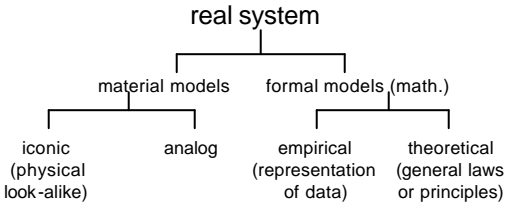


### Classification of Models




---

---

---

---

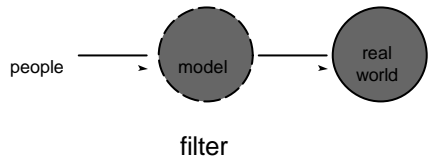
---

---

---

---

### Model Representation




---

---

---

---

---

---

---

---

### Criteria for Classifying Models

- Structure and subject
  - individual processes
  - component models
  - integrated watershed models
  - global watershed models
- Role of the time factor
  - static -- empirical eq. & regression models
  - dynamic -- time as an independent variable

---

---

---

---

---

---

---

---

Criteria (cont.)

- Cognitive value of model
  - physically-based model
    - laws and structure well known
  - conceptual models
    - used if structure is unknown or too complex
    - simplified model behavior
  - trend models
    - statistical relationship

---

---

---

---

---

---

---

---

Criteria (cont.)

- Character of results obtained
  - stochastic
    - if any variables are random w/ probability distr.
  - deterministic
    - free from random variation
- Applied approach & methods of solution
  - “black box” -- operator transforms input to output
  - “white box” -- physical system understood enough to synthesize without I/O observations

---

---

---

---

---

---

---

---

Criteria (cont.)

- Properties of operator function
  - linear or nonlinear -- 2 meanings
    - statistical  $y=a+bx$
    - systems theory -- superposition
$$\begin{matrix} x_1(t) \xrightarrow{\quad} y_1(t) \\ x_2(t) \xrightarrow{\quad} y_2(t) \end{matrix} \quad \Rightarrow \quad \begin{matrix} x_1(t) + x_2(t) \xrightarrow{\quad} y_1(t) + y_2(t) \end{matrix}$$
  - lumped or distributed
    - spatial variability of inputs, outputs & parameters
  - stationary or nonstationary

---

---

---

---

---

---

---

---

Criteria (cont.)

- Size and time scale
  - field vs. watershed
  - single vs. mixed land use
  - event or continuous

---

---

---

---

---

---

---

---