



The design process and creative problem solving

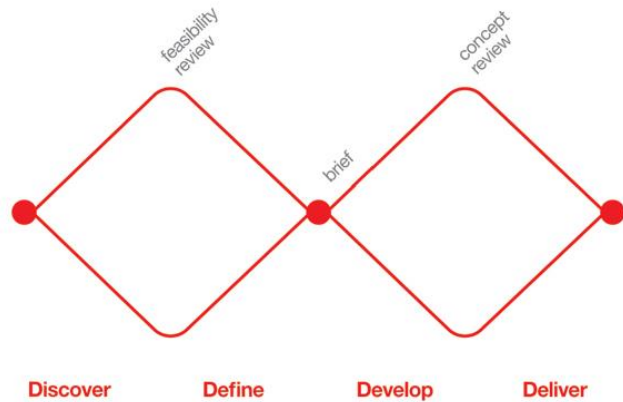
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Introduction

Strong connections exist between Creative Problem Solving (CPS) and Design Thinking (DT). Ultimately, both 'creative problem solving' and 'design thinking' are approaches to help creativity, change, problem solving, and innovation. The purpose of this document is to examine some of the similarities and differences that exist between the two approaches and provide some general conclusions.

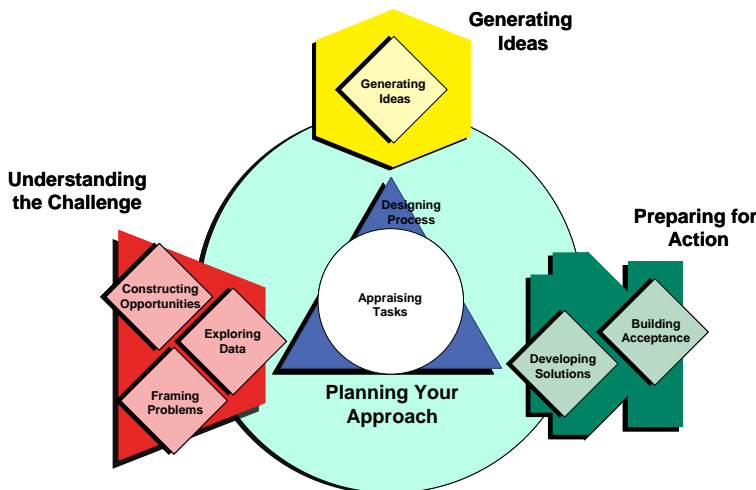
The design process is the specific series of events, actions or methods by which a procedure or set of procedures are followed, in order to achieve an intended purpose, goal or outcome (Design Council, 2007).

It is noted that there is not only one way to approach design. Indeed, one of the recurring themes in the design literature is a message about flexibility – taking core generic stages and applying them to fit a particular task or project.



Specifically in this document, the 'design process' referred to is the 'Double Diamond' design process model developed by the Design Council in 2005. The model divides the design process into four distinct phases: **Discover, Define, Develop and Deliver**. It describes both the divergent and convergent stages of the design process, showing the different modes of thinking that designers use. We acknowledge that the double diamond model is not the only model of the design process.

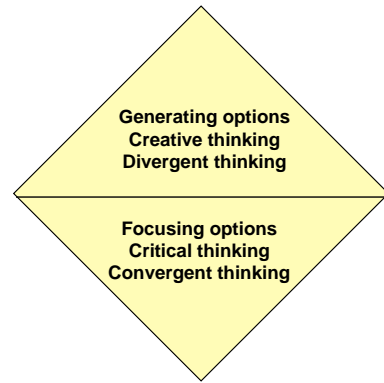
Creative Problem Solving v6.1 (CPS) is a broadly applicable framework to help design and develop new and useful outcomes. CPS is a framework which functions as an organising system. Through this system, tools can be applied to understanding problems and opportunities; generating many, varied, and unusual ideas; and evaluating, developing and implementing potential solutions. CPS functions to transform tasks, needs and inputs into meaningful and valuable outcomes.



In this document, we are referring to CPS v6.1. For a history of the development of CPS, see the Isaksen and Treffinger, 2004 reference under 'References' below.

Similarities

- One of the obvious links between the DT and CPS is the **modes of thinking**.
- In CPS, the two modes of thinking are referred to the heartbeat. A human heartbeat provides a pulse – an audible, natural and vital sign of health and the heartbeat of CPS involves a dynamic balance, or pulse, of two complementary types of thinking: generating and focusing.



Both approaches acknowledge these two types of thinking.

- Both approaches aim to **serve an intended purpose, goal or outcome** and do not follow a process for process sake.
- Both ultimately take a **descriptive** (in contrast to a prescriptive) **approach to process**. They have elements that can be applied flexibly, without a prescribed order or sequence. Both CPS and DT are ‘in service’ to the goal, purpose or outcome and therefore need to be able to be applied flexibly depending on the situation.

The Design Council states: "Design processes are difficult to standardise, in part because of their iterative, non-linear nature, and also because the needs of clients and users are so different. In addition, real life, with its changing market conditions and customer preferences, is much more dynamic chaotic and fuzzy than any standard model can fully accommodate and often, stages of the design process overlap."

Descriptive	Prescriptive
Flexible framework	Predetermined pathways
Realistic - based on observation	Authoritative - determined by custom or expertise
Approach is situational with many choices based on the need	Approach is specified with limited choices

Isaksen et al (2011) state: "The CPS framework should be used to describe the kinds of activities that might take place during natural problem solving, not to specify a fixed or rigid order or sequence of their application."

- Both can result in the use of a **wide variety of approaches and tools** to address a challenge, and both are open to integration with other tools and processes.
- The DT and the CPS process can both be seen **to start with the sensing of a ‘challenge’, ‘problem’, or ‘opportunity’**.

The **Discover** stage of DT “helps to identify the problem, opportunity or user need that should be addressed, and introduces the space within which design can provide a solution – the playing field for design.”

In CPS, the function of the **Understanding the Challenge** component “is to help develop a clear area of concern or well-defined opportunity.”

- The next stage of the DT and CPS can both be seen to involve **ideas**.

In the DT, the **Define** stage should be thought of as a filter where the review, selection and discarding of ideas takes place. This is where findings from the Discover stage are analysed, defined and refined as problems, and ideas for solutions are pitched and prototyped.

In CPS, the **Generating Ideas** stage is used when many, varied, new, or unusual ideas are needed to solve a problem that has already been defined.

- The third part of both processes start to describe the concept of a **solution and also the involvement of a wider audience**.

At the **Develop** stage of the DT process, the project has been taken through a formal sign-off, which has given the corporate and financial backing to the development of one or more concepts that have addressed the initial problem.

In CPS, the **Preparing for Action** component aims to turn interesting ideas and promising ideas into useful, acceptable and implementable actions.

- The fourth part of the DT is **Deliver** and the output of CPS is a **plan of action**. The final **Delivery quarter of the DT model** is where the resulting product or service is finalised and launched in the relevant market. The key activities and objectives during this stage are final testing, approval and launch as well as targets, evaluation and feedback loops.

In CPS, the previous **Preparing for Action** component includes developing promising solutions as well as considering all possible sources of assistance and resistance and **formulating a specific plan of action**, some of which overlaps with the Develop and Deliver stages of the DT process.

Differences

Some of the main differences between the DT process and CPS are:

DT	CPS v6.1
Focuses on being a process applicable for products and services.	Focuses on being a broadly applicable framework, system of which the process is only one part.
Is derived from the design process of companies.	Is derived from people's natural creative problem-solving process.
Takes a more prescriptive approach and suggests a 'start point' but acknowledges variations.	Includes a management component called Planning Your Approach where situational dependency is deliberately considered. The approach to be taken considers the outcome, the context, and the people involved before designing the process approach.
Stages tend to have a divergent or convergent focus.	Provides for deliberate divergent and convergent thinking in all stages Provides a set of guidelines for high performance divergent and convergent thinking.
Provides guidance and access to tools and processes at each stage.	Provides a toolbox of tools for divergent and convergent thinking as well as guidance and access to other tools. Stimulants and blocks in the working environment are considered. People as problem solvers are considered in several ways – thinking styles (<i>VIEW</i>); role clarity (Client, Facilitator, Resource Group); team working. The application of the process will vary based on whether the outcome desired is more radical, step change, discontinuous in contrast to incremental, within the paradigm, continuous.
In the Define stage the project is taken through a formal sign-off to provide corporate and financial backing.	This could happen at any stage.
Emphasises a human centred, creative, iterative, and practical approach to finding the best ideas and ultimate solutions.	Any of these can be emphasised and so could other factors depending on the situation.

Conclusions

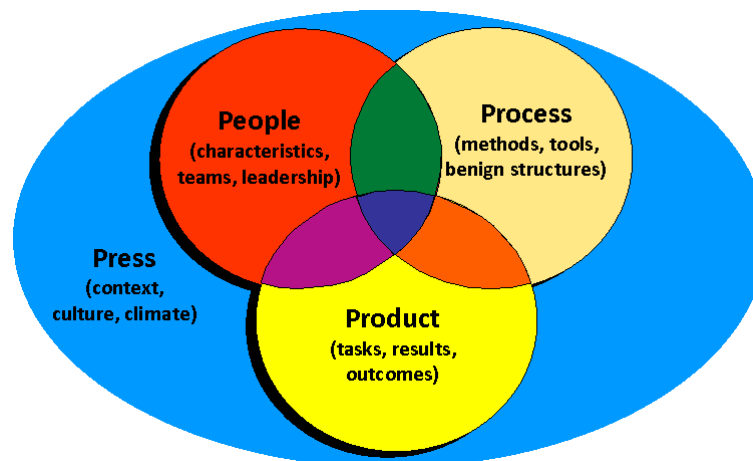
When the research shared by the Design Council is considered in the light of the evolution of Creative Problem Solving over the last 60 years, it is interesting to note that the design world appears to be wrestling with some similar challenges to that faced by CPS academics and practitioners over the last 30 years.

One of those is summarised by the Design Council: "Design processes are difficult to standardise, in part because of their iterative, non-linear nature, and also because the needs of clients and users are so different. In addition, real life, with its changing market conditions and customer preferences, is much more dynamic chaotic and fuzzy than any standard model can fully accommodate and often, stages of the design process overlap."

CPS faced a very similar challenge in the 1980s which resulted in three major developments.

1. Firstly, the linear model of CPS was broken and became CPS v5.0 – the componential model. "Isaksen and Treffinger discovered that the new process modifications supported the importance of flexibility in using the process, and reinforced movement away from the fixed, prescriptive 'run through' approach." (Isaksen & Treffinger, 2004)
2. Then in 2000, v6.0 – another component with two more stages was added. "We also introduced the **Planning Your Approach** component (including the **Appraising Tasks** and **Designing Process** stages). **Planning Your Approach** became an integrated component, at the centre of the CPS framework (graphically and in practice). We also differentiated **Planning Your Approach** as a 'management' component, guiding problem solvers in analysing and selecting 'process' components and stages deliberately," (Isaksen & Treffinger, 2004).

A systems view of CPS v6.1



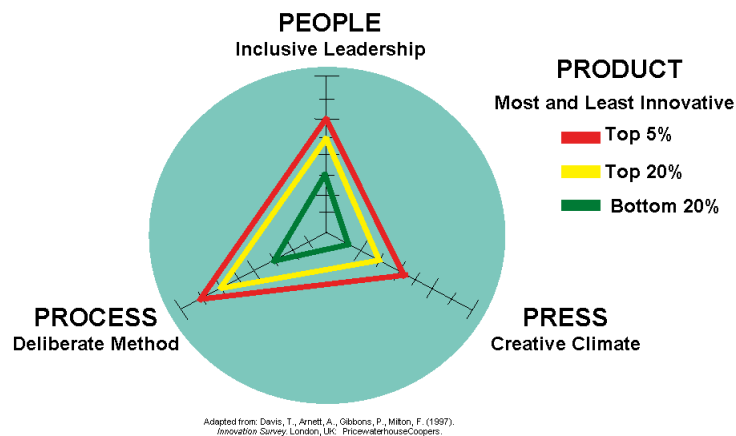
3. In CPS Version 6.1™, the emphasis is on CPS as a system – a broadly applicable framework. The CPS system now incorporates tools for generating and focusing options, the CPS process components and stages, as well as the CPS management component, and their integrated application. It also includes a diagnostic tool to help identify stylistic characteristics that are relevant to problem solving behaviours (*VIEW*) and a measure of context (the *Situational Outlook Questionnaire*). These tools provide for the assessment and integration of salient personal characteristics and situational conditions with the design of an appropriate process pathway.

When viewed as a system, it can be seen that the 'Double Diamond Design Process' and any other process or method such as Lean or Six Sigma can be positioned as one of the four elements that need to be considered – but not the only element. We believe (and research suggests) that sustainable innovation

requires all four elements to be considered. For example, the global PricewaterhouseCoopers (PwC) Innovation and Growth survey in eight countries found the companies that earned the highest percentage of turnover from new products and services (Product) and greater shareholder returns were distinguished by three capabilities:

- taking an inclusive approach to leadership (People)
- building a creative climate (Press)
- and having deliberate method for applying creativity (Process).

Create the Climate (Press) + Inclusive Leadership (People) + Deliberate Process = Desired Results (Products)



There is a strong interest and popularity in the concept of ‘design’ and the word ‘design’ may carry more cachet in certain sectors than ‘creative problem solving’ at present. However, the double diamond design process and the process ‘P’ of CPS v6.1 share more in common than differences and work well together.

The divergence that evolved from seeing ‘design as art’ or ‘design as engineering’ lead to specialization and the separation of industrial and engineering design about which Ivor Owen, a former director of the Design Council, said, “I strongly believe that the schism between engineering design and industrial design has been one of the most damaging issues in manufacturing industry imaginable.”

Today ‘design as innovation’ is a new way of seeing design although numerous books and articles attempt to explain and link creativity, innovation and design. The risk is design ends up with another schism if a more inclusive and systemic approach is not taken.

For example, one option might be to look at design as a system involving:

- designers (people)
- using design thinking (process)
- in a design context (press)
- to produce designs (product)

... in a similar way to CPS v6.1.

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