A Simple Game On Resources

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We introduce a simple two-player game on resources. Our main notion $H \models A$ means: The first player has a strategy σ in the game A such that for every counter-strategy π of the second player, there is a multiset of resources $h \in H$ covering all of the expenses of playing σ against π.

Essential for resource consciousness are game constructors $A \odot B$, which state that *both* A and B are played (and consequently, the expenses of playing A and B are summed up in $A \odot B$). The meaning of 'both' must and can be precisified in different game-theoretic ways, the simplest one being: 'first play A, then B'.

We discuss axiomatizability of $\models$ for various versions of the game. Finally, by identifying resources with propositional atoms and game constructors with logical connectives, we compare the game to the traditional approach to resource-conscious reasoning via substructural sequent calculi.