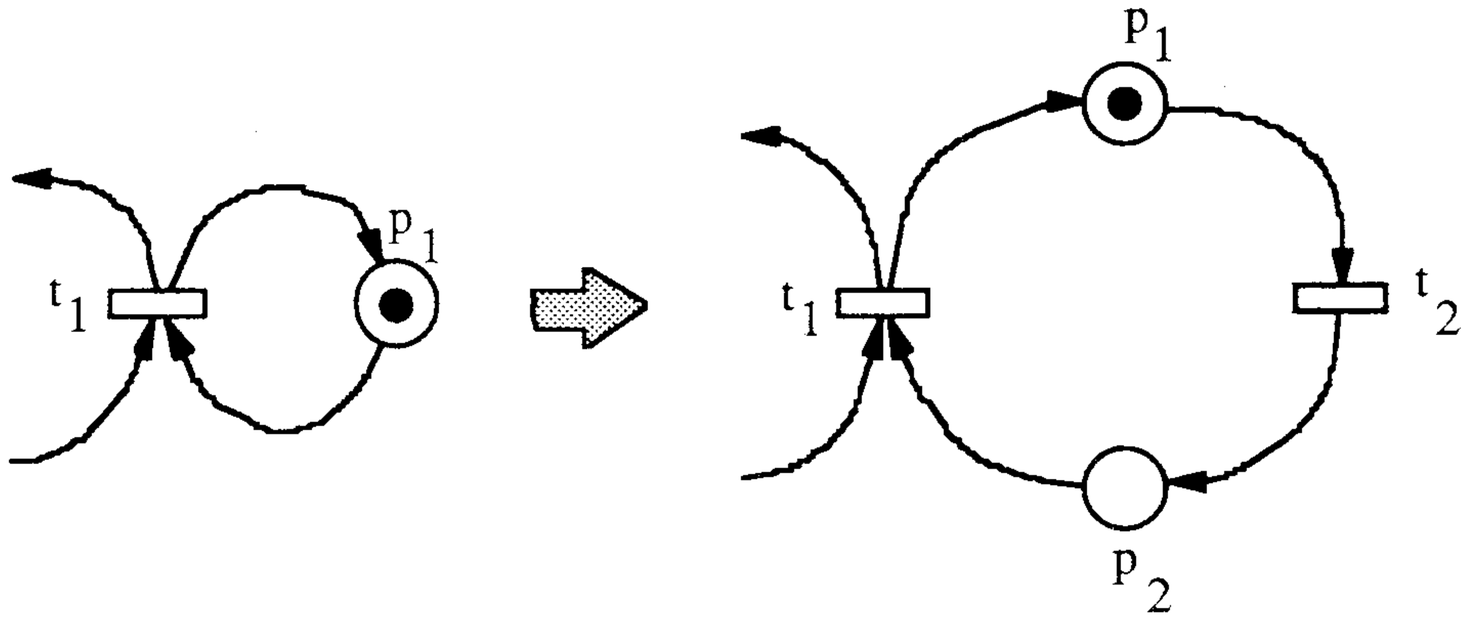

Fig. 1.3. Transformation of a self-loop to a loop, where t_2 and p_2 are a dummy pair of transition and place.

Exercise 1.1: Consider the four ordinary finite capacity nets shown in Fig. 1.4, where the capacity of each place is one. Depending on when tokens are considered to be "consumed" and "produced", we can give the following four different interpretations of the enabling condition of transition t, where *E2, E3*, and *E4* are wrong interpretations.

Rule E1: (This is the strict transition rule): There are enough tokens in input places, i.e., $M(p) \geq w(p,t)$ for each input place p; and there are not "too many" tokens in output places, i.e., $M(p) \leq K(p) - w(t,p)$ for each output place p.

Rule E2: There are enough tokens in input places, i.e., $M(p) \geq w(p,t)$ for each input place p; and after firing the resulting marking must be within capacity in output places, i.e., $M(p) \leq K(p) - w(t,p) + w(p,t)$ for each output place p.

Rule E3: Tokens can be "borrowed" in input places but after firing the resulting marking must be nonnegative, and there are not "too many" tokens in output places, i.e., $w(p,t) - w(t,p) \leq M(p) \leq K(p) - w(t,p)$ for each place p.

Rule E4: Tokens can be "borrowed" in input places but after firing the resulting marking must be nonnegative and within capacity in all places,

i.e., $w(p,t) - w(t,p) \leq M(p) \leq K(p) - w(t,p) + w(p,t)$ for each place p.