The following design protocols are excerpted from *Design is the Problem* by Nathan Shedroff. The four protocols outlined here are the most popular strategies used in material production at the current time. Each one represents a slightly different approach to environmental and sustainability concerns.

**Approaches to Sustainability**

1. **Natural Capitalism**
   - Also known as ‘eco-efficiency’
   - Presents a framework for re-thinking the value of social and natural resources in the context of business
   - Describes four different types of capital:
     - Natural Capital
     - Human Capital
     - Manufactured Capital
     - Financial Capital
   - Promotes four primary shifts:
     - Radical Resource Productivity
     - Ecological Redesign
     - Service and Flow Economics
     - Investing in Natural Capital

2. **Cradle to Cradle**
   - Also known as ‘eco-effectiveness’ or ‘C2C’
   - Presents a powerful perspective on the cyclic nature of waste and food, as well as the need to keep technical and biological materials separated
   - Basis for this approach involves four main principles:
     - Elimination of hazardous (toxic) materials
     - “Waste equals food” (changing our definition of “waste)
     - Use the current solar income of energy
     - Use “upcyclable” materials

3. **Biomimicry**
   - Represents an approach to re-imagining the design and development process
   - Searches for new ways of creating sustainable materials, products, services, and other solutions by learning how nature already works
   - Central principles include:
     - Striving to discover and emulate nature’s processes and materials
     - Evaluating solutions against nature’s own principles
Learn from nature as a source of information and strategies, not merely materials

4. Life Cycle Analysis

- Represents the most exacting and accurate framework for assessing solutions
- Assesses the environmental aspects and potential impacts associated with product, process or service by using the following criteria:
  - Compiling an inventory of relevant energy and material inputs and environmental releases
  - Evaluating the potential environmental impacts associated with indentified inputs and releases
  - Interpreting the results to help you make a more informed decision

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