Sustainable Insights:
re-connecting electronic products through 'integrated scales of design, production and post-use for sustainability'

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This paper introduces outcomes of a design-based research project and provides new insights into an integrated concept for sustainable product design, which reappraises current norms of product production and post-use by offering new 'systems thinking' across the lifespan of contemporary electronic products.

This paper firstly presents a design-based research and includes design propositions in furniture and lighting that enable local producers at the batch-production scale to create products, to contribute to material culture, and to express local tastes and cultural preferences (i.e. adaptable, integrated design). These exploratory designs lead to further conclusions, and provide insights and design concepts into new product categories that are currently predominantly designed, produced and distributed at the mass-production scale (e.g. small household appliances, electronics, etc.). The final exploratory design concepts focus on a reconfiguration and re-integration of electronic products in a way that the majority of the circuitry or hardware is embedded in a laser-cut batch-produced panel system. These final design explorations represent a way of looking and conceptualizing functional objects through systems thinking, which 1) is substantially adaptable in terms of product aesthetics; 2) allows recovery, repair, and reuse locally; 3) provides flexibility for a range of sizes of recovered circuitry; 4) re-integrate electronic products into house and work environment in a way that the majority of the hardware and software components could be shared and upgraded effectively; 5) and reduces related energy consumption and waste through eliminating repetitive electronic products' parts.

Together with the design explorations, a summary of primary research findings from product examples in the furniture and lighting sectors are presented (at the mass-, batch and craft production scales). Several 'case pairs' are examined that include: Furniture: mass-produced panel design for a modular office system and craft produced entrance table; Furniture and Lighting: batch produced industrial design ceramic lamp and chair, and locally produced craft lamp and chair; Furniture: further examination of design and production of four small-scale furniture design companies. The conclusions from the design-based research provide a substantial basis to better understand and define the feasibility and potential of 'design for sustainability' and the potential contribution of the integrated concept for sustainable products through systems thinking.