

Annotated Bibliography
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The trouble with jellyfish. in Harvard Gazette [database online]. 2015 [cited October 28 2015]. Available from <http://news.harvard.edu/gazette/story/2015/10/the-trouble-with-jellyfish/>.

The artwork in the article is an exhibition by an artist Mark Dion in collaboration with Harvard design students to create awareness about the increasing jellyfish blooms, its causes and its negative impacts on the environment. This precedent well describes the causes and effects of jellyfish bloom and how the problematic can be pointed out through design.

Attril, Martin J., Jade Wright, and Martin Edwards. 2006. **Climate-related increases in jellyfish frequency suggest a more gelatinous future for the north sea.** *Limnology and Oceanography* 52, (1), DOI:10.4319/lo.2007.52.1.0480, <http://onlinelibrary.wiley.com.libproxy.newsc.hool.edu/doi/10.4319/lo.2007.52.1.0480/abstract>.

Martin Attril is the Director of the Marine Institute at Plymouth University, UK. Martin Edwards is an underwater photographer. The three authors study the possible changes in jellyfish population in the North Sea and identifying the related causes and effects. This article of importance in understanding why jellyfish blooms occur and its impact on the environment.

Crawford, Chris. 2002. **The art of interactive design**, ed. Karol JuradoWilliam Pollock.

Christopher Crawford is a computer game designer and writer. He is known for his passionate advocacy of game design as an art form and is the founder of The Journal of Computer Game Design and the Computer Game Developers' Conference. His book proposes an understanding of what makes things interactive for successful creation of websites, computer games and softwares. The book was helpful in understanding interactive design in terms of technology used by humans.

Demont, M. Edwin, and John M. Gosline. 1988. **Mechanics of jet propulsion in the hydromedusan jellyfish, polyorchis penicillatus: II. energetics of the jet cycle.** *Journal of Experimental Biology*(134): 333-45.

Edwin M. Demont is a Professor at University of British Columbia with focus on properties of biological materials, invertebrate cardiac physiology and mechanics, biological fluid dynamics. John M. Gosline also was a Professor at University of British Columbia and his research field is comparative biomechanics. Their research

is about studying jet propulsion of jellyfish. It is important as it talks about the ability of jellyfish to store mechanical energy produced by their movement.

Dunne, Anthony, and Fiona Raby. 2013. **Speculative everything - design, fiction, and social dreaming**. The MIT Press.

Anthony Dunne is a Professor and Head of Design Interactions Program at the Royal College of Art. He is the author of *Hertzian Tales: Electronic Products, Aesthetic Experience, and Critical Design* (MIT Press). Fiona Raby is a Professor of Industrial Design at the University of Applied Arts, Vienna, and Reader in Design Interactions at the Royal College of Art. This book proposes a tool for designing ideas to imagine possible futures. It is important as it gives an understanding of what speculative design means and what its purpose is.

Durkin, Jessica. **Bioluminescence**. 2011 [cited October 21 2015]. Available from <http://jessica-durkin.com/biolum>.

Jessica Durkin is a user experience designer with an art school background focused on human centered design and interactive technology. The installation showcases capabilities of bioluminescent organisms, using a glowing jellyfish to interact with passersby. I am using this installation as a precedent as the bioluminescence of the jellyfish has been biomimicked using technology to create awareness about bioluminescence.

Fukushi, Keiichi et al. 2004. **Preliminary study on the potential usefulness of jellyfish as fertilizer**. *Bulletin of the Society of Sea Water Science, Japan* 58 (2): 209-17.

Keiichi Fukushi is a Professor of Analytical Chemistry at Kobe University, Japan with research interests in analysis of various constituents of seawater. In his study, he uses chemical studies to convert jellyfish to fertilizer. This paper presented a different use of jellyfish, besides medicine and food.

Greenhouse, Esther Semsei. 2012. **Human-centered design**. *Livable New York Resource Manual*.

Esther Semsei Greenhouse is an Environmental Gerontologist in Ithaca, New York. His article talks about the need and importance of human centered design in communities and environments. In his writing, he provides a basic understanding of the concept of human centered design.

Grigoriev, N G, et al. 1997. **Voltage sensing in jellyfish shaker K⁺ channels**. *Journal of Experimental Biology*(200): 2919-26.

N G Grigoriev is part of the Department of Biological Sciences at University of Alberta, Edmonton, Canada. This research paper talks about voltage sensing in jellyfish. It is crucial as it shows possibility of an electric charge in jellyfish.

Hsieh, Peggy Y-H, Fui-Ming Leong, and Jack Rudloe. 2001. **Jellyfish as food.** *Hydrobiologia* 451, (1) (May), DOI: 10.1023/A:1011875720415, <http://link.springer.com.libproxy.newschool.edu/article/10.1023/A:1011875720415>.

Y-H Peggy Hsieh is a food scientist at Florida State University and is a Professor in the Department of Nutrition and Food Science. Fui-Ming Leong is at Perseco Asia Pacific Singapore. Jack Rudloe is a writer, naturalist and environmental activist from Panacea, Florida and is the founder of Gulf Specimen Marine Laboratory. Their article describes environmental and economic benefits of the Chinese culture using semi-dried jellyfish as food. It is useful in knowing the importance of jellyfish in the food industry.

Marshall, John et al. 1995. **The jellyfish green fluorescent protein: A new tool for studying ion channel expression and function.** *Neuron* 14, (February), 10.1016/0896-6273(95)90279-1, <http://www.sciencedirect.com.libproxy.newschool.edu/science/article/pii/0896627395902791>.

John Marshall is an Assistant Professor of Medical Science in the Department of Molecular Pharmacology, Physiology and Biotechnology at Yale School of Medicine. This paper describes two methods for using jellyfish green fluorescent protein (GFP) for studying the embryonic kidney cells. It is an example of the use of jellyfish in medicine.

Mills, Claudia E. 2000. **Jellyfish blooms: Are populations increasing globally in response to changing ocean conditions?** In *Development in hydrobiology jellyfish blooms: Ecological and societal importance.*, eds. Jennifer E. Purcell, W. M. Graham and Henri J. Dumont. Vol. 155, 55-68 Kluwer Academic Publishers.

Claudia E. Mills is an independent research scientist at Friday Harbor Laboratories and Department of Biology at University of Washington. Her paper describes the causes and effects of non-indigenous species and possibility of extinction of certain species. It focuses on non-native species as a cause of blooms.

Nagai, Takeshi et al. 1999. **Collagen of edible jellyfish exumbrella.** *Journal of the Science of Food and Agriculture*(79): 855-8.

Takeshi Nagai works at the Laboratory of Marine Biochemistry in Japan. This article describes the process of extracting collagen from jellyfish. It is useful as it shows an alternative use of jellyfish except food and medicine.

Nawroth, Janna C et al. **A tissue-engineered jellyfish with biomimetic propulsion.** *Nature Biotechnology*(30), 10.1038/nbt.2269, <http://www.nature.com.libproxy.newschool.edu/nbt/journal/v30/n8/abs/nbt.2269.html> (accessed July 22, 2012).

Janna C. Nawroth is a Technology Development Fellow for Biologically Inspired Engineering at Wyas Institute at Harvard and the Disease Biophysics Group at Harvard School of Engineering and Applied Sciences (SEAS). She studies the use of the medusa model of movement in the sea to replicate the model for muscular pumping to survive. It is a great example of biomimicking a jellyfish.

Parsons, T. R., and C. M. Lalli. 2002. **Jellyfish population explosions: Revisiting a hypothesis of possible causes.** *La Mer, Societe Franco-Japonaise d'Océanographie* 40 : 111-21.

Dr. T.R. Parsons is a Professor Emeritus at the University of British Columbia and an Honorary Research Scientist at the Institute of Ocean Sciences in Sydney, B.C., Canada. The study is about a hypothesis that relates jellyfish bloom to specific food chains in the sea that are based on production of nanophytoplankton. I like the paper as it considers natural and man-made causes of the bloom.

Pixar. *Wall-E* (2008).

The image of the Earth used in the infomercial is taken from this site.

Purcell, Jennifer E., Shin-ichi Uye, and Wen-Tseng Lo. 2007. **Anthropogenic causes of jellyfish blooms and their direct consequences for humans: A review.** *Marine Ecology Progress Series* 350, (November 22), 10.3354/meps07093.

Jennifer Purcell is a Marine Scientist at Shannon Point Marine Center with focus on biological oceanography and zooplankton ecology. Shin-ichi Uye is a Professor of biological oceanography at Hiroshima University, known for focused research on jellyfish. Wen-Tseng Lo is a Professor of marine biotechnology and resources in Taiwan with focus on limnology, marine biology and ecology. The article lays down the causes, effects, advantages and disadvantages of jellyfish. It helps in receiving and understanding the importance of jellyfish in the ecosystem.

Richardson, Anthony J. et al. **The jellyfish joyride: Causes, consequences and management responses to a more gelatinous future.** *Trends in Ecology & Evolution* 24, (6) (June), 10.1016/j.tree.2009.01.010, <http://www.sciencedirect.com.libproxy.newschool.edu/science/article/pii/S0169534709000883>.

Anthony Richardson is a Mathematics Professor with research interests in marine ecology, climate impacts research and analysis of large datasets using modern analysis techniques. This paper talks about causes, effects, advantages and disadvantages of jellyfish as well. This paper is important because it provides possible solutions to control these blooms.

Rouse, William B. 1999. **Human centered design**. *Wiley Encyclopedia of Electrical and Electronics Engineering*, 10.1002/047134608X.W7118, <http://onlinelibrary.wiley.com.libproxy.newschool.edu/doi/10.1002/047134608X.W7118/full>.

Dr. William Rouse is a researcher, educator, author and entrepreneur. He is a Professor at Georgia Institute of Technology and Alexander Crombie Humphreys Chair in Economics of Engineering in the School of Systems and Enterprises at Stevens Institute of Technology. In his article, he provides a framework for human centered design. It is important as it explains the objectives and issues of human centered design.

Smith, Mark. Weather channel strangest weather on earth thunder show. in Youtube [database online]. 20142015]. Available from <https://www.youtube.com/watch?v=xYy8cxnHH0A>.

Part of this video was used for the introduction of the infomercial.

Uye, Shin-ichi. 2008. Blooms of the giant jellyfish *nemopilema nomurai*: **A threat to the fisheries sustainability of the east asian marginal seas**. *Planktos and Benthos Research*(3), 10.1.1.458.2458, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.458.2458&rep=rep1&type=pdf>.

Shin-ichi Uye is a Professor of biological oceanography at Hiroshima University, known for focused research on jellyfish. In the paper, he focuses on a specie of the jellyfish and its impact on the fisheries business in East Asia. The article highlights the causes of bloom of one specie and its economic effect on the fisheries business.

Villanueva, Alex, Colin Smith, and Shashank Priya. 2011. **A biomimetic robotic jellyfish (robojelly) actuated by shape memory alloy composite actuators**. *Bioinspiration and Biomimetics* 6, (3), 10.1088/1748-3182/6/3/036004, <http://iopscience.iop.org/article/10.1088/1748-3182/6/3/036004>.

Alex Villanueva, Colin Smith and Shashank Priya are part of the Center for Intelligent Material Systems and Structures (CIMSS) and Center for Energy Harvesting Materials and Systems (CEHMS) at Virginia Tech. They did research on biomimicking the jet propulsion technique of jellyfish using shape memory alloy composite actuators. This paper provides and example of biomimicry of jellyfish.

Wittorski, Pierre. **Medusa electronica**. 2014 [cited October 21 2015]. Available from <http://www.pierrewittorski.com/medusa-electronica/>.

Pierre Wittorski is a student at EMYLON Business School in the field of information technology and services. The installation was created as a metaphor of Internet that we feed with our personal data everyday. It uses three jellyfish wherein two feed in data from human interactions to light up the third one. This installation is a precedent because he uses jellyfish as an example of human interaction with technology.

Wu, Yeong-Jen, and Wei-Hsiang Lai. 2010. **Simulation of piezoelectric jellyfish power generator**. *Modern Physics Letters B* 24, (13) (30 May 2010), 10.1142/S0217984910023530, <http://www.worldscientific.com/doi/abs/10.1142/S0217984910023530>.

Yeong-Jen Wu and Wei-Hsiang Lai are at the University of Aeronautics and Astronautics in Taiwan. Their study focuses on using sea waves movement to generate electrical energy in jellyfish tentacles made from piezoelectric polymers. The study holds importance as it is biomimicking jellyfish tentacles for producing usable electrical energy.

Ye, Xiu Fen et al. 2008. Driving mechanism of a new jellyfish-like microbot. *Mechatronics and Automation*, 10.1109/ICMA.2008.4798818, http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=4798818&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D4798818.

Xiu Fen Ye is part of the Harbin Engineering University in China. The paper talks about biomimicking the jet propulsion technique of jellyfish using shape memory alloy and ionic conducting polymer film actuators. This is a good example of biomimicking a jellyfish.