implies that a generalized function considered as a functional can sometimes be extended to a linear continuous functional on a wider space.

Note that $D \subset S$ and thus there is the inclusion of the linear dual spaces: $S^* \subset D^*$; convergence in S^* of linear continuous functionals implies their convergence in D^*, however, a sequence of elements of S^* that converges in D^* may not converge in the topology of S^* (see the example in section 3.2).

In the terminology of Schwartz (1966) generalized functions are sometimes called "distributions" and elements of S^* "tempered distributions"; here we shall call them generalized functions indicating the specific space considered. In Sobolev (1992, p.59) a diagram shows various chains of generalized functions spaces embedded in each other; these are spaces of functionals on spaces of continuously differentiable (of different orders) functions, continuously differentiable functions with compact support and Sobolev spaces.

Any locally summable (integrable on any bounded set) function $b(t)$ defines a generalized function b in D^* by

$$(b, \psi) = \int b(t)\psi(t)dt \tag{11}$$

on the space of real-valued test functions or by

$$(b, \psi) = \int b(t)\overline{\psi(t)}dt; \tag{12}$$

for complex-valued functions. Any locally summable function $b(t)$ that ad-