

Easier to remember: 917-462-5380

This is chunking — grouping bits into bigger, familiar parts so we can remember them better.

How This Helps in UX Design

In design (especially in apps, websites, or forms), you should:

Keep Choices Limited
Don't show too many buttons or options. Aim for around 5 to 9.

Group Related Info Together
Use headings, sections, and spacing to organize things into meaningful parts.

Make Content Easy to Scan
Break long text into short paragraphs, bullets, or steps.

5. Postel's Law

Postel's Law suggests a very helpful rule in UX (User Experience) and interface design:

> **Be strict in what you ask the user to do, but flexible in what you accept from the user.**

This means:
Don't ask the user for unnecessary or too much information.
Be ready to handle many different ways people might input that information.

Example : Forms on Websites or Apps

orms are a common way for people to share information—like signing up for a service or placing an order.
Here's how we apply Postel's Law in form design:

What to do:
Ask for only what's needed.
Example: Don't ask for someone's phone number if you only need their email.

Don't ask for info you already have.
Example: If the user is already logged in, don't ask them to enter their email again.

6. Peak–End Rule

The Peak–End Rule is a psychological principle that says:

People remember an experience based on how they felt at its most intense moment (the peak) and at the very end — not the entire experience.

Key Points:

1. It's a cognitive bias discovered by Daniel Kahneman.
2. The peak can be positive or negative — it's the most emotional point.
3. The end is the final impression.
4. The overall memory of an experience is shaped mostly by these two moments.

UX Example Scenario:

Task: Submitting a job application
Peak: A friendly, well-structured form with smart auto-fill functionality and an engaging loading animation.
End: A clear confirmation message such as "Thank you. We'll review your application and get back to you soon," followed by optional links to resume tips or related blog articles.

Result: A positive and professional user experience, even though filling out forms is typically a mundane task.

7. Aesthetic–Usability Effect

The aesthetic–usability effect is a psychological phenomenon where users perceive more attractive products as easier to use—even if they are not. This bias is driven by positive emotional responses to good design.

Key Takeaways:

1. A beautiful interface leads to positive first impressions.
2. Aesthetically pleasing designs enhance cognitive performance, increase perceived usability, and boost credibility.
3. This effect influences user trust, engagement, and overall satisfaction.

Why It Happens

1. Our brains process visual appeal quickly and associate beauty with functionality.
2. Users use automatic cognitive processing to form early judgments.
3. Positive emotions can enhance problem-solving and perception of system performance.

UX Implications

1. First impressions matter: users may not give a second chance to unattractive interfaces.
2. Visually appealing interfaces can compensate for minor usability issues.
3. Use visual hierarchy, color theory, white space, and consistency to enhance aesthetics.

7. Von Restorff Effect (Isolation Effect)

1. Items that stand out are more easily remembered.
2. Known as the Von Restorff Effect, or the isolation effect.

Key Takeaways:

1. Humans are naturally drawn to distinctive, novel, or contrasting items.
2. We have evolved with superior pattern recognition and attention filtering.
3. Effective design uses contrast in color, shape, size, position, or motion to guide attention.
4. Too many focal points create cognitive overload—design must be purposeful in emphasis.

Origins:

1. Introduced by Hedwig von Restorff (1933), who found that people remember visually different items in a similar set more easily.
2. Supported by further research (e.g., Taylor & Fiske, 1978) on salience and attention.

Example:

Silver ring Gold necklace **Emerald-encrusted crown**

Later, we clearly remember the emerald-encrusted crown — because it stood out as bold, unique, and extraordinary among the others.

8. Tesler's Law

Every system has some complexity. The question is:

Should the user handle it, or should the designer/developer handle it?

A good design makes things easy for the user by hiding or managing the hard parts behind the scenes.

1. Some things will always be a bit complicated — we can't remove all of it.
2. Designers and developers should do the hard work so the user doesn't have to.
3. This makes the product feel smooth, fast, and easy to use.

Simple Example: Email App

When you send an email:

1. You need a sender and a receiver.
2. Good apps fill in your email automatically.
3. They also suggest contacts as you type.

This saves time and effort for you. The app does the work in the background.

9. Doherty Threshold (Law of Fast Interaction)

When a computer responds in less than 400 milliseconds (ms), people feel in control, stay focused, and work more productively.

Key Points:

1. If a system responds fast (under 400 ms) users stay engaged and happy.

2. If it's slow (over 1 second) users get bored, distracted, or frustrated.

3. Even if a task takes longer, we can reduce the "feeling" of waiting by showing feedback or animations.