

Researchers say academia can learn from Hollywood

14 October 2014

According to a pair of University of Houston (UH) professors and their Italian colleague, while science is increasingly moving in the direction of teamwork and interdisciplinary research, changes need to be made in academia to allow for a more collaborative model to flourish.

Professors Ioannis T. Pavlidis and Ioanna Semendeferi from UH and Alexander M. Petersen from the IMT Lucca Institute for Advanced Studies in Italy published a commentary in the October 2014 issue of *Nature Physics*, articulating policies that will harmonize academic structure with function in the team [science](#) era. Titled "Together we stand," the piece discusses how this harmonization will involve rethinking graduate education and research, starting from quantitative analysis of pressing problems.

"Science is no more the work of 'solo genius,' but the product of a collective operation, involving hundreds or thousands of scientists at a time," Pavlidis said. "The recent discovery of the Higgs particle, for instance, took more than 3,000 scientists working together. We live in the era of [team science](#) where groups of scientists resemble ant colonies."

The authors argue that whereas research and science have become more of a team effort, [academia](#) – the main host of scientific operations – remains largely the same in the way it operates. They point out that academic career advancement is based on individual recognition, grants are most often entrusted to a single faculty member as the principal investigator (PI) and students navigate the curriculum independently. They say this causes a misalignment of academic policies and norms with the increasingly collaborative nature of science and calls for imaginative solutions.

After analyzing these challenges, the team of researchers proposes a set of intriguing policies to address them. Their key recommendation is for

academia to adapt models from other creative communities. In particular, they look to the movie industry, which has embraced a team structure and used it to its advantage. Unlike in academic projects, they say, each contribution in a film is recognized and rewarded.

"A good example is in the role of film editor," Pavlidis said. "There are clear avenues for independent recognition with an Oscar in film editing, for instance, and the work is not simply a step along the path to directorship. The same applies for scriptwriters and sound engineers, as well as almost every role in the filmmaking process."

Similarly, Pavlidis and his colleagues address the issue of the PI structure in research grants, asserting that it should be replaced with a "crew structure" in which multiple specialized PIs operate on equal standing.

To make room for this change, Pavlidis, Petersen and Semendeferi recommend restructuring of the grant overhead to fund more tenure-track positions, which in turn would unclog the postdoctoral lines. They also recommend developing late career options and rebalancing the teaching load to reduce the need for instructional faculty. The authors also consider fundamental the introduction of quality humanities education in graduate programs of science, the adoption of teaching models immersed in group culture and the application of communal mentorship to address the issue of socio-emotional help in big labs.

"We understand that these changes carry their own risk," Pavlidis said. "The cost of inaction, however, carries a far greater risk."

The commentary was based on research funded by the National Science Foundation and the Italian National Research Council.

Provided by University of Houston

APA citation: Researchers say academia can learn from Hollywood (2014, October 14) retrieved 27 September 2020 from <https://phys.org/news/2014-10-academia-hollywood.html>

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