

How to Get “Bio-Inspired”?

- **You Are Not Going to Use So-Called Systematic Design Methods**
 - Pahl & Beitz
- **Still the Following Process Is Recommended**
 - Analyze the Problem in the Physical Level
 - What Should Happen? (Not How)
 - Collect “Similar” Phenomena/Machines
 - From Biological Phenomena
 - Analyze the Collection
 - Derive Categorization
 - Categorize the Collection and Visualize it
 - Find Vacancies (Holes) in the Categorization
- **For More Details -> Dr. Breedveld’s Lecture**

Then, How to Build “Bio-Collection”?

- **Lecture**
- **Books**
- **Internet**
 - Wikipedia (Images)
 - Google
 - <http://www.biomimicry.org>
 - VPRO Television Series
<http://www.youtube.com/user/Noorderlicht#g/c/ABA1491C449CBA0D>
<http://www.tvopjepc.nl/programma/947>
- **Use Wordnet 3.0**
 - A Computer-Based Thesaurus

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"The more our world functions like the natural world, the more likely we are to endure on this home that is ours, but not ours alone."

~ Janine Benyus

Photo Credits

The **Biomimicry Institute** promotes learning from and then emulating natural forms, processes, and ecosystems to create more sustainable and healthier human technologies and designs. [Learn more...](#)

How would Nature heat and cool a home?

Using tunnels and vents, termite mounds maintain a constant internal temperature. Inspired by the termites, designers in Zimbabwe constructed a passively cooled building that maintains a relatively constant temperature and saved the builders \$3.5 million up-front.



To learn about more examples of biomimicry, visit our [case studies](#) or our online database of nature's strategies [AskNature.org](#)

Why Biomimicry?

Biomimicry is the science and art of emulating Nature's best biological ideas to solve human problems. Carbon-sequestering cement inspired by corals and energy efficient wind turbines inspired by schooling fish are examples of biomimicry happening today. [Learn more about Biomimicry.](#)

Featured Strategy on AskNature: Cats' Tongues



When a cat drinks, it just barely touches its curled-back tongue to water, then draws it toward the mouth, pulling a column of water with it. This delicate, well-timed flick exploits inertia to keep water...

Employment Opportunity: Financial and Administrative Assistant

Provide administrative support to the financial manager and other department staff. Duties include general bookkeeping in addition to general clerical, receptionist and project based work. Send cover letter and résumé to jobs@biomimicrygroup.com subject line "Financial Assistant Position". Closing date Jan. 30, 2011. [Click here for complete job description.](#)

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AskNature (Official)

AskNatureTweets

Biomimicry + HOK for restorative design. Janine Benyus explains how for China

How to Analyze the Collection?

- **“Biomimic Design”**
 - Analysis through “Wordnet”
 - I. Chiu and L.H. Shu: “Biomimetic design through natural language analysis to facilitate cross-domain information retrieval,” *Artificial Intelligence for Engineering Design, Analysis and Manufacturing* (2007), Vol. 21, pp. 45–59.
- **Wordnet 3.0**
 - <http://wordnet.princeton.edu/>

WordNet Search - 3.0 - [WordNet home page](#) - [Glossary](#) - [Help](#)Word to search for: Display Options:

Key: "S:" = Show Synset (semantic) relations, "W:" = Show Word (lexical) relations

Noun

- [S:](#) (n) [jump](#), [leap](#) (a sudden and decisive increase) "*a jump in attendance*"
- [S:](#) (n) [leap](#), [jump](#), [saltation](#) (an abrupt transition) "*a successful leap from college to the major leagues*"
- [S:](#) (n) [jump](#) ((film) an abrupt transition from one scene to another)
- [S:](#) (n) [startle](#), [jump](#), [start](#) (a sudden involuntary movement) "*he awoke with a start*"
- [S:](#) (n) [jump](#), [parachuting](#) (descent with a parachute) "*he had done a lot of parachuting in the army*"
- [S:](#) (n) [jump](#), [jumping](#) (the act of jumping; propelling yourself off the ground) "*he advanced in a series of jumps*"; "*the jumping was unexpected*"

Verb

- [S:](#) (v) [jump](#), [leap](#), [bound](#), [spring](#) (move forward by leaps and bounds) "*The horse bounded across the meadow*"; "*The child leapt across the puddle*"; "*Can you jump over the fence?*"
- [S:](#) (v) [startle](#), [jump](#), [start](#) (move or jump suddenly, as if in surprise or alarm) "*She startled when I walked into the room*"
- [S:](#) (v) [jump](#) (make a sudden physical attack on) "*The muggers jumped the woman in the fur coat*"
- [S:](#) (v) [jump](#) (increase suddenly and significantly) "*Prices jumped overnight*"
- [S:](#) (v) [leap out](#), [jump out](#), [jump](#), [stand out](#), [stick out](#) (be highly noticeable)
- [S:](#) (v) [jump](#) (enter eagerly into) "*He jumped into the game*"
- [S:](#) (v) [rise](#), [jump](#), [climb up](#) (rise in rank or status) "*Her new novel jumped high on the bestseller list*"
- [S:](#) (v) [jump](#), [leap](#), [jump off](#) (jump down from an elevated point) "*the parachutist didn't want to jump*"; "*every year, hundreds of people jump off the Golden Gate bridge*"; "*the widow leapt into the funeral pyre*"
- [S:](#) (v) [derail](#), [jump](#) (run off or leave the rails) "*the train derailed because a cow was standing on the tracks*"
- [S:](#) (v) [chute](#), [parachute](#), [jump](#) (jump from an airplane and descend with a parachute)
- [S:](#) (v) [jump](#), [leap](#) (cause to jump or leap) "*the trainer jumped the tiger through the hoop*"
- [S:](#) (v) [jumpstart](#), [jump-start](#), [jump](#) (start (a car engine whose battery is dead) by connecting it to another car's battery)
- [S:](#) (v) [jump](#), [pass over](#), [skip](#), [skip over](#) (bypass) "*He skipped a row in the text and so the sentence was incomprehensible*"
- [S:](#) (v) [leap](#), [jump](#) (pass abruptly from one state or topic to another) "*leap into fame*"; "*jump to a conclusion*"; "*jump from one thing to another*"
- [S:](#) (v) [alternate](#), [jump](#) (go back and forth; swing back and forth between two states or conditions)

[WordNet home page](#)

Biologically Inspired Design Process

- **Lecture at Georgia Institute of Technology**
 - Michael Helms, Swaroop S. Vattam and Ashok K. Goel: “Biologically inspired design: process and products,” Design Studies 30 (2009) 606-622, doi:10.1016/j.destud.2009.04.003 606.
 - Steps
 1. Problem Definition
 2. Reframe the Problem
 3. Biological Solution Search
 4. Define the Biological Solution
 5. Principle Extraction
 6. Principle Application