

Response to Nanotechnology

This article chronicles the debate held between Rice University's Smalley and Foresight Institute's Drexler. These two gentlemen are debating about the implications of self-replicating nanomachines and nanofactories.

There seem to be two main arguments, one made by each person. Smalley argues that self replicating nanomachines are impossible because chemistry states that such a reaction would have to happen in a water-environment using enzymes. These requirements will drastically limit what can be produced by nanofactories and quite probably make the self-replicating impossible. Drexler responds to these allegations by arguing in favor of a more machine-based approach. He states that through the use of nanomachines one could move molecules to just the right positions in order to trigger reactions and create self-replicating technologies even in the absence of water.

The two men argue and counter each other throughout the article until Smalley seems to just write off Drexler and drop the argument. Some valid and interesting points were brought up in the discussion however. Smalley made a point which I had been considering myself; his point was that simply smashing two molecules together with nanomachines does not guarantee that the correct reaction will occur. Drexler stated that the nanomachines would detect this error and correct for it. I agree with Smalley that being able to position molecules may not be all that is required to create the correct reactions, enzymes may be needed for instance. The main problem I have with both arguments is the controlling of a nanomachine. Drexler mentioned computer-control to make the machines precise. I am unsure how he would control a machine which is less

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then a nanometer in size with a computer. All of the nanomachine's instructions will have to be chemical and biological reactions rather than encoded instructions. Elaborating on this crucial problem may have allowed Drexler to begin to convince Smalley.

Both men brought up valid arguments and created an interesting discussion. Examining the points in this discussion and attempting to solve the problems mentioned will further help to drive nanotechnology's progress. Attempting to drive this progress was one of the few things these men seemed to agree upon.