

# IEOR 8100: Topics in OR: Asymptotic Methods in Queueing Theory

Fall 2009, Professor Whitt

Class Lecture Notes: Monday, September 14.

## Donsker's theorem (continued)

### Topics Covered

1. The representation of initial segments  $(S_0, \dots, S_n)$  of a discrete-time random walk as random elements of the function spaces  $D \equiv D([0, 1], \mathbb{R})$  and  $C \equiv C([0, 1], \mathbb{R})$ . Space and time scaling in this context.
2. The continuous mapping theorem
3. The meaning of convergence in distribution or convergence in law, denoted by  $\Rightarrow$ .
4. The Skorohod representation theorem
5. Convergence results for  $M_n$  and  $W_n$  in this framework.

See the previous lectures notes for reading on this.