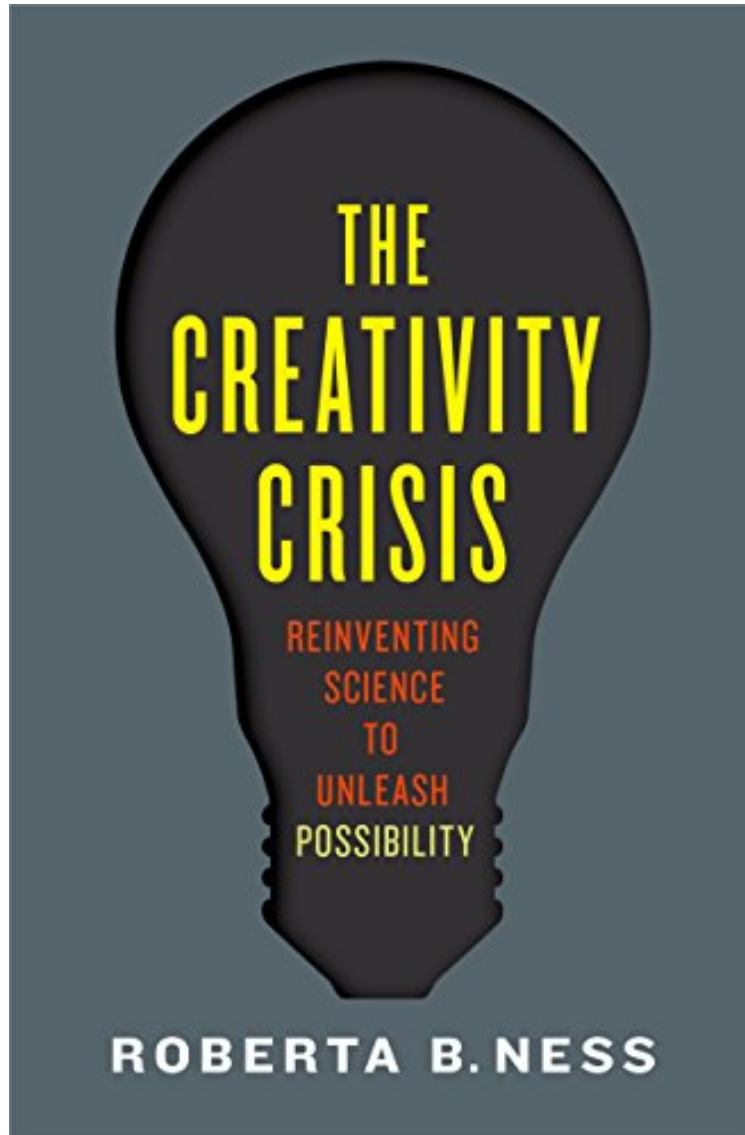


The Creativity Crisis: Reinventing Science to Unleash Possibility

Roberta Ness

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Roberta Ness : The Creativity Crisis: Reinventing Science to Unleash Possibility before purchasing it in order to gage whether or not it would be worth my time, and all praised The Creativity Crisis: Reinventing Science to Unleash Possibility:

1 of 1 people found the following review helpful. Everyone wants better medicine, faster computers or higher resolution photographs to ...By C. M. StahlScience and technology are subjects of much talk in the US. Everyone wants better medicine, faster computers or higher resolution photographs to name a few things that culturally, we expect. We just want invisible humans to make those things happen for us. As the author pointed out our scientific expertise has really flattened since around 1970 after an energetic fifteen years in response to the Soviet space

program. Our progress now depends more on evolutionary steps offering mass market products whose technology trickles down to scientific instrumentation. Though she does not point this out, in the background scientific instrumentation actually is making some significant strides. This can be witnessed by the 2014 Nobelists in Chemistry, Eric Betzig, William E. Moerner and Stefan Hell pushed the envelope for biological imaging with their microscopy improvements. I think her point is well made in general however. We like many other nations, count on scientists to make sausage while we look away. We just want shiny new objects to be our Christmas gifts. It has not always been so. In the last fifty some years we were embarrassed by Yuri Gagarin and the earlier Sputnik orbit that propelled our political leadership to get the dollars out for more science education. It became so, and for many years. We as a culture grew complacent however. The same problems that nearly brought the big three automakers down, have plagued all research. Cultural laziness has played a significant role in this complacency but it is not the sole source. We still have companies that emulate Bell Labs and universities that are cranking out mass market technologies and we have the sometimes odious "Technology Transfer" legislation that has provided us with many useful and much junk products like "natural" remedies. Yet we are still producing viable and critical products that are used for more than our leisure ease; just not as much as we could. So the author is mainly concerned with the balance between creation and caution. She suggests that the conservative nature of academia and peer review may be standing in the way of creation. While I read her many descriptions of this reality I continued to think of the fictional Martin Arrowsmith and his concerns about the same things and later in the book she described the very character. This suggests that I was continually getting her message. There is not enough collaboration of the various studies of science and technologies by her premise. Likewise there is little gamble of incorporating the social sciences into the collaborative mix of gaining new insight and spurring creativity especially amongst the young researchers. Gino Segre wrote *Ordinary Geniuses* about the endeavors of George Gamow and Max Delbruck and how they broadened science research immensely and this is what Ness would like to see more of. Segre's point was that being wrong can be very creative as long as the idea posed new thinking. It seems that the author of *The Creativity Crisis* would be in total agreement to that. She wants to open new (or dormant) avenues for creativity in the sciences. Open Source technology is one example and it pits itself against the standard peer review process. Not entirely of course but the point is to make knowledge available to more people who may push the information to new heights. Her point is that too much information is kept under covers for fear of being "scooped" or losing lead roles in discovery. This is a tough point since the researcher does not want to give information away allowing some other researcher to take advantage. This very problem was what impelled Darwin to rush his latent theory of the Origin of Man to print with Wallace writing his own nearly identical theory. Her premise is that those in peer review are already acknowledged in their field and that new ideas may actually influence their review since the study they are reviewing may gainsay already firm beliefs. It seems that this possibility is real but in the realm of science if a hypothesis is challenged and fails the test it is replaced by the gunslinger that drew faster. Of course it is not always that pure. A new idea may not see the light of day for the conservative nature of a reviewer or for that matter a department head. (I speak from experience here-I was advised not to attempt to draw minorities or women to my own classes 30 and more years ago). Ness suggests several avenues for garnering more creativity not the least of which is open source technology. In the business world there are more relaxed standards of decorum than in the past and many companies provide a really open forum for intellectual input. She may have chosen more wisely than to use Toyota as an example given the massive recalls in recent years, but theoretically their openness to new ideas is a good thing. In general brainstorming and crowd sourcing appear to be pretty reasonable efforts to get science and technology revived. Open the field to new ideas. Upgraded science fairs and graduate level contests were a couple of her suggestions and they are well met. Often while reading the book I had notions like "but what about this?! What about that?!" and she answered them pretty well. Not perfectly. She is asking for something close to an overhaul in how research is done and presented for review. She might be right but there are a lot of hurdles to overcome before that happens. The necessary changes are vast and not likely to occur soon. Peer review for instance is pretty well entrenched and has been working pretty well though the author's concerns make sense. Duplications of lab results likewise have worked well yet as she suggests it also may lead to conservative efforts rather than experimentation that turns heads. As Ness rightly suggests, science can no longer be viewed as linear and purely reductionist. The knowledge of complexity theory and its insights force any scientist to re-imagine the scope of possibilities and that is the point of the book. I think she made it decently. Sometimes trivia and data got in the way at least to this reader but it seems that the notion that there is a crisis in scientific creativity is in all well made.

2 of 2 people found the following review helpful. An insider's guide to fixing science
By Pumpjack
A brave book, gentle without too much overt criticism, but forthright about the human forces restraining science, especially biomedical science, in the U.S. Turns out it's a host of things that individually seem inconsequential or at least manageable, but during the last few decades, these elements have managed to blend themselves together into a frighteningly strong and obstructive swirl that now slows down, even poisons, scientific outcomes, devaluing public investment. Dysfunctional federal funding mechanisms, misaligned academic rewards, the insular culture of research, well-intentioned but suffocating regulations, and a host of others, hindering scientific creativity in favor of caution, slowing down progress, at a moment in history when humanity

needs scientific thinking more than ever to solve some of our most pressing problems. Ness suggests that science as it is currently practiced may no longer be up to the challenge. The scientific-academic-industrial complex is second only to the military in its tentacles into the U.S. economy, making change very difficult, but Ness provides what seem to this layperson like pragmatic, even inspired, recommendations to help dig us out of this messy ditch in our collective scientific journey. Ness delivers a healthy dose of reality and optimism, and demonstrates that she is an important big-picture scientific thinker. Extremely readable, Ness has made a very complex topic accessible to the broad spectrum of people who could help fix the situation, including those outside the scientific cloister. My only critique of the book is the absence of a meaningful discussion about animal rights/welfare, an area in which society's views are rapidly shifting and one that, by definition, poses existential questions about the biomedical scientific status quo.

Every day we hear about some fascinating new discovery. Yet anemic progress toward addressing the greatest risks to humankind -- clean energy, emerging infections, and cancer -- warns us that science may not be meeting its potential. Indeed, there is evidence that advances are slowing. Science is costly and can hurt people; thus it must be pursued with caution. Yet, excessive caution stifles the very thing that powers inventiveness: creation. In her boldest book yet, Roberta Ness argues that the system of funding agencies, universities, and industries designed to promote innovation has come to impede it. The Creativity Crisis strips away the scientific enterprise's veil of mystique to reveal the gritty underbelly of university research. America's economic belt-tightening discourages long-term, risky investments in revolutionary advances and elevates short-term projects with assured outcomes. The pursuit of basic research insights, with the greatest power to transform but little ability to enrich, is being abandoned. The social nature of academia today also contributes to the descent of revolutionary discovery. In academia, which tends to be insular, hierarchical, and tradition-bound, research ideas are "owned" and the owners gain enormous clout to decide what is accepted. Communalism is antithetical to idea ownership. Thus science has not embraced the Web-based democratic sharing of ideas called crowdsourcing, one of the greatest tools for creativity and social change in our age. A final battleground between creation and caution is within the sphere of ethics. Scientists are typically altruistic but sometimes have all-too-human inclinations toward avarice and conceit. The most original thinkers are most likely to flout convention. This tendency can pull them across the lines of acceptable behavior. Caution is a necessary check on the destructive potential of amoral creation. Yet, when every individual and institution is considered a priori to be a threat, adventuresome invention is squelched. Creation and caution in science should be in balance, but they are not. For possibilities to unlock, the ecosystem in which science is done must be fundamentally rebalanced.

"This book will stimulate much discussion and deserves considerable attention" -- Choice
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About the Author
Roberta Ness is an internationally renowned physician-scientist and author of 350 scientific papers and books. She is a member of the Institute of Medicine, National Academies of Science; a Fellow of the American College of Physicians as well as the American College of Epidemiology; and a frequent advisor to the National Institutes of Health, National Academies of Science, Department of Defense, and Centers for Disease Control. She is past President of the American College of Epidemiology and of the American Epidemiology Society. Her Board memberships include the Association of Schools and Programs of Public Health and the National Board of Public Health Examiners. Dr. Ness has received many awards and honors including a White House appointment to the Board of the Mickey Leland Center; Laureate award from the American College of Physicians; Leadership Award from the Family Health Council; and receipt of the Snow Award, one the most prestigious lifetime achievement awards in her profession. She is Dean of the University of Texas School of Public Health and the University of Texas-Houston Vice President for Innovation.