A many-valued logic is defined by its language, its set of truth values $V$, a subset of designated truth values, and truth functions for its connective. Together, these elements are called a matrix.

**Definition syn.1 (Matrix).** A matrix for the logic $L$ consists of:

1. a set of connectives making up a language $L$;
2. a set $V \neq \emptyset$ of truth values;
3. a set $V^+ \subseteq V$ of designated truth values;
4. for each $n$-place connective $\star$ in $L$, a truth function $\widetilde{\star} : V^n \to V$. If $n = 0$, then $\widetilde{\star}$ is just an element of $V$.

**Example syn.2.** The matrix for classical logic $C$ consists of:

1. The standard propositional language $L_0$ with $\bot$, $\lnot$, $\land$, $\lor$, $\to$.
2. The set of truth values $V = \{T, F\}$.
3. $T$ is the only designated value, i.e., $V^+ = \{T\}$.
4. For $\bot$, we have $\widetilde{\bot} = F$. The other truth functions are given by the usual truth tables (see Figure 1).