ERRATA CORRIGE

Multilinear Programming: Duality Theories

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Abstract. It has been pointed out that the text and proof of a proposition in Ref. 1 are worded ambiguously. The version below is intended to be clearer.

Key Words. Nonlinear programming, duality, game theory.

Concerning Ref. 1, Page 463, Line 36, Proposition 2.1 and its proof are best reworded as follows.

Proposition 2.1. Among the globally optimal solutions of a multilinear programming problem, if any exists, there is at least one that lies on the boundary of the feasible region. This is true also among the locally optimal solutions.

Proof. Assume that one or more global optima exist, and denote one of them by $x^*, y^*, z^*, \dots$. As will be shown, it is no restriction to assume further that this optimum lies on the boundary of the feasible region F . Finding x^* , when $y = y^*, z = z^*, \dots$, is a linear programming problem with the objective function $f_0(x, y^*, z^*, \dots)$ and a feasible region F_x defined by the inequalities $f_m(x, y^*, z^*, \dots) \leq 0$ so derived from (3). This linear problem has at least one solution (namely, x^*), which by assumption is finite and achieves a finite value $f_0(x^*, y^*, z^*, \dots)$. This same value is then achieved also by an x that lies on the boundary of F and that may as well be chosen as the optimal x^* . That choice ensures that $f_m(x^*, y^*, z^*, \dots) \leq 0$ for all m , with equality for at least one, showing that the point $(x^*, y^*, z^*, \dots)$ lies on the boundary of F , as asserted in this proposition. The argument is clearly symmetrical with respect to the variable classes x, y, z and is valid also for local, as well as global optima.

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Reference

1. DRENICK, R. F., *Multilinear Programming: Duality Theories*, Journal of Optimization Theory and Applications, Vol. 72, No. 3, pp. 459–486, 1992.