# **DIY Input Technology**

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Bill Buxton's Preface to Human Input to Computer Systems: Theories, Techniques, Technologies (unpublished)

When compared to displays and graphical output, studies of human-computer interaction have paid too little attention to input. Interaction is a two-way street. To be effective, there must be a balance of concern for both directions of communication. Without this balance, the full potential power and benefit of the technology cannot be fulfilled.



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Wii	7.84M Japan 21.43M America 17.71M Others	46.98M	48.9%
<b>XBOX</b> 360	0.94M Japan 16.40M America 11.26M Others	28.61M	29.8%
P53	2.88M Japan 7.86M America 9.81M Others	20.55M	21.4%
	25.94M Japan 32.68M America 40.18M Others	98.80M	68.4%
PayStation Portable	11.67M Japan 16.32M America 17.58M Others	45.57M	31.6%
	http://www.vgchartz.com/		













Input is important, and deserves considerable attention. But once this need is recognized, the intrepid investigator quickly runs into a brick wall. Useful information relevant to the designer is near impossible to obtain. The standard texts on computer graphics (such as Newman & Sproull, 1979, and Foley & Van Dam, 1982) give us general descriptions of devices, both physical and virtual, as well as interaction techniques. However, the "real world" is not general. It is made up of real problems, where the designer has to find some match among a mix of users, display technologies, tasks, context and input technologies. Each situation is different, and requires a deep understanding of the relevant factors. But where does one go to obtain this understanding?















## Atari 2600 CX40 Joystick (1977)



Just 5 switches!

\ o5 o4 o3 o2 o1/ \ o9 o8 o7 o6 / \\_\_\_\_/

pin #
1 Up
2 Down
3 Left
4 Right
5 unused
6 Button

unused Ground unused







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# **Stanford Responsive Workbench**

































### **The Future**

Mechanotronics of interfaces

- Mechanical and tactile
- Electronic sensing and analog computing
- Computing and signal processing

Every light switch will have a microcontroller Every power outlet will sample power consumption





## The Future

Sensing of the real-world (sensor net, Street View) Coupled with simulation of the virtual world At a massive scale (Google Earth, Second Life)

How will we interact with the system?







