1096-VN-1159 **Naiomi T. Cameron*** (ncameron@lclark.edu), Department of Mathematical Sciences, Lewis & Clark College, 0615 SW Palatine Hill Road, Portland, OR 97219. *Generalized Fine and Motzkin Number Sequences.* Preliminary report.

In this talk, I will describe a generalization of each of the Fine and Motzkin numbers and point out some connections between them. A generalized t-Dyck path is a path from $(0,0)$ to $((t+1)n,0)$ using up and down steps of the form $U(1,1)$ and $D(1,-t)$ and never going below the x-axis. The generalized Fine sequence counts generalized t-Dyck paths with no hills, where a hill is defined as a ground level subpath of length $t+1$ and form $UU\cdots UD$. (Note that this is different than counting t-Dyck paths having no peaks of minimal height.) I will present a generalization of the nonobvious identity

$$(2z+z^2)F^2(z)-(1+2z)F(z)+1=0,$$

where $F(z)$ is the generating function for Fine numbers, indicating how this generalization can be used to compute the asymptotic proportion of t-Dyck paths having a given number of hills. The generalization of the Motzkin number sequence will be obtained by adding t steps of the form $(1,0)$, $(1,-1)$, $(1,-2)$, $\ldots$, $(1,-t+1)$ to the step set of t-Dyck paths. I will describe a coloring of these modified paths which retrieves the generalized Catalan numbers and I will discuss subsets of these generalized Motzkin paths which are enumerated by the generalized Fine sequence. (Received September 13, 2013)