

TO: Paul Vanden Bout  
FROM: Steve Schneider, Five College Astronomy Dept *ESJ*  
RE: 300 foot replacement

I understand that various possibilities for a replacement telescope for the 300 foot are under consideration. Scientifically, I think one of the most important considerations should be for extragalactic 21 cm work. With the Arecibo telescope's narrow declination range and the Bonn telescope's lack of success due to interference, there is no other instrument now capable of making sensitive measurements of HI over most of the sky.

Studies of low-luminosity extragalactic phenomena--including dwarf galaxies, galaxies of low surface brightness, and intergalactic matter--may allow us to better understand galaxy formation, star formation within galaxies, and cosmological questions about distant galaxy formation. If significant radio light is present, the only practical approach to such studies is via 21 cm observations.

The 300 foot was the best available instrument outside of Arecibo's declination range, but even it was beginning to become limited by problems of confusion. I therefore think a larger instrument, optimized for longer wavelength use would be the best choice for the 300 foot's replacement.