Open vs. Closed Systems for Accountability

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Abstract	The relationship between accountability and identity in online life presents many interesting questions. Here, we first systematically survey the various (directed) relationships among principals, system identities (nyms) used by principals, and actions carried out by principals using those nyms. We also map these relationships to corresponding accountability-related properties from the literature. Because punishment is fundamental to accountability, we then focus on the relationship between punishment and the strength of the connection between principals and nyms. To study this particular relationship, we formulate a utility-theoretic framework that distinguishes between principals and the identities they may use to commit violations. In doing so, we argue that the analogue applicable to our setting of the well known concept of quasilinear utility is insufficiently rich to capture important properties such as reputation. We propose more general utilities with linear transfer that do seem suitable for this model. In our use of this framework, we define notions of "open" and "closed" systems. This distinction captures the degree to which system participants are required to be bound to their system identities as a condition of participating in the system. This allows us to study the relationship between the strength of identity binding and the accountability properties of a system.

Systems Engineering Science of Security CPS Technologies Foundations accountability ACM CCS CPS Technologies Database and Storage Security foundations identity Information Accountability and Usage Control Science of Security systems engineering utility Database and Storage Security Information Accountability and Usage Control ACM CCS