S. Saroiu, et al., "An Analysis of Internet Content Delivery Systems," ACM SIGOPS Operating Systems Review Special Issue on Network Behavior, vol. 36, Winter 2002.

I thought his paper was very well written. As someone who knew close to nothing about content delivery networks (CDNs) before reading this, I felt like this paper provided useful insight in regards to how the CDNs operate and in regards to the differences between them when it came to network consumption. The charts provided in the paper were for the most part accompanied by a clear description of what they were showing which made the paper easier to follow. In particular, the results in section 5.2 regarding figure 9 were quite meaningful in my opinion. It was an interesting realization that was made by the authors that "the number of simultaneous open Kazaa connections is about twice the number of simultaneous open WWW + Akamai connections." This realization seems quite trivial if someone were to explain to you that it is because of the large size of the P2P objects that are being transferred and the fact that they are transferred in fragments makes it so that the time the connection needs to stay open and the bandwidth consumption of the operation increase significantly however, showing this with charts and data to back it up was impressive.

I did find a few parts in the paper that I thought could have been improved on. First, in section 5.3 they talk about figure 12b and how it "shows that nearly *all* HTTP bytes transferred in WWW, Akamai and PSP systems are for useful content." My problem with this statement is that nowhere in the paper do they discuss what they mean by useful content and it is not something that can be deduced by the reader by examining the figure. Additionally, since the authors pretty much grouped the Kazaa results with the Gnutella results in a lot of their analysis, I believe they should not have misled the reader into thinking the paper included 4 different CDN types and rather stated that they tried analyzing these two P2P systems individually but concluded that the results were similar for the most part. What ended up happening instead is that you have a few figures in which the authors only discuss the distribution for the Kazaa network and do not even mention the Gnutella curve even though it appears to have some interesting characteristics (ex: figure 5).

Considering this paper was written in 2002, I think its contribution is significant to the understanding of these different networks. Even though there was no "future work" section, the paper did discuss a possible P2P reverse cache system that based on their brief analysis, could significantly lower bandwidth consumption by these programs. I have not heard of any implementation of this anywhere which leads me to believe that either internet connections are fast enough today to where this is not a problem, or, that since P2P programs generally spread pirated content, companies do not want to take on the potential lawsuits that could ensue by creating such a caching system.