

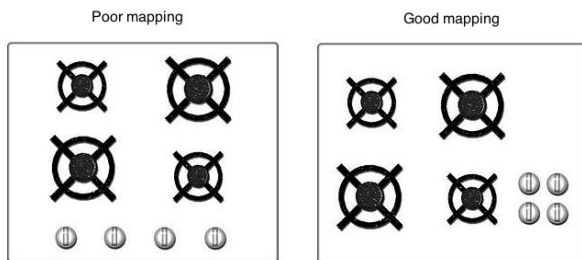
## Normans Design Principles:

**Visibility** – The more visible functions are, the more likely users will be able to know what to do next. In contrast, when functions are "out of sight," it makes them more difficult to find and know how to use.

**Feedback** – Feedback is about sending back information about what action has been done and what has been accomplished, allowing the person to continue with the activity. Various kinds of feedback are available for interaction design-audio, tactile, verbal, and combinations of these.

**Constraints** – The design concept of constraining refers to determining ways of restricting the kind of user interaction that can take place at a given moment. There are various ways this can be achieved. AKA: Constraints is about limiting the range of interaction possibilities for the user to simplify the interface and guide the user to the appropriate next action. This is a case where constraints are clarifying, since they make it clear what can be done. Limitless possibilities often leave the user confused.

**Mapping** – This refers to the relationship between controls and their effects in the world. Nearly all artifacts need some kind of mapping between controls and effects, whether it is a flashlight, car, power plant, or cockpit. An example of a good mapping between control and effect is the up and down arrows used to represent the up and down movement of the cursor, respectively, on a computer keyboard.



This slider also has a strong mapping, since it's clear moving it to the right will increase its value versus moving it to the left will decrease it.



**Consistency** – This refers to designing interfaces to have similar operations and use similar elements for achieving similar tasks. In particular, a consistent interface is one that follows rules, such as using the same operation to select all objects. For example, a consistent operation is using the same input action to highlight any graphical object at the interface, such as always clicking the left mouse button. Inconsistent interfaces, on the other hand, allow exceptions to a rule.

- *Internal*: Within the same system or application.
- *External*: The same design elements are used in other independent systems/applications/devices.

Is it consistency in terms of:

- appearance (looks the same);
- the visual metaphors, icons, elements used, etc.;
- the steps needed to accomplish similar interactions; or
- standard conventions.

Components with similar behaviours should have a similar appearance.

Components with different behaviours should have a different appearance

**Affordance** – is a term used to refer to an attribute of an object that allows people to know how to use it. For example, a mouse button invites pushing (in so doing acting clicking) by the way it is physically constrained in its plastic shell. At a very simple level, to afford means "to give a clue" (Norman, 1988). When the affordances of a physical object are perceptually obvious it is easy to know how to interact with it.

**Signifier** – They are used to communicate clearly the purpose, structure, and operation of a device, so that users can understand how to use it correctly.

- Signifiers are signals, eg., signs, labels and drawings, such as “push”, “pull” or “exit”.
- They can be seen on doors, or arrows (eg., “Toilets are this way”), as well as diagrams.
- They can indicate what is to be acted upon or in which direction to gesture,

### Shneiderman's 8 Golden Rules:

Ben Shneiderman. In his popular book "Designing the User Interface: Strategies for Effective Human-Computer Interaction", Shneiderman reveals his eight golden rules of interface design:

- **Strive for consistency** by utilizing familiar icons, colors, menu hierarchy, call-to-actions, and [user flows](#) when designing similar situations and sequence of actions. Standardizing the way information is conveyed ensures users are able to apply knowledge from one click to another; without the need to learn new representations for the same actions. Consistency plays an important role by helping users become familiar with the digital landscape of your product so they can achieve their goals more easily.
- **Enable frequent users to use shortcuts.** With increased use comes the demand for quicker methods of completing tasks. For example, both Windows and Mac provide users with keyboard shortcuts for copying and pasting, so as the user becomes more experienced, they can navigate and operate the user interface more quickly and effortlessly.
- **Offer informative feedback.** The user should know where they are at and what is going on at all times. For every action there should be appropriate, human-readable feedback within a reasonable amount of time. A good example of applying this would be to indicate to the user where they are at in the process when working through a multi-page questionnaire. A bad example we often see is when an error message shows an error-code instead of a human-readable and meaningful message.