

<b>Session 1</b>	<b>Listening in time: human perception of temporal sequences</b>
<b>Time</b>	<b>10:30 – 11:00</b>
<b>Name</b>	Maria Chait
<b>Title</b>	Change detection in complex acoustic scenes
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<b>Email</b>	m.chait@ucl.ac.uk
<b>Abstract</b>	<p>The ability to detect changes in our surroundings is crucial for survival. Hearing is hypothesized to play a pivotal role in this process by serving as an ‘early-warning device’, rapidly directing attention to unexpected events in the environment. I will report on a series of psychophysics experiments in which we investigated listeners’ sensitivity to changes in complex acoustic scenes. We created artificial ‘scenes’ populated by multiple pure-tone components. To ensure they are perceived as different/separate items, they were also characterized by a unique square wave amplitude modulation rate. Importantly, these scenes lacked semantic attributes, which may have been a limiting factor in interpreting previous studies, thus allowing us to probe low-level, pre-semantic, processes involved in auditory change perception.</p> <p>Our results reveal a striking difference between ‘appear’ (CA) and ‘disappear’ (CD) events. Listeners are exceptionally sensitive to CA: change detection and identification are at ceiling, response times are short, with little effect of scene-size. In contrast, listeners have difficulty detecting, and still more so identifying, disappearing objects, even in small, acoustically simple, scenes: Performance rapidly deteriorates with growing scene-size, response times are slow, and even when change is detected, the changed component is rarely successfully identified.</p> <p>Further experiments also demonstrate that ‘appear’ and ‘disappear’ events are differentially perturbed by scene interruptions. The qualitatively different performance patterns for CA and CD, which are not entirely consistent with explanations in terms of adaptation or differences in on- and off- tuned cell populations, suggest ‘appear’ and ‘disappear’ change-detection may be accomplished by different mechanisms.</p>