

# **The Future of Inclusive Design Online**

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**A new paradigm for  
accessibility is emerging.**

**What is it?**

**What will it mean (opportunities  
and challenges)?**

**How do we need to respond?**

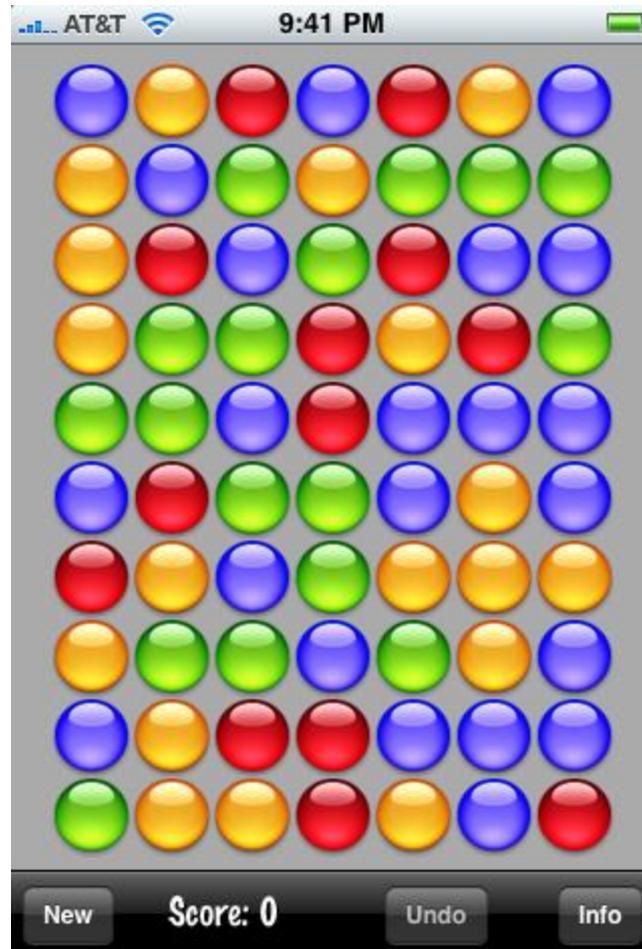
# The Raman Principle

"The way to think about the visual system is as a way to ask questions about a spatial database. If you give someone another way to ask the questions and get the answers, they don't need vision."

--T V Raman



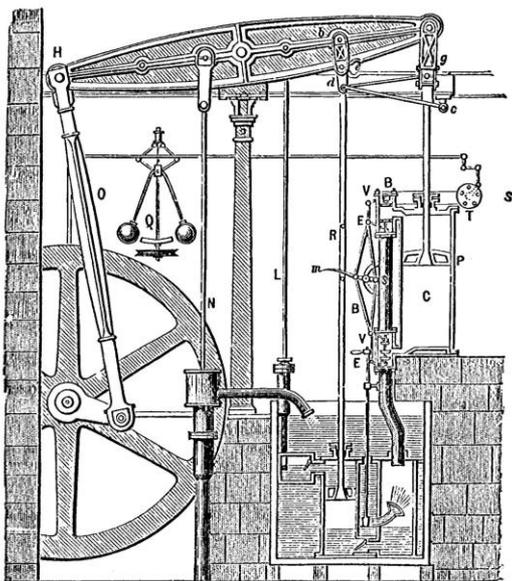
# Jawbreaker Demo (Raman and Chen)



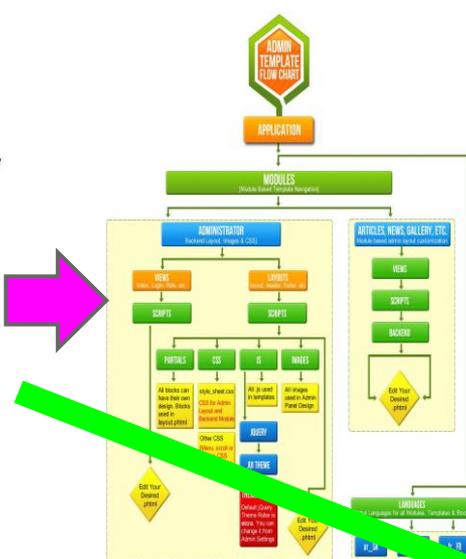
**This idea shifts our focus from  
making *presentations* accessible to  
making *content* accessible.**



# Beyond the Screen Reader (more Raman)

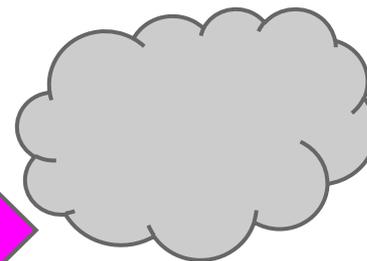


something you need to understand and work with

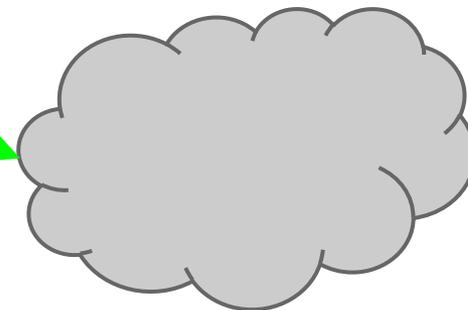


visual presentation

screen reader



non-visual presentation of visual presentation



non-visual presentation of what you need to understand and work with

# **The new paradigm (Raman, 2013)**

Providers of content and services will provide APIs (application program interfaces)...

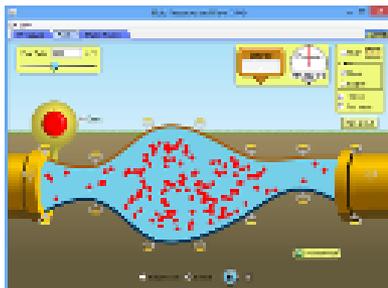
... to which a wide variety of clients can be connected...

... that serve the particular needs of users.

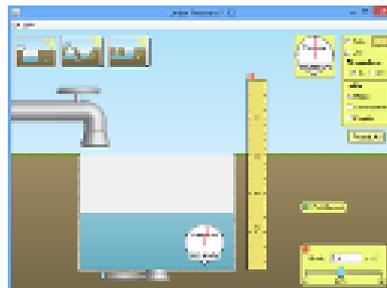
# Opportunities

*superior* access can be provided

# making interactive simulations accessible



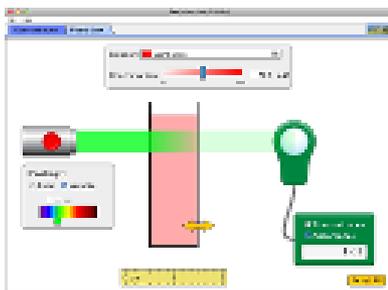
**Fluid Pressure and Flow**



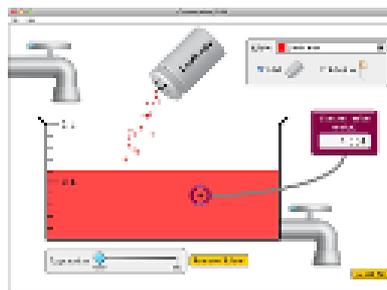
**Under Pressure**



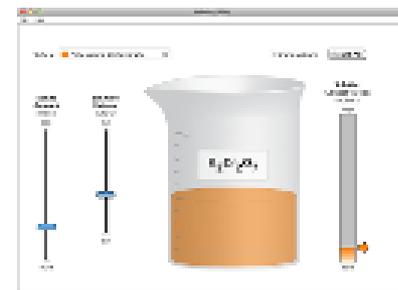
**Normal Modes**



**Beer's Law Lab**



**Concentration**



**Molarity**

# Creative Technology for People with Disabilities: Visual Programming?

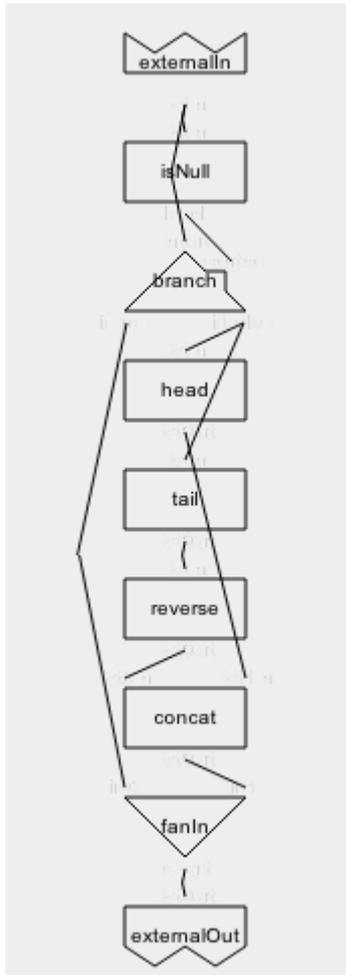


Jamal Mazrui



Gregg Vanderheiden

# Non-Visual Visual Programming



```

[{"functionName": "isNull",
  "in": {"listIn": "listIn"},
  "out": {"bool": "b0"}},

```

```

{"functionName": "branch",
  "in": {"input": "listIn", "control": "b0"},
  "out": {"ifTrue": "b1", "ifFalse": "b2"}},

```

```

{"functionName": "head",
  "in": {"listIn": "b2"},
  "out": {"listOut": "b3"}},
{"functionName": "tail",
  "in": {"listIn": "b2"},
  "out": {"listOut": "b4"}},

```

```

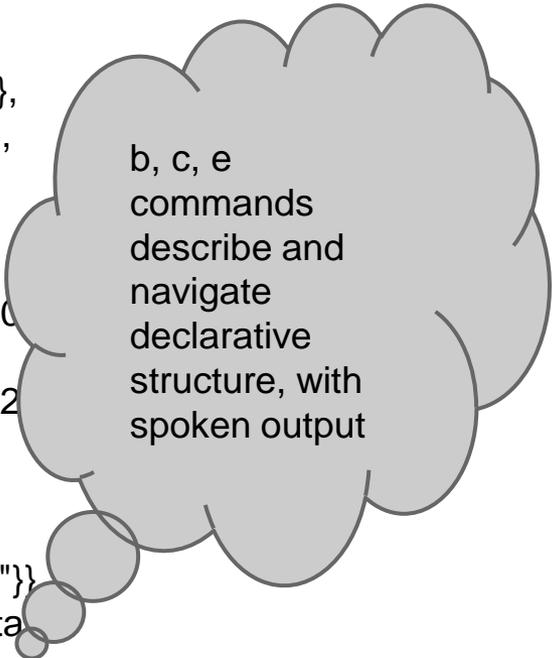
{"functionName": "reverse",
  "in": {"listIn": "b4"},
  "out": {"listOut": "b5"}},

```

```

{"functionName": "concat",
  "in": {"list0In": "b5", "list1In": "b3"},
  "out": {"listOut": "b2"}},

```



commands can traverse **logical structure** of  
program, not just **layout order**

# The Grand Strategic Trend

## from presentation to content



John Seely Brown, 1984: WYSIWYG is a  
bad idea!

We have accessibility problems everywhere today because people are creating *presentations rather than content.*

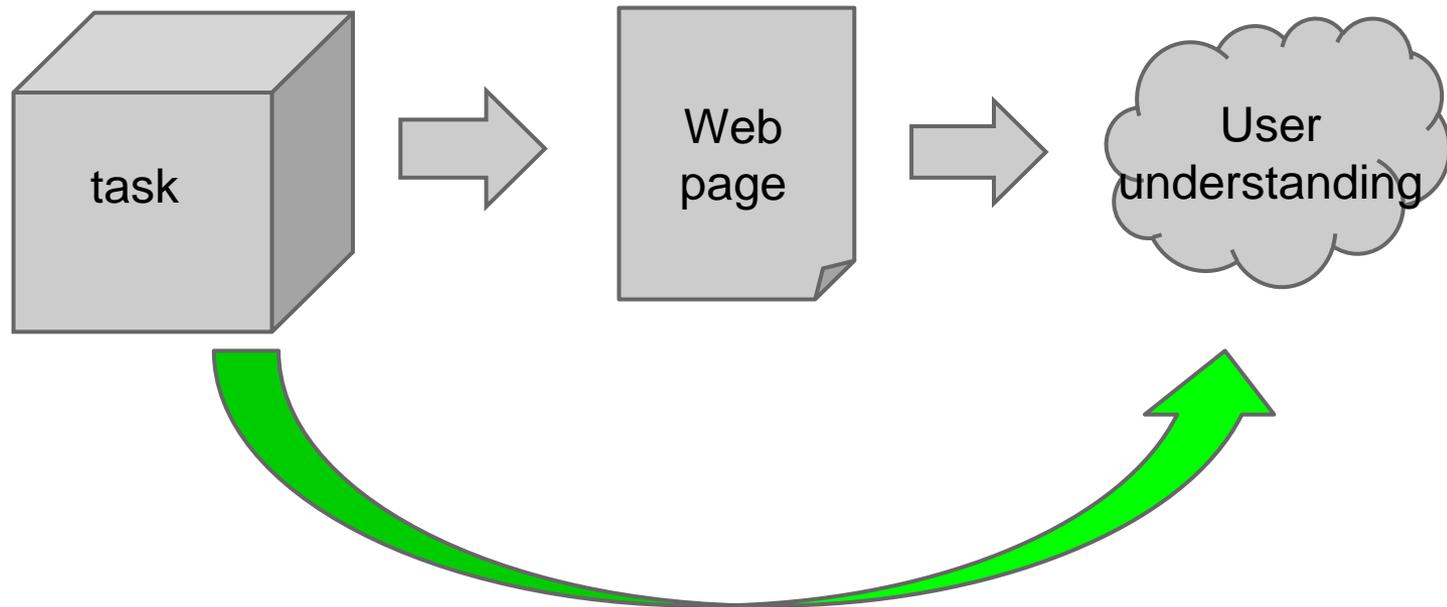
We have to replace presentation-oriented tools by content-oriented ones.

This is happening, eg CSS, CMS, but we need to push much harder... it's been almost 30 years since 1984



# Pushing the Raman Principle Farther

*How does the principle apply to cognitive limitations?*



# Pushing the Raman Principle Farther

*How does the principle apply to cognitive limitations?*



Bob Williams  
Associate  
Commissioner  
SSA

We can ask not "How can we make this page easier to understand?"

but

"How can we make this task easier to perform?"

- Use Choice Architecture (cf Thaler et al.)
- Use *personalization* to simplify the task

# Challenges

# **New division of labor**

Agency that produces content may not produce the clients...

*... so who is responsible for accessibility?*

VA Blue Button may illustrate this issue:

VA produces content (as plaintext dump), not client viewers of the content.

# New software tools

- tools for publishing *content*, not Word documents or pdfs
- tools for creating clients, flexibly, quickly, inclusively, and cheaply
  - this is part of the Mazrui Challenge
  - it also connects to the shift from *mass production* to *mass customization*

# Progress on Client Creation

Work within the Global Public Inclusive Infrastructure Initiative (GPII.net) is promising

- emphasis on maximum configurability of software
- uses declarative representation of programs, and advances on program merging and integration
- see [fluidproject.org](http://fluidproject.org)

# How we need to respond

Plan and carry out needed changes in public policy

- not only accessibility (sec 508) but also intellectual property law may be affected

Promote advances in software tools

# Thank you!





**Just Say *No!* to  
Native Apps!**