

Directors' perspective: Luminosity

A supernova can outshine an entire galaxy if only for a few days or weeks. Some supernovae are original heavyweights. They assemble their mass at birth and burn up their own supply of hydrogen until collapse and explosion are inevitable. Others acquire their weight later in life aided always by a collaborator, a companion star that generously gives of itself so that its partner can grow to explode in a burst of light that outshines all around it. The collaborator is ignored and often suffers catastrophe at the hands of its main partner, who reaps all the glory. The galaxy gains an unprecedented prominence, as astronomers who had no prior interest in its existence suddenly take notice and use its distance as a metric of the expanding fabric of space-time. This notice is new. Only recently have we acquired the tools to find distant supernovae easily. Early ones were not appreciated despite their best efforts to call attention to themselves through great explosions of light, energy, and matter.

A similar prominence occurs when we issue press releases about scientific discoveries with Hubble. We call attention to the work of one or two astronomers in a press release or a televised press conference, and their world is suddenly changed, if only for a short time. Sometimes these astronomers are "heavyweights." Their work has been prominent among specialists for a long time, and everyone agrees that they are deserving of the media attention. More often, the prominence is bestowed on scientists who get lucky, whose previous work is good but not special, certainly not of supernova quality. Still more often, the attention lands upon one or two people in collaboration with many. Like the supernova's companion star, the collaborators are ignored by the press, despite the best efforts of the prominent few to include them in the story. The world likes heroes; teams are not heroes even if they are heroic.

It is too bad that the credit is sometimes distorted, landing heavily on one or two partners in a much larger collaboration. It is rarely the fault of the lucky few. They try in vain to credit their partners, but the press cares little about unseen partners. Reporters like the immediacy of those in the spotlight. Only the immediate family of the collaborators remembers their roles, anyway. Can you name the main collaborators in the discovery of AIDS? Of global warming? Of the discovery that the universe may be pervaded by a vacuum energy (Λ) as measured from distant supernovae? If you can, you are ahead of 99% of the general population, and you should know the answer to my third query (check the *Ap. J.* author list again; it may surprise you). Almost everyone benefits, nevertheless. The collaborators have an easier time getting grants or jobs or telescope time, once the research is seen as exciting. It is mainly a question of how much.

This prominence focuses attention on astronomy, the much larger galaxy surrounding the prominent stars. Astronomy reaps the benefit of this attention. People get interested in what we do. They can see what their tax contributions buy. Some get excited as they struggle to understand what the latest discovery means. It takes them, as it takes us, out of their daily duties and lets them ponder the imponderable.

I believe this attention is good, so long as we are honest about what we do. It is dishonest to highlight results that are known to be wrong or results of little interest, but it is generally true that the quality and future value of new results are debatable. Edwin Hubble's first estimate of the rate of expansion of the universe was wildly in error for reasons he could not foresee. Should he have announced the expansion without the measurement? Van de Kamp's "discovery" of a planet around Barnard's star was an artifact of the process by which plates are developed. This problem was not foreseen at the time. Should he have held off? How conservative should we be before going public? People are still interested in the results, just as we are interested in partial scores of a football game, if it is a game we care about, even though it may not portend the final outcome. It is more important that people care about the game.

Our Office of Public Outreach does an outstanding job of telling the public what we in astronomy do. We reap big rewards from public appreciation of and fascination with our research. It takes a professional approach: writers who can write for a general audience, media specialists who understand what visual cues will instruct, and above all an understanding of what interests the press and what excites the general public. I have heard complaints about our selection of topics or scientists – although never from those selected. Some suggest that we should be more conservative, that we should wait for "proof." Sometimes we

should, but “proof” in astronomy, unlike mathematics, is rare if it ever exists – witness the solar neutrino problem.

It is noteworthy that the press trusts our public outreach efforts. Praise accrues to astronomy when we make successes of our big projects. We are very lucky to have the support we do. But luck is sometimes manufactured, and the best way to manufacture this luck is to give our supporters value for their money. Telling them what their money buys seems like the least we can do.

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