Mass ejection is involved in the generation of many types of electromagnetic transient, often in the presence of at least one compact stellar object. A variety of processes can cause mass to become unbound from a gravitational field, including neutrino emission or absorption, magnetic stresses, angular momentum transport, or nuclear processes. In this talk I will discuss two astrophysical situations in which non-trivial mass ejection from the vicinity of a compact object should occur: the accretion disk formed in a neutron star merger, and failed supernovae that make black holes.