New Product Development

Unit 1

Product Development and Customer Needs

Topic:FAST METHOD

Text book

Kevin Otto and Kristin Wood ," **Techniques in Reverse Engineering and New Product Development"**

Establishing product function

- **A function** is the relationship between the available input and the desired output of a product, independent of any particular form.
- **Product function** – overall intended function of the product. What it is to do.
- **Subfunction** – A subfunction is a component of a product function.
- **Abstraction -** Process of ignoring what is particular or incidental and emphasizing what is general and essential.
- **A constraint** – statement of a clear criterion that must be satisfied by a product and requires consideration of entire product to determine the criterion value.

- **Basic function**
  - Describes the **characteristics or task** which is the primary reason for the existence of the item.
  - It is what the product or process was actually designed to.
- **Secondary function -** Are designed in functions which are required to cause or allow the basic function to occur.
  - It is any function that directly contributes to accomplishing the basic function.
  - It can be further divided into several other categories which are known as sub-groups.

- **Dependent function**
  - A function that depends on another function for its existence.
  - Comes into existence when a specific method is selected.
- **Independent function**
  - **Does not depend upon one other functions** for its existence or on the method selected to perform those functions
- **Support functions**
  - A function which **assists a critical function** in doing its job so that it may be done in a reliable and acceptable manner.

- **Critical path functions**
  - Any system which describe specifically how or why another functions are performed.
- **Higher order functions**
  - Appear in left hand portion of the diagram.
- **Lower order functions**
  - Appear in right hand portion of the diagram.
  - Their existence depends on the relevance of higher order functions.

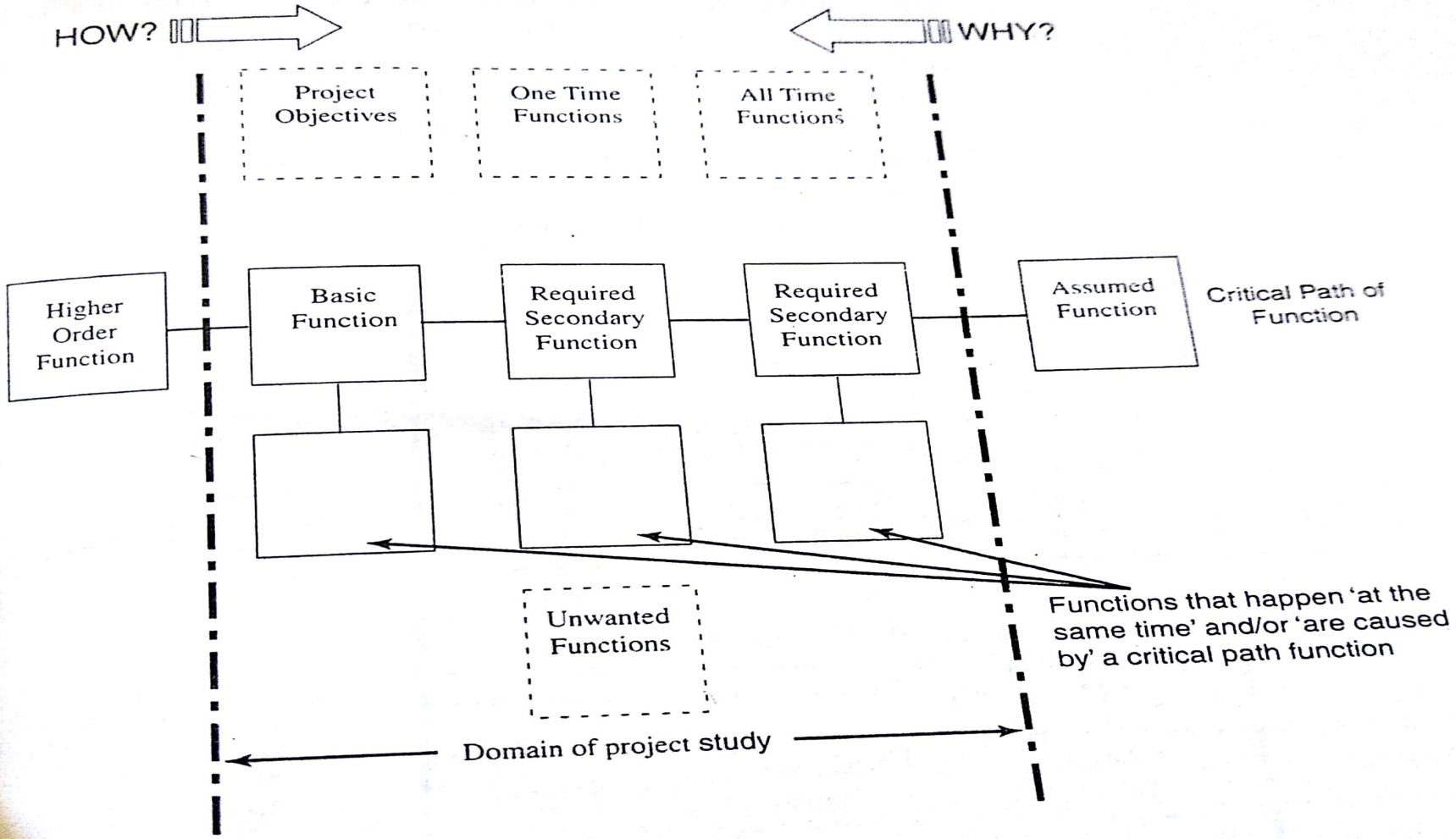
Function trees

- **Two approaches**
  - FAST method
  - Subtract and Operate Procedure

Fast method

- **Function Analysis System Technique (FAST)**
- **Top down approach**
- **Used to define, analyse and understand product functions, how the functions relate to one another, which functions require attention to increase the product value.**
- Hierarchical approach for modelling the function of a product or system.
- Used to
  - Display functions in a logical sequence,
  - Prioritize them and
  - Test their dependency.

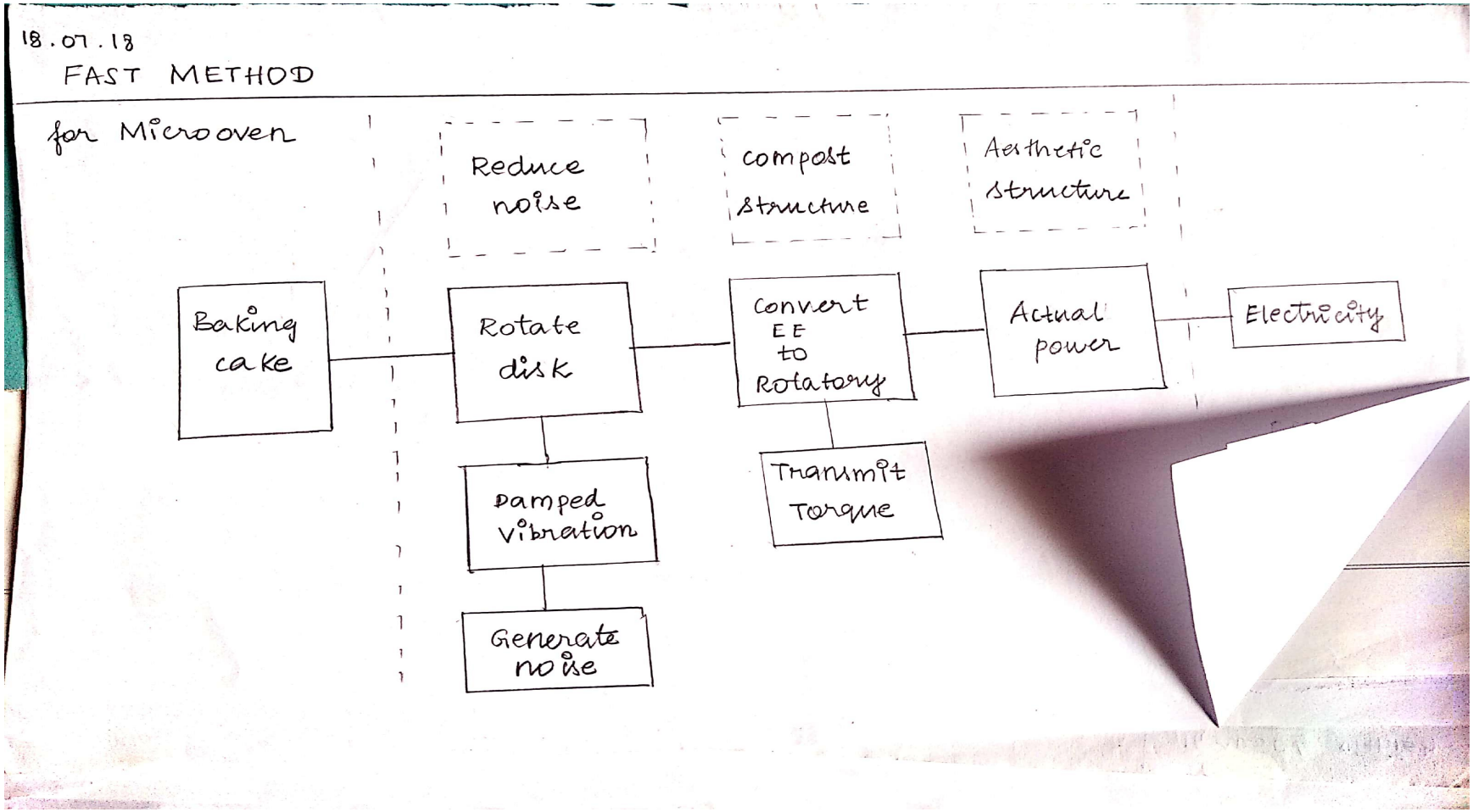
FAST Method


HOW?
WHY?
Project Objectives
One Time Functions
All Time Functions
Higher Order Function
Basic Function
Required Secondary Function
Required Secondary Function
Assumed Function
Critical Path of Function
Unwanted Functions
Functions that happen 'at the same time' and/or 'are caused by' a critical path function
Domain of project study

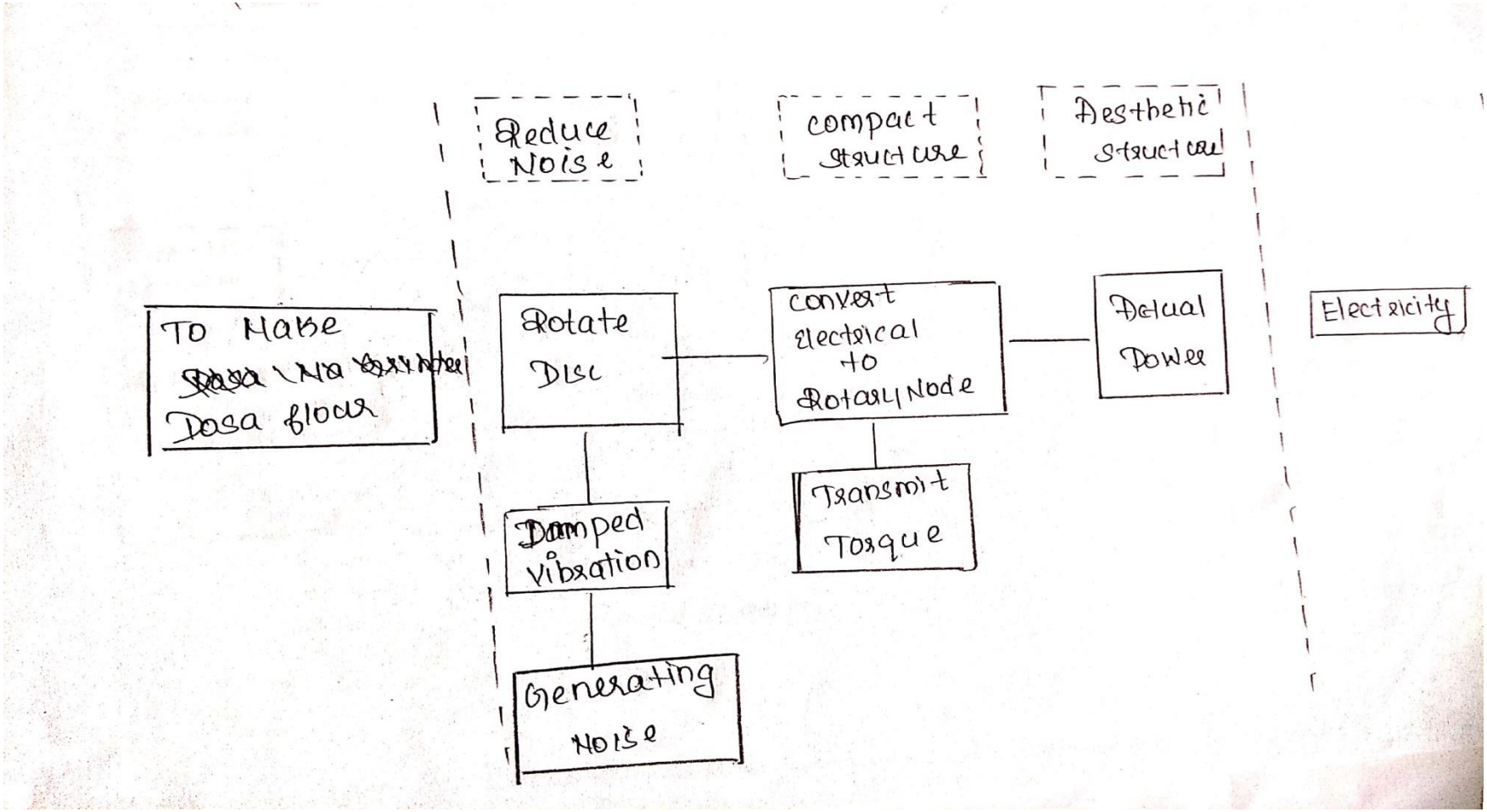
Procedure

1. Construct **two vertical lines**, dashed lines, one to the extreme left and one to the right. Scope of product development objective.
2. **Basic function** – right of the left hand scope line. Why? Left of the basic function and connect it with line.
3. **Secondary function** – right of basic function.
4. **Assumed function** – outside the right scope line.
5. Generate **remaining secondary functions**.
6. **Objective** – above the basic functions.

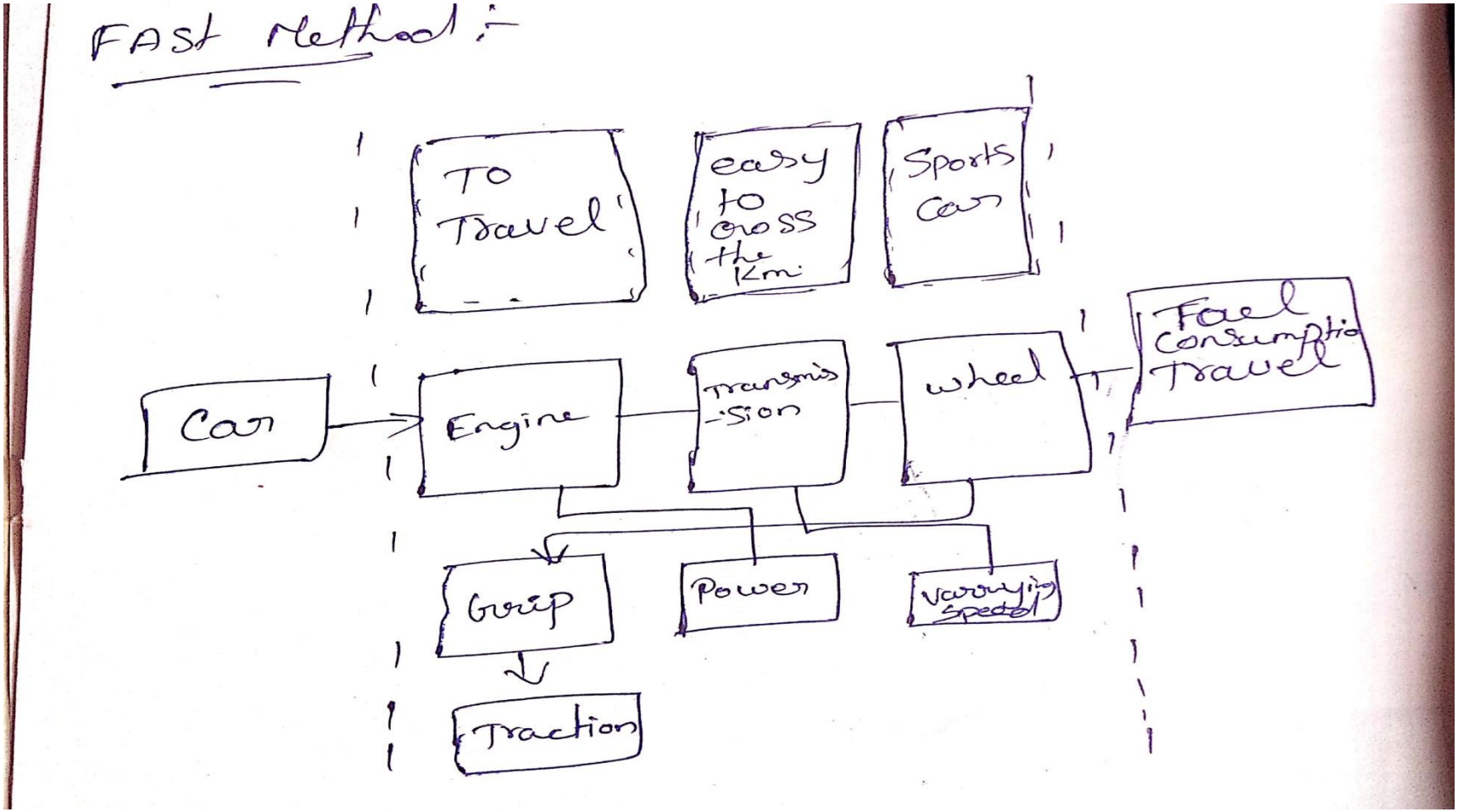
Case study: Baking cake



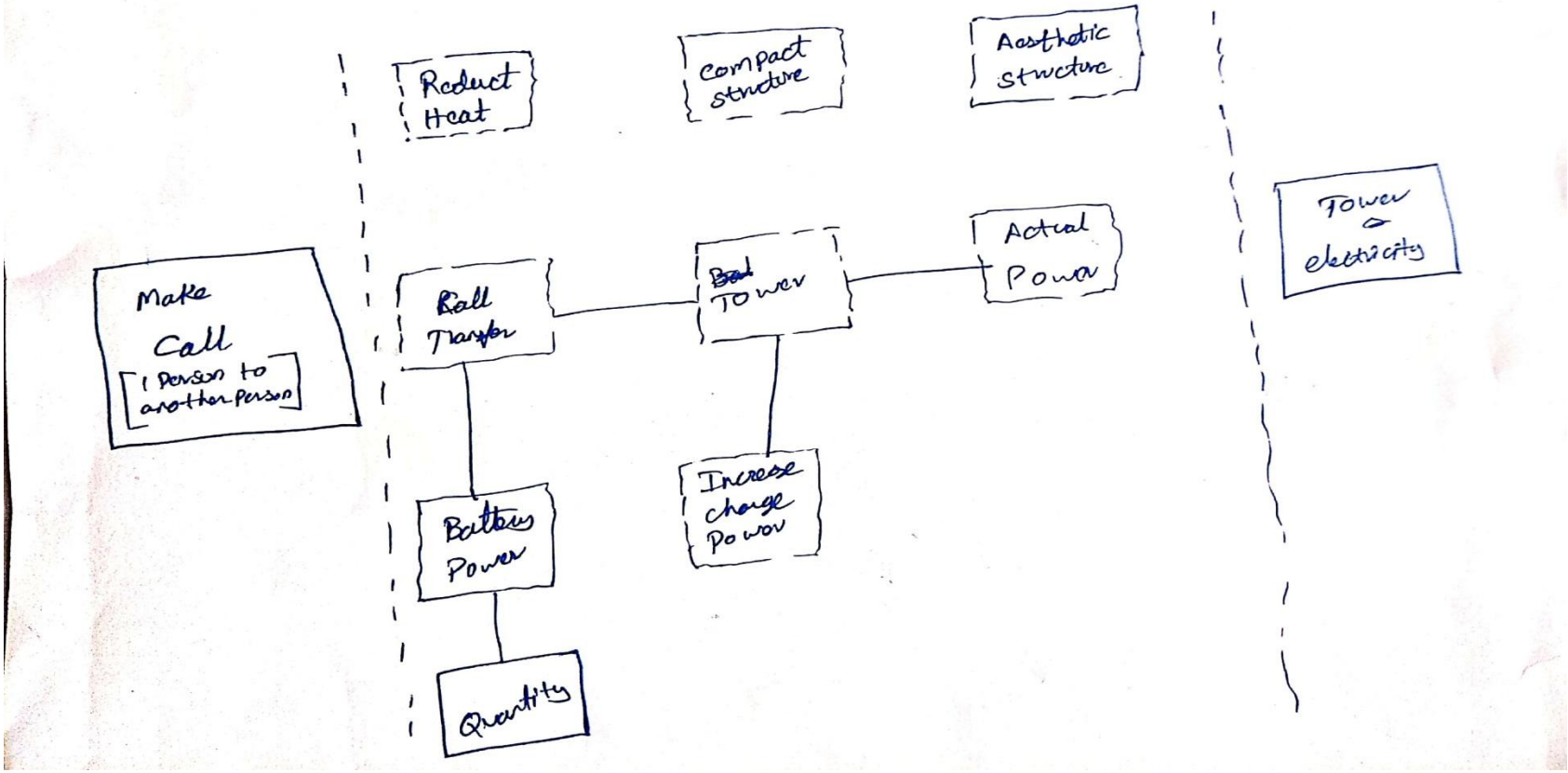
Example: Dosa Flour



Example:Car


FAST Method :-
To Travel
easy to cross the Km
Sports Car
Car
Engine
Transmis -sion
wheel
Fael Consumptio Travel
Grip
Power
Varying Speed
Traction

Example: Phone Call

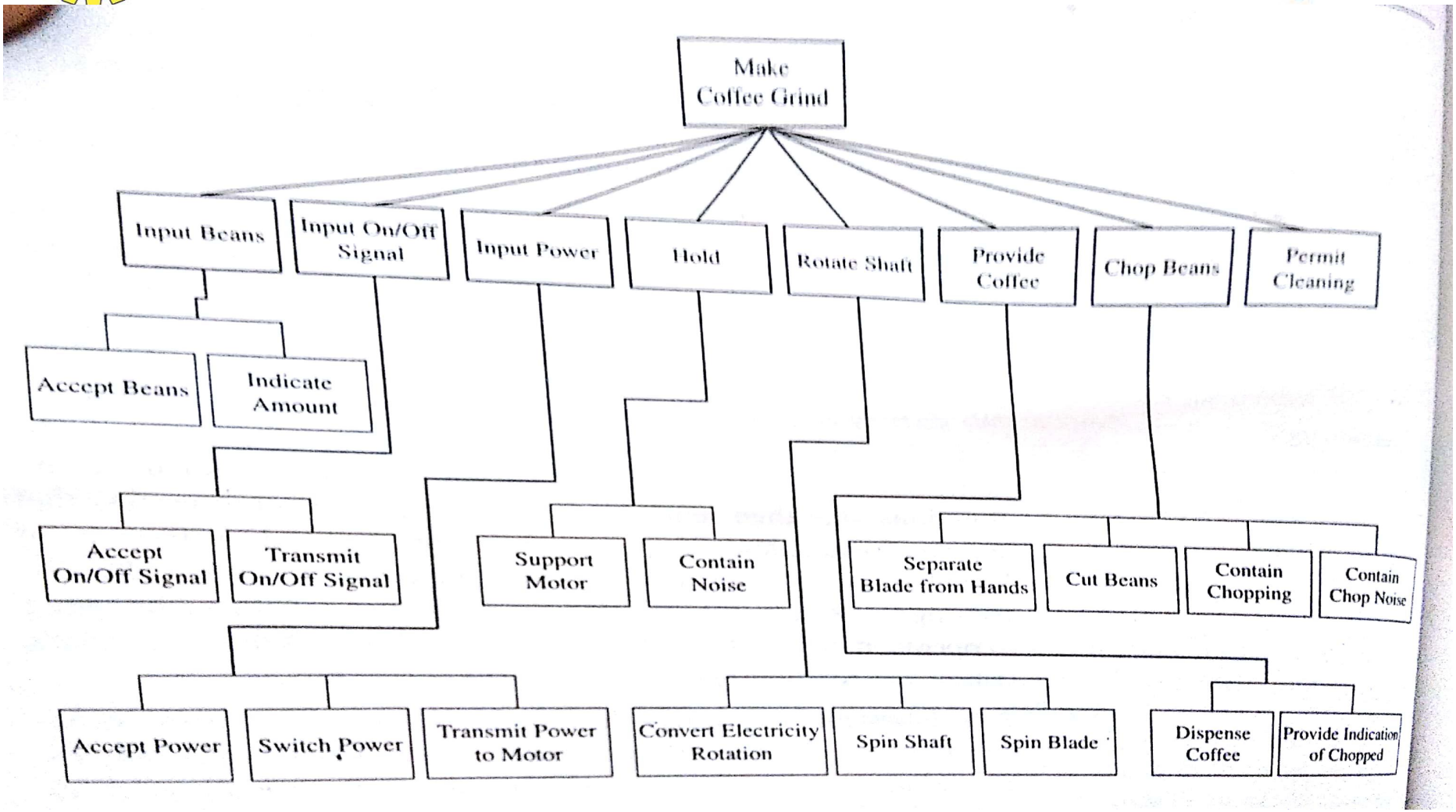


Subtract and operate proc

- **Bottom up approach**

1. Disassemble (Subtract) one component of the assembly.
2. Operate the system through its full range.
3. Analyze the effect.
4. Deduce the subfunction of the missing component.
5. Replace the component and repeat the procedure n times, where n is the number of components in the assembly.
6. Translate the collection of subfunctions into a function tree.

Subtract and operate method
Ex: Coffee mill



Thank u