



FIGURE 14. The network for solving the T-C problem. See text for explanation.

1 if the input is a *T* (at any location or orientation) and 0 if the input is a *C*. Further, in order that the learning that occurred be independent of where on the field the pattern appeared, we constrained all of the units to learn exactly the same pattern of weights. In this way each unit was constrained to compute exactly the same function over its receptive field—the receptive fields were constrained to all have the same shape. This guarantees translation independence and avoids any possible "edge effects" in the learning. The learning can readily be extended to arbitrarily large fields of input units. This constraint was accomplished by simply adding together the weight changes dictated by the delta rule for each unit and then changing all weights exactly the same amount. In