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Self-commissioning, Intuition and Prosumer | Autoencargo, Intuición y Prosumer

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Resumen

El autoencargo en diseño se refiere a la práctica de establecer objetivos y metas para uno mismo en lugar de tener un encargo o brief de empresa. En el autoencargo el creador tiene mayor control sobre el proceso creativo y puede enfocarse en sus propias visiones. La intuición creativa, como capacidad de confiar en la inspiración y las ideas que surgen de manera espontánea, no depende de métodos creativos tradicionales. La combinación de ambas prácticas, autoencargo e intuición creativa, puede permitir una mayor libertad para explorar ideas y enfoques originales. Por otra parte, el "prosumer", combinación de las palabras productor y consumidor, y que se refiere a la práctica de los usuarios de convertirse en productores activos de productos, en lugar de simplemente consumir lo que les ofrecen las empresas, es un creativo que encaja adecuadamente en el autoencargo y la creación propia. En el contexto creativo, esto puede significar que el creador es tanto el productor como el consumidor de su propio trabajo, utilizando su intuición creativa y autoencargo para producir contenido original y único, que también es apreciado por otros. Estas prácticas pueden ayudar a los creadores a tener un mayor control sobre su proceso creativo, explorar ideas originales e innovadoras, y crear contenido que sea relevante y atractivo para otros usuarios.

Palabras clave: autoencargo; intuición creativa: prosumer; creatividad; diseño de producto; práctica de diseño

Abstract

Self-commissioning in design refers to the practice of setting goals and objectives for oneself rather than having a brief or brief from the company. In self-commission, the creator has more control over the creative process and can focus on his own visions. Creative intuition, as the ability to trust inspiration and ideas that arise spontaneously, is not dependent on traditional creative methods. The combination of both, self-commissioning and creative

intuition, can allow greater freedom to explore original ideas and approaches. On the other hand, the "prosumer", a combination of the words producer and consumer, and which refers to the practice of users becoming active producers of products, instead of simply consuming what companies offer them, is a creativity that fits appropriately into self-commissioning and own creation. In the creative context, this can mean that the creator is both the producer and consumer of his own work, using his creative intuition and self-commissioning to produce original and unique content that is also appreciated by others. These practices can help creators gain more control over their creative process, explore original and innovative ideas, and create content that is relevant and engaging to other users.

Keywords: self-commission; creative intuition; prosumer; creativity; product design; design practice.

Introduction

This design modality is an effective way for designers to experiment with new ideas, techniques and materials, and to explore areas that interest them on a personal level. Through self-commissioning, designers have more freedom to express themselves, in the form of creative gymnastics (Pelta, 2010), to develop their portfolio and demonstrate their ability to generate original design ideas and solutions(Alfalah, 2018). It is common for the designer to explore for a time in self-commissioning, either to satisfy an idea that may be his corporate identity, his own image, his studio as a workspace, his materials and work tools, his promotional products, etc. (Camillini & Pierini, 2016). Self-commissioning is distinguished by its ability to address personal and specific needs, which implies that each designer approaches the problem from their own experience, incorporating individual requirements and avoiding the need to universalize the design creating solutions that are broadly applicable to diverse users. This further emphasizes the idea that the designer generates a bespoke, personalized, and highly tailored solution, recognizing that other individuals may have different needs and preferences that will require different approaches. This perspective underlines the unique and diverse nature of the design process, emphasizing the importance of considering the uniqueness of each user in the development of innovative and meaningful solutions(Ruiz, 2014).

Intuition, on the other hand, is the ability to make decisions based on previous experience and a quick understanding of a given situation. Creative intuition is a non-linear way of thinking that is based on the connection and synthesis of seemingly unrelated ideas and experiences (Gabora, 2010). It also represents the ability to rely on prior inspiration and ideas that arise spontaneously, without relying on creative methods (Csikszentmihalyi, 1997; Dijksterhuis, 2004; Sawyer, 2011). The benefits of intuition in the early stages of product conception are: accelerated and improved decision making, solving unstructured problems in creative ways, and the potential for a higher quality product and anticipation for the planning of new products. Colloquially, intuition also represents a feeling that may go against what is reasonable and established, such as an instinct or impulse to make a critical change that, if not followed, will turn out to be a mistake (Sadler-Smith & Shefy, 2004). Many designers, artists, and creatives rely on their intuition to generate new ideas and approaches that may be difficult to discover through a more structured thought process (Finke et al., 1996). However, while creative intuition can be a powerful tool, it is not infallible and can be affected by prejudices, personal preferences, and cognitive biases. Therefore, it is important to combine intuition with other creative and critical thinking methods to ensure that ideas are workable and effective in practice (Dayan & Di Benedetto, 2011).

The concept of the "prosumer," a fusion of the words producer and consumer (Ritzer, 2010; Toffler, 1980), refers to the practice

in which users become active producers of goods, rather than merely consuming what companies offer them (Asión Suñer & López Forniés, 2022; Blättel-Mink et al., 2010). Toffler (1980), in his book "The Third Wave," describes an important social change where the home becomes a central nucleus for family relationships, friendships, and neighbourhoods. In this new context, there is an increase in the number of people acting as prosumers. This trend reflects an emphasis on individualization and personalization.

In this sense, it can be considered that the prosumer, intuitively and without being fully conscious, carries out a self-entrustment when responding to an individual need. By assuming an active role in the production of goods and services, the prosumer is in tune with the spirit of self-commissioning and self-creation. Through his direct participation, the prosumer has the ability to meet his personal needs in a more precise and adapted way, without depending exclusively on the standardized products found on the market. This intersection of prosumer and self-commissioning highlights the inherent ability of the individual to recognize and address their own creative needs, thus driving the search for authentic, personalized solutions. Ultimately, it becomes clear that the prosumer inadvertently engages in a self-commissioning process by exercising his creativity and responding to his own demands, thus playing a significant role in shaping and personalizing his experience as a consumer and producer.

In the creative context, this can mean that the creator is both the producer and the consumer of their own work, needing to experience transgression, overcome weaknesses, and gain personal key competencies, using self-commissioning and their creative intuition to produce original content and unique that is also appreciated by others (Lebuda & Csikszentmihalyi, 2017). These three practices help creators gain more control over their creative process, gain innovation, and do their work better because it is the work they truly love (Sternberg & Lubart, 1996). Personalization has become a necessity in the production of goods, since the standardization of products cannot satisfy the individual needs and desires of each consumer (Chandler & Chen, 2015; Toffler, 1980). The personalized object would be one that has a high level of customization, adapting the artifacts to the particular needs and preferences of each person, and that the technology is adapted to be produced with similar costs to standardized products (Norman, 2005). However, the prosumer can make the decision to design their personalized product with which more lasting relationships are established, allowing them to extend their useful life and postpone their obsolescence (Chapman, 2015).

This approach has gained relevance because the products have tended to be more massive and standardized. Today, customization plays a key role in many design and manufacturing processes thanks to technology. Consumers have more and more options and tools to customize products and services according to their individual needs and preferences. This has led to a greater emphasis on the user experience and the ability to satisfy the particular needs and tastes of each consumer (Franke & Piller, 2004).

This paper studies the results of the creative process applied by novice designers to the design of a personalized object, taking results from different profiles of professional designer and prosumer/maker as examples. The objective is to contrast the common points of the process, and if the differences that are detected come from the personal profile, the design they intend or the tools they have at their disposal. Once analyzed, they are compared with the self-commission results carried out by novice designers whose creative process has been characterized from the proposal to the testing of a prototype and the formal definition.

The interest of this contribution lies in the orientation of the analyzed profiles, all of them with particular needs, towards their specific solution, with their own or customized design, but with similar

processes. With the new forms of digital manufacturing, using manufacturing and prototyping tools, DIY or Do It Yourself (DIY), the professional and novice designer have greater autonomy to develop their creativity and experiment creating their designs, validating their ideas and solving their particular needs (Gershenfeld, 2005).

Methodology

It has been intended to examine the possible relationship between self-commissioning and the concept of prosumer through bibliographic research and a search for examples of self-commissioning. Our objective is to determine whether the creative processes undertaken by designers in a self-order are similar to those undertaken by prosumers.

Examples openly published by Professional Designers (PD) and PRosumers (PR) have been used in order to illustrate and enrich the knowledge of design students or Novice Designers (ND), dealing with similar products and within the same sector of activity. as can be seen in Table 1. However, an effort has been made to promote freedom in the creative process of novice designers, both in the selection of the object to be designed and in the development of the process itself, including the different phases, methods and techniques used. Through this approach, autonomy and originality are promoted in the creative process of NDs, encouraging them to seek innovative solutions.

The initial investigation relates self-commissioning in the field of design, whether academic or not, with the intuitive creative process, the manufacture or materialization of the object to be designed. The cases will serve to document and compare the common elements and differences. The cases of professionals and prosumers will be used as an example to compare the results of the profile of novice designers.

Of the professional designers, the products made as self-order are analyzed, the results they pursue and that they contribute to their profession, these cases have been extracted from online design magazines such as Core77, DesignBoom, Yanko Design, Experimenta, etc. For the prosumer profile, their results published on the net are sought on websites such as Instructables, Makezine, Thingiverse, Hackaday, Craftsy, among others, showing what types of objects or designs they make, what goals they pursue, their methods, and the results obtained.

In the case of a new designer, the results of an experience with 74 second-year students of a degree in Industrial Design Engineering and Product Development are used, in the subject Design Workshop III, Creativity, with 74 students, and carrying out a project called the Prosumer Project, their academic work will be studied as if it were a self-commission, the process developed, the personal and academic objectives and the final results. Students are taught the definition of prosumer and the meaning of self-entrustment (Asión-Suñer, 2021).

Figure 1 shows the model proposed for NDs. The self-order is the identification of an individual and specific need within your home environment, with the aim of designing a product that solves said problem. Emphasis is placed on the importance of each ND identifying their personal problem, thus highlighting their ability to detect their own needs and solve them autonomously through the prosumer

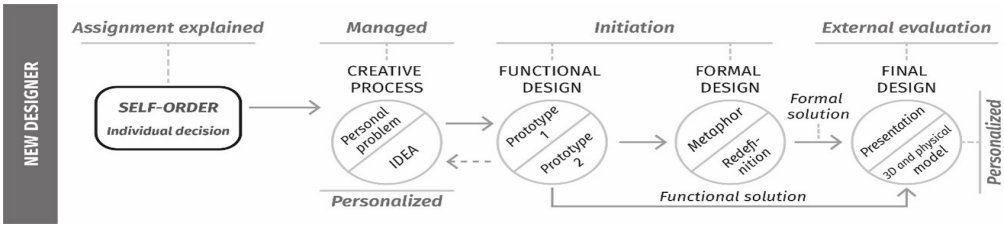

Figure 1.. Model shown to the new or novice designers (ND), to carry out their creative process of self-commissioning (Own elaboration).

Table 1. self-commissioning products for Professional Designers (PD) and Prosumers (PR). Source: own elaboration

	Diseñador/Estudio	Producto	Sector
DP	Nienke Hoogvliet (2023) Agote Surfboards Triangle Studio (TRIANGLE-STUDIO, 2023)	Material textil Fish Leather (Studio Nienke Hoogvliet, 2017) Tablas de surf a medida Try Angle Paper (Eyeondesign, 2015).	Textil/mobiliario Ocio y deporte Diseño gráfico
PR	Engineer42 (2023) Memestra (2022) Varios diseñadores	Sensor de CO2 Tabla de surf artesanal Camisetas personalizadas	Electrónica Ocio y deporte Diseño gráfico

design approach. They are instructed to adopt the role of the ideal prosumer, being designers, producers and consumers; assuming the responsibility of creating and manufacturing most of its product, thus avoiding the need to acquire it from third parties.

The creative process is initially led by asking them to document their problem through photographs and videos that show the context in which the problem occurs. From this point on, each ND decides in an intuitive and personalised way how to tackle the resolution of the problem. In the ideation phase each ND approaches solutions by experimenting with rapid prototypes to validate their first ideas.The project involves the creation of a functional prototype that demonstrates the resolution of the problem and the development of an aesthetic defined by means of a metaphor obtained through the analysis of an audiovisual in which they find attributes with which to dress the functional prototype. The requirements for the students are simple: at least one piece of the product must be designed and manufactured by the students themselves using manual and/or digital fabrication technologies, and they are encouraged to use recycled materials from their own home environment as far as possible. The results of the first prototype and the first tests should be used to improve the design, functionality, usability, ergonomics and sizing of the object or selection of materials (López-Forniés, 2021).

This methodology encourages independence and individual creativity, allowing students to become active agents in solving their own problems, while applying the principles of design and digital fabrication.

Models of creative self-commissioning processes

Table 1 presents 6 examples of design by professional and prosumer designers, used as a reference for students as an example and as a reference for comparative analysis. These cases have been chosen because they represent a functionally complex product (design of materials and electronics) with a very elaborate development process, a product in a single piece, even if it is constructed with different materials, related to leisure, sport and hobbies (surfboards) and an example of graphic design (experimental for the prosumer and home consumer of t-shirts).

Nienke Hoogvliet's (2017) research with seaweed has resulted in a cotton-like textile material with better yields and more sustainable by reusing fishing nets or similar. Another of her research has resulted in a new process for tanning leather from fish skins. Both his creative and design process is highly intuitive and his achievements derive from small breakthroughs in his experimentation. The aesthetics of his designs are "delicately crafted and the presentation is striking" (Hoogvliet, 2023).

The case of surfboard designers and craftsmen, such as Agote Surfboards (Basque Country Surf Company, 2023) or Surferrule (2023) is interesting, as they cover the three themes discussed in this paper: self-commissioning, prosumer and customisation. In addition, they state that they spend their periods without commissions developing their ideas to validate their designs, which they can then leave to test and/or sell. Nacho Agote, known as the luthier of the sea, has a work philosophy that transcends beyond the

dimension of the object. His boards have a higher value than the practice of surfing. His work is very vocational, with very few units per year and high dedication and care.

At a South Korean studio, the designers have supplemented their modest portfolio with a quarterly publication cleverly titled Try Angle Paper (Eyeondesign, 2015). The self-commissioned project gives them an opportunity to do things they might not be able to do for clients, such as experimenting with typography, making their own paper and creating products to sell online. The studio also uses self-commissioning as a free promotional tool for its work and compensates for its time.

In the group of prosumer, maker and DIY enthusiasts according to the Instructables website (Autodesk, 2023)there are 5 main groups of products for self-ordering: products that introduce small electronics, products for the home, handmade products, products for the outdoors (garden, terrace, etc.) and recipes. On the Makezine website (Make Community LLC, 2023) they have 8 categories where we find the following differences, digital fabrication, drones, vehicles, science and technology, workshop projects. On the Thingiverse community website they are grouped into nine categories with the following differences: hobbies, learning, tools, arts, accessories, games and toys. Other sites such as hackster.io (Avnet Inc., 2023) classify projects by difficulty, initial knowledge before self-ordering.

The first example is the experimentation with electronic components in which a CO2 sensor is designed (Engineer42, 2023) which has become a standard by COVID-19. With the motto "design your own CO2 sensor", the project explains the entire implementation, from component list and assembly to adjustment. If you continue your search on the Instructables website, you will see that there are similar projects that show their own characteristics in the display of information with LEDs, LED strips or graphic displays, where each one requires different programming and therefore involves learning and advancing the knowledge of the prosumer who is generating his prototype. In this type of project, the final finish, formal design and presentation are not the most important thing and sometimes detract from the functional value of the prototype.

The second example is about a designer of wooden surfboards (Memestra, 2022) which he makes by hand and which he displays on the web in an open way so that anyone who wants to can make their own board in their workshop or garage. In his design, which he has personalised by learning from other designers, he includes improvements tailored to his needs and shares all the information so that others can enjoy building their own board, achieving an autotelic experience in which the pleasure of building is shared with the enjoyment of the sport. It should be noted that this designer's experience and knowledge are high or expert level and his materials and manufacturing tools are of a quasi-professional standard. The finishes are professional, although handcrafted details are noticeable.

The third example is T-shirt designers who brand themselves using various technologies. This is not a specific designer, but a group of amateurs who make their own creations and share them by showing the design and execution process. The diversity of creative options is unlimited as it depends on the personal taste of the person designing. It also depends on the technique they execute or ask a company to execute for them. Many examples show the limitations of home-made techniques versus professional screen or transfer printing.

Figure 2 shows these processes and the different phases in which self-engagement, intuition and personalisation are manifested. For the professional designer, self-engagement is evident from the beginning of the creative process, at the moment the designer assumes responsibility for solving a personal need or problem. This approach implies a high degree of autonomy and reflection, as each designer is confronted with his or her own individual experience

and requirements, thus avoiding the universalisation of design and allowing for a personalised solution.

Intuitive thinking manifests itself for the professional in the creative phase and is based on his or her own knowledge as if working on a black box project. Personalisation manifests itself in the final stages of the creative process. However, this personalisation is latent from the beginning of the project, is deliberately pursued by the professional designer, represents the image of his target, and adapted by the prosumer, must be tailored to his specific needs and requirements. Personalisation becomes a way to ensure the relevance and attractiveness of the final product for consumers.

For the prosumer, self-consciousness emerges after a series of attempts and then intuitive thinking is applied throughout the process, from the cyclical phase of iterations in which the problem is analysed and fed back through ideas ranging from observation to discovery. Once an idea is reached and validated through prototyping, or editing, an improvement process is established leading to formal design and finalisation of the product that acquires personal emotional value.

The ND have been shown, in addition to these, other examples, always within a closer and more domestic environment, with different degrees of difficulty in the definition, development, construction and finishing.

Results

Table 2 displays the results of the search phase for PD and RP cases and examples, and those of the analysis of the ND projects; the main factors affecting self-commissioning, the type of creative process and the results obtained. With regard to motivations, those that produce benefits for oneself such as self-evaluation, self-fulfillment, autotelic experience, personal branding, autonomy, etc. predominate.

Self-engagement has the potential to lead to a design process because of the need for an autotelic experience, where the designer enjoys the very pleasure of doing what they are doing, not because they get a reward, but because they really enjoy what they are doing and are able to immerse themselves in a state of flow or Flow (Csikszentmihalyi, 1997).

The analysed cases of professional designers reflect varied motivations for self-commissioning (Walsh, 2019) and are divided into two groups. The first aims to personalise their image to present themselves to the outside world in a unique way. This will enable them to stand out from other professionals in their field. The second is to promote their products and ideas by showing their own style. Self-commissioned projects to promote their own ideas allow them to have more control over the creative process and to present products that reflect their personal vision, showing their ability to solve problems and create innovative solutions, experimenting

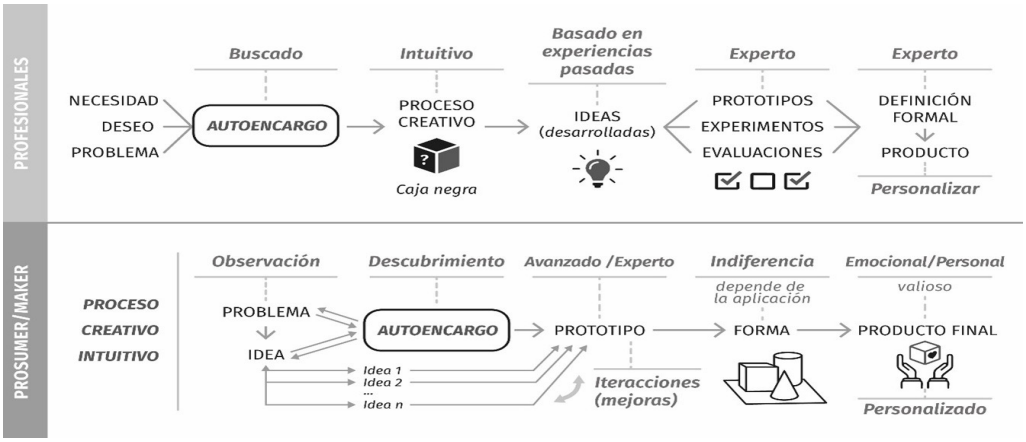

Figure 2. Self-commissioning creative process models for Professional Designer and Prosumer (own elaboration).

with new techniques and enhancing their reputation with clients or collaborators (Mineyama-Smithson, 2023). It can be said that the resolution of initial situations, ideas and solutions are solved with experience and according to an intuitive process based on experimentation, prototyping and successive evaluations for the improvement of the first ideas. Regarding the formal finishes and details of the final design, they are careful and valuable as they represent their own image, their personal touch and promotion to the outside world. The creative process is experimental, although previous knowledge has a great weight in the decisions.

With regard to the prosumer or maker group, it can be observed that self-commissioning appears for two reasons: either because of the detection of a problem or a need or because of an intuitive idea, we can say that self-commissioning comes from a discovery. The creative process is intuitive, based on a series of trial-and-error attempts that take you to a level of advanced prototyping (if you need to learn something specific) or expert if you master the field in which you are designing. Regarding the shape of the objects, this is something that is relegated to second place except in cases where the products are visible to third parties; this aspect seems indifferent and they feel comfortable with craft-type finishes and also feel that it is something they can redo and improve at a later stage. The value of the designed object lies in the emotional value, in the satisfaction of a need not covered in any other way, a tailor-made adaptation or the overcoming of a personal challenge.

As a prosumer, the autotelic experience can provide personal fulfillment and satisfaction. By being involved in the entire design and production process, from the conception of the idea to the realisation of the final object, the prosumer can feel a unique connection to his or her work and to his or her ability to create. This can be especially rewarding when the designed object has a high level of complexity or requires specialised skills and knowledge to realise it (Csikszentmihalyi, 1997). Through personal fabrication, the prosumer creates his or her own objects using traditional hand tools and techniques, such as carpentry, blacksmithing, sewing or ceramics (Mota, 2011). On the other hand, digital fabrication involves the use of digital technologies, such as 3D printers, laser cutters and CNC machines, to produce objects. This offers prosumers the ability to create complex and detailed objects more quickly and accurately, which can increase their efficiency and creativity (Yoo et al., 2016).

In the group of novice designers, self-commissioning is something imposed and directed so that they can learn this concept

Tabla 2. Self-commissioning factors. Initiation, process and outcome.

Factor	Detonante o necesidad inicial (Autoencargo)	Proceso Creativo	Resultados obtenidos
DP	Dar la oportunidad a algo vanguardista, divertido o que apasione. Nutrir el alma creativa Mejorar las relaciones comerciales. Conexión emocional Autoevaluación. Valorar competencias y descubrir fortalezas personales Autorrealización y ambición personal. Expansión en RRSS Comercializar a través de productores de diseño Diseño experimental (Hoogvliet, 2023) Experiencia Autotélica. Disfrutar de tiempo no productivo Cambiar orientación profesional (Disrupt Design LLC, 2023)	Intuitivo y en caja negra Experimental Diversión Basado en experiencias previas	Depurados y alta calidad en los acabados Tarjeta de presentación
PR	Experiencia Autotélica Resolver una necesidad personal insatisfecha Aprendizaje autónomo. Aprender una determinada materia Fabricación personal y fabricación digital Compartir. Sentimiento de comunidad	Intuitivo en todo el proceso, incluso tras finalizar Copia y transformación de ejemplos Iterativo. Prueba y error	Poco cuidados en los detalles cuando es para autoconsumo Es más importante el vínculo afectivo
DN	Creación de un portfolio Formación como diseñadores (Walden & Kokotovich, 2012) Conocer una materia específica relacionada con diseño (Walden & Kokotovich, 2012) Crear su propia marca personal Autonomía en su proceso creativo y de diseño Emprendimiento (Universidad Politécnica de Valencia, 2023)	Muy diverso, sin patrón Tensión en la toma de decisiones Problemas mal definidos Los que experimentan resuelven mejor	Muy básicos y descuidados No hay preocupación por el detalle Es suficiente con que funcione medianamente bien No tiene el mismo valor que para el profesional

(although some already know it). They are given the option of choosing the problem, every day and personal, so that they can understand the concept of prosumer. Their creative process is directed and guided, although open, they learn to work with problems by analysing the causes and to delve deeper into the conditioning factors of design, by recording them with photographs and videos.

Table 3. Results of the designed objects classified by field of application. Source: own elaboration

Ámbito	Objeto
Almacenamiento y organización	Expositor bisutería. Organizador camisetas. Organizador de bolso. Organizador material ilustración. Organizador objetos personales. Organizador prendas para armario. Tendedor (de interior, de radiador y plegable)
Aseo e higiene personal	Estuche lentillas. Estuche limpiador férula dental. Estuche maquillaje. Quita-pelos para cepillo
Baño	Cierre cortinas de ducha. Filtro de pelos para ducha. No mojarse las mangas en el lavabo
Bricolaje	Cubierta cortacésped
Complementos	Empuñadura-funda de paraguas. Extensión paraguas para dos. Funda de móvil con alojamiento para tarjetas. Inmovilizador interior inflable para maletas. Llavero protector puertas
Deportes	Enrollador vendas boxeo
Electrónica	Organizador cables de ordenador. Bandeja móvil y pertenencias. Fundar portátil. Lampara despertador para móvil. Soporte mandos a distancia. Soporte mandos consola. Soporte ordenador portátil. Soporte ratón sobre portátil. Soporte tableta
Limpieza hogar	Cuencos limpieza. Recogedor y cepillo para escoba
Menaje	Asa para transporte de pesos. Clasificador residuos domésticos. Compactador de latas. Contenedor hermético con válvula de vacío. Dosificador de cereales. Emparejador de calcetines para lavadora. Especiero múltiple. Faja antigoteo para tazas. Funda protectora de sandwichera. Lavavajillas. Organizador de especias. Organizador hilos de costura. Organizador de útiles de cocina. Pelador fruta. Pinza para platos calientes. Soporte cuchara para tazas
Mobiliario	Apoyo pies para sillas altas. Colgador paraguas. Dispositivo antivuelco silla oficina. Lampara orientable. Mesita auxiliar cama. Soporte de secador de pelo. Soporte despertador. Soporte partituras. Superficie multifuncional para lavabo. Trinquete o freno para persiana
Motor	Funda casco para mochilas. Soporte calentador taza para coches
Ropa	Cordón cierre cremalleras de espalda. Percha (de viaje troquelada. extensible. para tendedor). Tacón plegable
Textil hogar	Cojín protege gafas

The students started with a process of detecting everyday problems to be solved, mainly using their own techniques based on Shadowing or the User's journey (Interaction Design Foundation, 2023). They created a table that reviews the daily actions that they find annoying during the week at different times or in different spaces and that they would like to eliminate. The examples seen and the review of their daily lives allow them to decide which product to design, although this is the most critical point for them as they are forced to decide.

Their personal motivations are linked to their portfolio or future presentation letter, knowledge of a specific subject, doing a project related to their hobbies or creating a personal brand, being similar to those of the PDs and PRs. Academic motivations include training as designers and gaining autonomy in their creative process. Finally, there is a somewhat remote motivation to take the idea to production and turn their project into a company through entrepreneurship (Universidad Politécnica de Valencia, 2023) which could be related to the commercialisation of objects through PD or PR entrepreneurship.

Idea generation is also driven by the initial prototyping which forces them to self-evaluate. The first prototype is initiatory, in many cases it is the first time they make a working model, unlike the PDs and PRs who work immediately with prototypes and have to be insisted upon to realise and exploit them. However, it helps them to redefine the problem and iterate on ideas to improve until they reach the second prototype that will lead them to the solution, as a PR would do. For formal development, it is recommended to work with metaphors and the redefinition of concepts observed in other fields. Their final design is evaluated externally, by supervisors or teachers, which for them is a measure of the achievement of their design, unlike PDs and PRs who do self-evaluation.

In the case of novice designers, 74 self-commissioning cases were studied, in a small project called prosumer. In the selection of the object to be designed, 13 areas of domestic or everyday applications were found, see Table 3, there are repeated proposals in some groups. The diversity of products is very high, with interesting

and novel applications such as a manual dishwasher or a folding heel adaptable to flat shoes, and other very basic and essential ones such as organisation and tidying in the bedroom.

To highlight the problem, they photographed the actual situation of use that bothers them and described the reasons and constraints that cause the problem. Figure 3 shows the sequence made as a sequence of use like a storyboard. The description of the problem is completed by means of a series of questions similar to the creative techniques of 5W-H, the why of things, etc. (Neuronilla Creatividad Integral, 2023). In this way the problem is completely defined in its context, with the design factors and variables that condition it.

Figure 3. Example of problem definition (author: Matthis Bellanger)

The process continues with an individual and free generation of ideas, through textual or graphical techniques. It is recommended that they use both to start visualising the solution through images. The main techniques used are micro-drawings to get sketches and variations quickly and morphing using the pictures they have taken (Neuronilla Creatividad Integral, 2023).

Once the ideas are defined, they develop a prototype to explore functionality and feasibility. The prototypes are made with recycled materials so that they can be edited and changes can be made based on observations. The result is a dimensional approximation of the object and the type of materials needed for the prototype to be validated. The first tests allow improvements in terms of use, functionality, materials and structure, ergonomics, etc.

With regard to prototypes, 17% have not modified the initial prototype, 60% have made a prototype including variations or improvements and 23% have made several prototypes in which they proposed changes. 73% stated that the changes helped them to improve the design and 9% led them to change the initial design or concept. In this aspect, prototypes bring them closer to an experimental and trial-and-error process similar to professional designers and prosumers that allows them to improve their designs, and corresponds to the results of finishes and functional definition. In the evaluation of prototypes as useful for the creative process, 27% of respondents rated them as very useful and 56% stated that they were useful, none stated that they were not useful and only 17% stated that they were of little or no use or did not know what to answer. The data are taken from the Teaching Innovation project "Monitoring and improvement of the use of prototyping as a tool for learning the design process in the first courses of the Degree in Industrial Design Engineering and Product Development" PIIDUZ_2 Consolidated 916_2022 (Sierra-Pérez, 2022).

Only 30% of students used digital fabrication tools to make their prototypes. Handcrafted items work worse and look more fragile, which can be seen in the quality of their manufacturing and finishes. Those made with FabLab tools result in better finishes and functional improvements due to more testing. Prosumers use iterative processes to improve their prototypes by editing and improving them.

Figure 4. Images of the second prototype and its use (author: Matthis Bellanger)

The second prototype makes it possible to evaluate the design and introduce the necessary improvements. It also demonstrates the operation by means of a sequence of use with photographs and videos. Figure 4 shows the second prototype made with featherboard, on which some changes have been implemented and the functioning has been verified. It can be seen that the finish is made with modelling paste. The object has a non-definitive finish and needs to evolve in terms of finishes.

For formal design they work with two techniques: metaphor and redefinition. The technique of metaphor (Lubart & Getz, 1997) involves comparing two seemingly unrelated things in order to find similarities or patterns that allow a better understanding of the subject matter. These techniques are used in many creative fields, including design, advertising, literature and poetry.

Metaphor allows them to find an element linked to their functional object and through redefinition they will be able to endow their prototype with formal attributes and an aesthetic of its own. In the redefinition, the designer must take a short audio-visual defined by their metaphor and from this extract elements such as rhythm, colour, shapes, music, to assign them as attributes in their formal definition. Finally, they make a presentation of their final design by means of a 3D representation, digital or with a physical model, and renders or photographs. In the final solution, the functional and the formal definition must coexist in harmony. Therefore, the dimensions of the prototype and the proportions of the final object must be in unison.

The formal results, aesthetics, finishes and details are poor and undeveloped, similar to a RP, and unlike a PD, the previous experience of PDs and PDs is the differentiating element with respect to PDs. Only those NDs who have evolved and perfected their prototypes in the experimentation phase have achieved successful formal results. The level of difficulty and complexity of the object also influences, as a dishwasher is not comparable to an umbrella stand.

Conclusions

The differences between company commissioning and personal self-commissioning are clear. The former involves risks and responsibilities while the latter is a decision to satisfy a personal need or desire, not covered in the same way. Self-commissioning assumes risks as one's own and with low impact.

All three groups end up consuming their self-commissioned products, each with different objectives. Therefore, self-commissioning is a way of becoming a prosumer, establishing their own creative process, which can be more or less intuitive depending on each profile's experience. For the ND, the freedom of this process allows them to explore their creative intuition and respond to individual needs in a personalised way. This is following a prosumer-like approach even if they are unaware of it. The lack of experience makes this creative freedom stressful for the ND by not having an easy path to follow.

By fostering the connection between self-commissioning and prosumer character, it opens a path towards understanding intuitive creative processes driven by individual needs and exploring new possibilities in design.

Many designs considered good design (Erlhoff et al., 2008) are an elegant materialisation of the learning that designers have acquired through the continuous process of trial and error derived from their intuitions and the skills they experiment with the alternative solutions generated.

Prosumers feel satisfied with their functional results regardless of their formal chapman 15appearance. They gain confidence to make new projects and emotionally bond with these objects (Chapman, 2015). The professional designer has a studio or workshop in which to recreate these sensations. It is imperative that the ND in a guided or voluntary way experiment with this type of project so that their creative and design processes improve, and their intuitive thinking grows.

Personalisation becomes a necessary act to satisfy the individual needs and specific preferences of each client (Asión-Suñer & López-Forniés, 2021). However, self-commisioning often involves customisation. All profiles have developed their objects with a high degree of customisation, which is a characteristic feature of the maker or prosumer sphere.

References

Alfalah, S. (2018). Self-Initiated Design Projects as a Form of Play: Understandings the Impact of Self-Initiated Projects on Students' Growth and Creative Performance.

Asión Suñer, L., & López Forniés, I. (2022). *El diseño modular en la creación de productos para prosumer.* Universidad de Zaragoza.

Asión-Suñer, L. (2021, March 20). *Prueba y validación de un nuevo método de evaluación.* Youtube.Com. https://youtu.be/tmXe3cWjh2I

Asión-Suñer, L., & López-Forniés, I. (2021). *Review of Product Design and Manufacturing Methods for Prosumers. In Lecture Notes in Mechanical Engineering.* https://doi.org/10.1007/978-3-030-70566-4_21

Autodesk, Inc. (2023, March 20). *Instructables*. Https://Www.Instructables.Com/.

Avnet Inc. (2023). *Hackster.io*. Hackster. https://www.hackster.io/

Basque Country Surf Company. (2023). *Agote Surfboards*. Basque Country Surf Company. https://agotesurfboards.com/

Blättel-Mink, B., Blättel-Mink, B., & Hellmann, K.-U. (2010). *Prosumer revisited.* Springer.

Camillini, G., & Pierini, J. (2016). The Imagined Client. *Progetto Grafico,* 29, 28–37.

Chandler, J., & Chen, S. (2015). Prosumer motivations in service experiences. *Journal of Service Theory and Practice, 25*(2), 220–239.

Chapman, J. (2015). *Emotionally durable design: objects, experiences and empathy.* Routledge.

Csikszentmihalyi, M. (1997). Flow and the psychology of discovery and invention. *HarperPerennial,* New York, 39, 1–16.

Dayan, M., & Di Benedetto, C. A. (2011). Team intuition as a continuum construct and new product creativity: The role of environmental turbulence, team experience, and stress. *Research Policy,* 40(2), 276–286.

Dijksterhuis, A. (2004). Think different: the merits of unconscious thought in preference development and decision making. *Journal of Personality and Social Psychology, 87*(5), 586.

Dijksterhuis, A., & Meurs, T. (2006). Where creativity resides: The generative power of unconscious thought. *Consciousness and Cognition*, 15(1), 135–146.

Disrupt Design LLC. (2023, March 20). *SELF-INITIATED PROJECTS*. Https://Www.Disruptdesign.Co/Work-Portfolio.

Engineer42. (2023). *CO2 Level Indicator.* Instructables.Com. https://www.instructables.com/CO2-Level-Indicator-4x7-Segment-RGB-LED-Manual-Cal/

Erlhoff, M., Marshall, T., & Board of International Research in Design. (2008). *Design dictionary: perspectives on design terminology.* Birkhäuser Verlag.

Eyeondesign. (2015, April 20). Here's the Latest Example of Why Designers Should Do More Self-Initiated Work. Https://Eyeondesign.Aiga.Org.

Finke, R. A., Ward, T. B., & Smith, S. M. (1996). *Creative cognition: Theory, research, and applications*. MIT press.

Franke, N., & Piller, F. (2004). Value creation by toolkits for user innovation and design: The case of the watch market. *Journal of Product Innovation Management,* 21(6), 401–415.

Gabora, L. (2010). Revenge of the "neurds": Characterizing creative thought in terms of

the structure and dynamics of memory. *Creativity Research Journal*, 22(1), 1–13.

Gershenfeld, N. A. (2005). *Fab: the coming revolution on your desktop--from personal computers to personal fabrication*. Basic Books (AZ).

Hoogvliet, N. (2023, March 20). *ABOUT*. Https://Www.Nienkehoogvliet.Nl/about-3/.

Interaction Design Foundation. (2023). *Shadowing in User Research - Do You See What They See?* Https://Www.Interaction-Design.Org. https://www.interaction-design.org/literature/article/shadowing-in-user-research-do-you-see-what-they-see

Klein, G. A. (2003). Intuition at work: Why developing your gut instincts will make you better at what you do. Currency/Doubleday.

Lebuda, I., & Csikszentmihalyi, M. (2017). Me, myself, I, and creativity: Self-concepts of eminent creators. In *The Creative Self* (pp. 137–152). Elsevier.

López-Forniés, I. (2021). Pick-up Balls. Del diseño del artefacto a la estética del producto. [Pick-up Balls. From the design of the artifact to the aesthetics of the product]. In L. de Nuere Menéndez-Pidal, Silvia; Miguel Álvarez (Ed.), STEAM. *La humanización de las ciencias en la universidad* (pp. 177–192). Dextra Editorial S.L.

Lubart, T. I., & Getz, I. (1997). Emotion, metaphor, and the creative process. *Creativity Research Journal, 10*(4), 285–301.

Make Community LLC. (2023, March 20). *Make*: Https://Makezine.Com/.

Massaguer, L. (2022). Diseñar y ser cliente/aa la vez: autoencargos y proyectos personales. *COMeIN: Revista de Los Estudios de Ciencias de La Información y de La Comunicación, 118,* 3.

Memestra. (2022, October 13). *Hollow Wood Surfboard. Plywood and Cedar.* Https://Www.Instructables.Com/Hollow-Wood-Surfboard/.

Mineyama-Smithson, J. (2023, March 20). *5 Reasons Why You Should Start a Self-initiated Project According to Tokyo Creatives*. Https://Www.Mamimutokyo.Com/Blogs/Journal/5-Reasons-Why-You-Should-Start-a-Self-Initiated-Project-According-to-Tokyo-Creatives.

Mota, C. (2011). The rise of personal fabrication. *Proceedings of the 8th ACM Conference on Creativity and Cognition,* 279–288.

Neuronilla Creatividad Integral. (2023). *Neuronilla*. Https://Neuronilla.Com/. https://neuronilla.com/

Norman, D. A. (2005). *El diseño emocional: por qué nos gustan (o no) los objetos cotidianos* (Vol. 58). Grupo Planeta (GBS).

Pelta, R. (2010). Paco Bascuñán. Por siempre. *I+ Diseño. Revista Científico-Académica Internacional de Innovación, Investigación y Desarrollo En Diseño, 2,* 96–107.

Ritzer, G. (2010). Focusing on the Prosumer. In *Prosumer revisited* (pp. 61–79). Springer.

Ruiz, M. X. B. (2014). De la identidad social a la representación visual, estrategias de intervención desde el diseño responsable. *Kepes, 11*(10), 281–301.

Sadler-Smith, E., & Shefy, E. (2004). The intuitive executive: Understanding and applying 'gut feel'in decision-making. *Academy of Management Perspectives, 18*(4), 76–91.

Sawyer, R. K. (2011). *Explaining creativity: The science of human innovation*. Oxford university press.

Sierra-Pérez, J. (2022). *Seguimiento y mejora de la utilización del prototipado como herramienta de aprendizaje del proceso de diseño en los primeros cursos del Grado en Ingeniería de Diseño Industrial y Desarrollo de Producto*. Innovación Docente UNIZAR. https://indo.unizar.es/proyecto/916/ficha

Sternberg, R. J., & Lubart, T. I. (1996). Investing in creativity. *American Psychologist, 51*(7), 677.

Studio Nienke Hoogvliet. (2017). *Fish leather* (N. Hoogvliet, Ed.). Drukkerij Tienkamp.

Surfer Rule, S. L. (2023). *Surfer Rule*. https://www.surferrule.com

Toffler, A. (1980). The Third Wave. In *The Ultimate Business Library, Wiley*. Wiley. https://search.credoreference.com/content/entry/wileyultbuslib/alvin_toffler_the_third_wave_1980/0

TRIANGLE-STUDIO. (2023, March 20). *TRIANGLE-STUDIO*. Http://Www.Triangle-Studio.Co.Kr/.

Universidad Politécnica de Valencia. (2023, March 20). *Design for kids*. Designforkids. Upv.Es.

Walden, R. J., & Kokotovich, V. (2012). Supporting Student Learning in Relation to Entrepreneurial Innovation in Self-initiated Industrial Design Major Projects. *Technology Education Research Conference*.

Walsh, J. (2019, July 15). *Creating Self-Initiated Projects*. Andwalsh.Com.

Yoo, B., Ko, H., & Chun, S. (2016). Prosumption perspectives on additive manufacturing: Reconfiguration of consumer products with 3D printing. *Rapid Prototyping Journal, 22*(4), 691–705.

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