Example: Typing • **Exercise:** • **what kind of knowledge do beginners/intermediate/expert typists use?**

• **Beginner:** Knowledge in the world (keyboard labeling)

• **Intermediate:** Knowledge in the world (peripheral vision, feeling keys) and in the head (knowing location of important keys by heart)

• **Expert:** All knowledge in the head, no eye contact to keyboard necessary anymore (cost/benefit tradeoff)

Example: City Map • **Exercise:** • **Try to write down exactly how to get from your home to the main university building**

Result: • Nobody has a perfect street/building map in their head; often entire parts are forgotten in route descriptions

• Nevertheless we can get from A to B safely

• Why? Signage and constraints (e.g., street numbers) supply external knowledge