Simplify, Simplify, Simplify

It is our view that multiple visits to survey fields and OTF observing are ill-advised strategies for the VLASS. The reasons are as follows:

Non-co-planar data are much harder to reduce, as are OTF data. We do not dispute that OTF data can in principle be reduced (although we have not seen a detailed comparison and one should certainly be made before the survey is approved if it does not already exist), but we are not talking about a few hours of data here but many thousands of hours. Furthermore, it is not just the initial reduction that is in question. It is not at all improbable that this huge dataset will require re-reduction at a future date for particular fields or for new purposes, and this will permanently complicate the reduction for future users.

Multi-epoch data are also harder to reduce if any variability is present (and if it isn't, multi-epoch data is useless); if variable sources are present in a field, then CLEANing will leave un-CLEANed flux in the combined image. Furthermore, multi-epoch observations are much harder to schedule, adding, in our view, an unnecessary complication. Since there will be a long delay between the observation of putative transients and their discovery in the data, the scientific value is dubious (see Nithyanandan et al. 2011). Furthermore, snapshot side lobes are likely to produce many false transients. ASKAP is designed for transient detection, and rather trying to make the VLASS all things to all people, why not let the telescope designed for transients do transients, and the telescope that can produce uniquely high-resolution, high-sensitivity, high-fidelity maps do that as well as possible.

Finally, the complications introduced by multi-epoch observations taken in OTF mode will unquestionable delay the production of the final data release to the community. In the previous two VLA surveys (NVSS and FIRST), the final maps were always made public as soon as they were reduced, and they represented the final product, not some interim images to be replaced at a future date.

David Helfand and Bob Becker