ISSN: 2623 - 4629

Journal of Integrated Information & Management

e-Journal

Volume 5 - Number 1 / Jan - Jun 2020

http://ejournals.uniwa.gr/index.php/JIIM

Journal of Integrated Information Management

Vol. 5 – No 1
Jan – Jun 2020

ISSN 2623-4629 (on-line)

Publisher

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Editorial message

Dear Colleagues,

It is with pleasure to announce the new issue of the **Journal of Integrated Information Management (JIIM)** publication. JIIM is an international, multidisciplinary, blind peer-reviewed journal that publishes research efforts on all aspects and issues regarding Information Science and Integrated Information Management.

Expressing our commitment to promoting high-grade quality scientific papers, we present you with the current issue, which contains four articles.

The first paper examines the application of the European General Data Protection Regulation (GDPR) to Greek companies. The research investigates the positive and negative impact of the implementation of the Regulations, 18 months after the new legislation went active, regarding technological, organizational and legal issues. Most importantly this paper highlights the significant role of the Data Protection Officer (DPO).

The following paper presents the PLUS information literacy model implementation in the context of a prison library, with the aim of helping second chance school learners to prepare a presentation on racism. The development of work plans in an informational organization environment, inspired by microteaching, can serve as a good example for promoting the application of informational models to their operation and services, as well as a pilot for the application of a work plan by educators and information scientists.

In the next paper readers will be informed of how an object can be examined by using S. Pearce's model for studying objects. Moreover, they will discover that the aforementioned model is a foundation stone in the study of material culture that enables any object to be perceived through a broader and more interesting feel for its inherent meaning, instead of exclusively through its narrow morphological sense.

The last paper discusses a new topic concerning the extension domain of subject - matter protected by patents, trademarks and copyright law regarding computer icons and graphical user interface. The extensive view of protectable subject - matter via intellectual property has blurred the clear delineation between patent, copyright, and trademark law, thus readers will be informed why it should only occur if it does not subvert the balance of intellectual property law per se.

We are aiming at making JIIM a reputable scientific communication channel, and we are now welcoming submissions for the upcoming journal issues as well as proposals for Special Issues. Your proposal should be no more than five pages and include at least an executive summary, a proper justification why the Special Issue is needed and how it is suitable with the JIIM topics. Special Issues proposals should be sent directly via email the Assistant Editor-in-chief (dkouis@uniwa.gr).

Finally, we expect your contribution and active support with remarks and points of improvement.

Assistant Professor - Assistant Editor-in-chief
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Journal of Integrated Information Management electronic journal

Implementing GDPR in Greek Companies - The necessary steps for integration

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Article Info
Article history:
Received 04 March 2020
Received in revised form 5 May 2020
Accepted 17 May 2010

https://doi.org/10.26265/jiim.v5i1.4424

Abstract:

Purpose - *The purpose of this paper is to examine the application of the European General Data Protection Regulation (GDPR) to Greek companies. The research investigated the positive and negative impact of the implementation of the Regulations, 18 months after the new legislation went active, regarding technological, organizational and legal issues.*

Design/methodology/approach – *For this research first step was the study of existing literature. Then, questionnaires were distributed to companies liable to the GDPR for the collection of quantitative data. Finally, a conduct research was made in a company that offers records management services trying to bring the services in compliance with GDPR.*

Findings – *The above procedures have yielded significant findings regarding the actual implementation of GDPR in the companies and the technological and organizational issues that took place and need to be resolved.*

The most important outcomes from this research is a) that the companies are in need for more guidance from the competent authorities in the field of data protection, b) there is a significant cost required to implement the changes in organizational structures and c) the important role of the Data Protection Officer *(DPO).*

Index Terms — General Data Protection Regulation - GDRP, Records Management, Data Protection Officer - DPO, Protection of Personal data

I. Introduction

With the passage of the new General Data Protection Regulation in 2016, the way European citizens' personal data is processed by both European countries and non-European countries has changed. The need for more stringent legislation with homogeneity in all European countries has led to the revision of Directive 95/46 / EC Regulation **[1]** on a strict legislative framework and heavy fines **[2]**. After the application of the 2018 Regulation, all countries had to comply with all necessary changes regarding the personal data processing.

However, Greece internalized the regulation with a significant delay, as the parliament passed the law 4624/2019 in August 2019 **[3]**. Despite the delay in the integration of the Regulation into Greek legislation system, actions for its implementation has been started since 2018 **[2]**. Specifically, the Hellenic Authority for the Protection of Personal Data carried out inspections and imposed fines exactly as stipulated by the new regulation.

Normally, the application of the Regulation to the public and private sector that process personal data in any form should have been completed before 25 May 2018, something which nevertheless did not occur **[2].**

The purpose of this study was to examine whether or not Greek private-sector enterprises accomplished the implementation of the Regulation and to what extent the technological, organizational and financial requirements (which arise from the implementation) did or did not impact their businesses processes and specifically their records management policies. Another, important part of the research, was to identify the role of the Personal Data Protection Officer and his/her contribution to the application process.

The first part of the paper illustrates the innovations of the Regulation. The second part presents the research results from several Greek companies, while the third part presents the results of the communication through questionnaires with the companies and their DPOs, alongside an interview with an active DPO of a well-established Records Management Company.

II. Terminology

In order to better understand the topic of the present research, it is important to define the basic terms according to Article 4 of the GDPR Regulation:

- **'Personal Data'** means any information relating to an identified or identifiable natural person ('data subject'); the identifiable natural person is that whose identity can be ascertained, directly or indirectly, in particular by reference to an identifier, such as name, identity number, location data, an identifiable identifier or one or more factors specific to the physical, physiological, genetic, psychological, economic, cultural or social identity of that natural person' **[2]** .
- "***processing***" is defined as "any act or series of operations carried out with or without the use of automated means on personal data or sets of personal data, such as collection, registration, organization, structure, storage, adaptation or

alteration, recovery, search for information, use, disclosure by transmission, dissemination or any other form of disposal, correlation or combination, restriction, erasure or destruction **[2]** .

"***Data Controller***" means a natural or legal person, public authority, service or other body which, alone or together with others, determines the purposes and methods of processing personal data; where the purposes and manner of such processing are determined by Union law or the law of a Member State, the controller or the specific criteria for his appointment may be provided for by Union law or the law of a Member State" **[2]** .

- "***Processors"*** shall be defined as a natural or legal person, public authority, agency or other body processing personal data on behalf of the controller" **[2]**.

III. General data protection regulation

A. Key Points

The revision of Directive 95/46/EC **[1]** and the implementation of the Regulation **[2]** was based on the strictest legislative and implementing framework .

The purpose was to create a new culture for personal data processing, through the revision of the basic principles, rights, obligations and fines.

Mainly, the new Regulation revised:

- Principles relating to processing personal data
- Obligations concerning the Data Protection Officer, the Data Controller and the Data Processor
- Rights of the data subject
- Criminal penalties and administrative fines

The European Parliament proceeded to the adoption of Directive 2016/680 **[4]** which analyzes all the articles of Regulation. The extensive and detailed description of the procedures of the Regulation aims to fill possible legal gaps and to avoid a similar application of Directive 95/46/EC **[1]**, where in many cases it was interpreted by the countries at will.

The main provisions of the Regulation focus on the processing of personal data in any form and how they should be carried out to ensure the safety and protection of the data subject. The processing operations concern the basic technological and organizational changes that should be made and maintained by those entities and companies that process and store data for their own purposes.

B. Key Roles

The data processing is carried out through a set of procedures for which the data controller has the responsibility. Processor has a secondary role and is always directed by the controller. In addition to the controller and processor roles, all companies with significant volumes of personal data and complex processing operations are required, by the new regulation, to appoint the data protection officer (DPO) **[2]**.

According to the GDPR, the main responsible for the right processing of personal data is the controller and secondly the processor. The DPO, in case of a data breach is not penalized if all the necessary actions described by the Regulation were applied. On the contrary, according to Greek Law 4624/2019, the data protection officer is accountable to the law if any of the actions constitute unethical behavior and pose a risk to the security and protection of the data of the subjects **[3].**

All obligations and procedures concerning controllers, processors and data protection officers, are analyzed in the fourth chapter of the Regulation and in the articles 24-39 **[2].**

C. Criminal penalties and administrative fines

The key for implementing the changes of the Regulation is through strict fines. According to article 83 of the Regulation, in cases of violation of the provisions, the enterprises are subject to administrative fines and legal penalties **[2]**.

For administrative fines two levels are described:

The first level predicts fines up to 10.000.000 EUR, or in the case of an undertaking, up to 2 % of the total worldwide annual turnover of the preceding financial year, whichever is higher, for obligations:

1. of the controller and the processor pursuant to Articles 8, 11, 25 to 39 and 42 and 43;
2. of the certification body pursuant to Articles 42 and 43
3. of the monitoring body pursuant to Article 41

The other level of administrative fines is up to 20.000.000 EUR, or in the case of a confirmed data breach, up to 4 % of the total worldwide annual turnover of the preceding financial year, whichever is higher for obligations **[2]**:

1. of the basic principles for processing, including conditions for consent, pursuant to Articles 5, 6, 7 and 9;
2. of the data subjects' rights pursuant to Articles 12 to 22;
3. of the transfers of personal data to a recipient in a third country or an international organization pursuant to Articles 44 to 49;
4. of any obligations pursuant to Member State law adopted under Chapter
5. of non-compliance with an order or a temporary or definitive limitation on processing or the suspension of data flows by the supervisory authority pursuant to Article 58 or failure to provide access in violation of Article.

It is important to be clarified as characteristically referred to in Article 83 paragraph 9 "…*In any event, the fines imposed shall be effective, proportionate and dissuasive…"* that the purpose of those strict fines is to act as a deterrent to violations of the regulation and as a base to change data processing attitudes **[2].**

D. Policy and privacy

The main concern of the Regulation is the protection of personal data, as it was the fundamental request for the revision of Directive 95/46/EC in Regulation **[1].**

The articles 25 (*Data protection by design and by default*), 32 (*Security of processing*), 33 (*Notification of a personal*

data breach to the supervisory authority), 34 (*Communication of a personal data breach to the data subject*) and 35 (*Data protection impact assessment*) **[5]** aim to strengthen data protection and encourage companies to proceed in revisions at all stages of personal data processing which means structural changes including their records management policies. Moreover, articles 40 and 41 of the Code of Ethics, attempts to create a unified perspective, a single culture on which the articles will find a test basis to be applied consistently and disciplined **[2].**

E. EU institutions and bodies

For the protection of personal data, institutions and authorities are obliged to define key persons responsible to inform and be informed about all developments in the field of data protection. They must also observe global developments in the technological and socio-political sectors in order to prevent the risks that may arise from them and may put in risk the personal data in their institute or organization.

With GDPR, the data protection agencies were also revised. With the article 68 of GDPR **[2]** the European Data Protection Board **[6]** was established, replacing the Group of Article 29 from the Directive 95/46/EC **[7]**. In addition, the duties of European Data Protection Supervisor **[8]** and the responsibilities of the national data protection authorities were revised accordingly **[2].**

In Greece, Hellenic Data Protection Authority represents the country in the European Councils of Data Protection, and it has the responsibility to control and inform legal entities from the private and public sector, as well as governmental agencies and the citizens about the new regulation **[9].**

F. Technological and organizational observations

The basic application of the Regulation is based on the legislative, technological and organizational upgrading of private and public sector. The proposed technologies of Article 25 **[2]** - such as anonymization, pseudonymization, minimization of processing data and implementation of certified security procedures - are difficult to implement, as they require significant investments and high maintenance costs, which companies cannot afford.

The technologies proposed by the Regulation were one of the main questions of the present research regarding their implementation by Greek companies **[10] [11].**

G. Innovative points of the regulation

The ground-breaking aspects of the Regulation are - as mentioned above - the necessary technological and organizational revisions as well as the strict fines. The innovations of the Regulation stand in important areas such as the essential and legislative presence of a data protection officer, the need of a records management policy, the imposition of fines which leads to a new era for the personal data processing.

As it will be presented at the upcoming section, not all type of businesses could manage these changes. The high cost, the lack of expertise and the need for guidance on the implementation of the Regulation are difficult tasks which, as it turns out, are not easy to carry out successfully.

The next chapter presents the findings from the GDPR application and impact on Greek Companies **[10] [11]**

IV. GDPR AND GREEK COMPANIES

A. Research methodology

As mentioned before, the research aimed to highlight the current situation for the implementation of the GDPR in Greek companies. Clearly, this research could not apply to all Greek companies in all levels and industries. Such a task would require a longer and certainly more immediate and interpersonal communication.

The methodology applied, was the case study of the application of the Regulation to a company through interviewing the Data Protection Officer and the distribution of electronic anonymous questionnaires to companies obliged to implement the Regulation.

The dual orientation of the research aimed firstly at the immediate collection of indicative statistics via the questionnaires, and secondly at a deeper understanding of the application process through the interview with the DPO.

B. Interview with a DPO

For the case study on the "implementation of the GDPR and the role of the Data Protection Officer", a leading company in the field of Records Management Services was selected. The criteria of this choice were that the company:

A. followed GDPR prior to the implementation of the Regulation and its establishment

B. already have high technological and organizational level

C. was already certified by official bodies for its services regarding data protection

D. operates in the field of Records Management Services which is about compliance.

For the interview process, the data protection officer was first contacted, and its cooperation and terms were agreed. The information sought to be collected, concerned both the company's procedures for implementing the Regulation and the role of the company's DPO.

Regarding the company's identity, it is a Records Management Services provider whose services concern the organization, storage and safe destruction of data that belong to third party companies - customers. The nature of the work concerns the management of personal data both at the level of the processor and at the level of the controller

The second phase was to study and examine the role of the DPO, the controller and the processor though the eyes of a professional DPO. Based on what the Regulation states about the technological organization the steps of the interview were as follows:

Part 1: Meeting with the Data Protection Officer, discussing her studies and professional experience in the field of data protection, responsibilities within the company in the compliance department and the relevant certifications which are helpful on the role of DPO.

Part 2: Presentation of the business, the nature of its

operations, services and size.

Part 3: The implementation of the Regulation in the company.

For the interview was used sound recording machine.

C. Questionnaires

For the definition of the sample of companies that would participate in the research, the following eligibility criteria were established:

- They had the obligation to implement the Regulation
- Their workflows had to include both processing and storage of personal data
- The companies should be subjected to Greek law.

After the establishment of the criteria, the next step was an online search for private companies that fulfill them. The search aimed to the collection of contact information – so that the questionnaire would be distributed online via e-mail - but also concerned the nature of the operations of the companies, in order to determine whether they were subject to the relevant legislation.

The information of the sample companies was collected and recorded in an excel file including also the type and the size of the company. The target population was about 100 companies and 100 DPOs, respectively. For this purpose, two questionnaires were created. The first was addressing the technological and organizational procedures of the implementation of the Regulation and the second the role of the Data Protection Officer.

Structurally both questionnaires were consisted of closed ended questions. In the DPO's questionnaire the number of questions were 25 and in the business's questionnaire they were 27. Both were required to be completed by the Data Protection Officer or the Head of the Compliance Department. The questionnaires were formulated after a detailed study of the existing bibliography, with the systematic monitoring of the developments in the field of data protection and the data that were exported daily and finally based on the Regulation.

The questionnaires concerning the application of the Regulation on business, were divided into the following four sections:

Part A: General business identity questions (type of business, where it operates, establishment year, number of personnel employed, type of services etc.).

Part B: Specific questions for the implementation of the Regulation regarding technological, organizational and economic challenges that the new regulation brought.

Part C: Specific questions on how the companies were informed and adapted the company of the GDPR.

Part D: Questions related to the impact of the GDPR in the records management policies of the companies, if any.

The questionnaire about Data Protection Officers was also divided into 4 topics which concerned:

Part A: Demographic questions.

Part B: Educational Training of the Data Protection Officer.

Part C: The role of the Data Protection Officer inside the company.

Part D: Records Management Policies after applying GDPR.

The collection period of the samples was initially set from 1st until 15th of October 2019 but since the number of the responses was low, the survey continued until the 10th of November 2019. The answers received within 40 days reached 13 in the DPO questionnaire and 18 in the business questionnaire.

V. RESEARCH RESULTS

This chapter provides a detailed overview of the results of the research conducted through the interview process and the analysis of the questionnaires. In paragraph A the data collected through the DPO interview are presented while in paragraphs B and C the results from the questionnaires. In the final section (VI) the analysis of the results is discussed.

A. Outcomes from DPO's Interview

Regarding the DPO position, the results of the interview showed that while it is an advantage it is not necessary for the DPO to be associated with IT or Legal Studies. What is required for this position is that the DPO should be characterized by observation, flexibility, communication and information insight. Furthermore, must be able to orchestrate the compliance procedures within the company, for the correct application of both GDPR and other security and compliance regulations.

The DPO also highlighted the need of GDPR Groups for the broad interdisciplinary approach of the applications of the Regulation.

Regarding the application of the Regulation in this specific company, DPO refers that the implementation of GDPR had to follow specific and carefully steps such as:

1. Data Mapping
2. Gap Flow Analysis
3. Data Processing Impact Assessment
4. Selection of technologies to fill gaps
5. Training of the staff on new technologies and procedures
6. Cultivating a culture of data protection and Records Management.

In addition to those steps, a key factor in implementing the Regulation is the pre-existing technological and organizational level as well as the company's policy. As it was mentioned by the DPO, the high costs of the proposed technologies are deterrent to a company that does not already have a good technological background as well as specific policies and procedures. The cost of implementing new technologies and reorganizing all compliance procedures and policies for small and medium-sized companies has been a major problem and the main reason for the delay in implementing the Regulation.

In the field of document management, there was an increase of documents, mainly legal and contractual

agreements between the company and customers. New documents were also created and provided for the gap analysis both within the company and in the companies that were potential customers. The most important new document was the Data Protection Impact Assessment (DPIA) both on the controller and on the processor side.

According to the DPO, the main negative of GDPR is the high cost for the companies which were not technologically ready to adopt the Regulation. It is almost impossible to reach 100% percent compliance as there is not only the technological barrier but also the human factor that affects the implementation of the Regulation. The positive aspects of the Regulation are the redefinition of the business policies, the understanding of the use and the value of records management in a company and the new jobs that were created.

B. Outcomes from the DPO's questionnaires

The main purpose of the questionnaire that was referred to DPOs, it was to identify their role, their perspective on the implementation of the Regulation.

Structurally, the questionnaire was divided into 4 sections with 25 questions. The most important outcomes revealed that:

- DPOs are mostly male, over 45 years old, with master's degrees and with experience in the field 1 to 5 years.
- Most of them have obtained certificates related to personal data processing within 2018.
- The certifications and the pre-existing subject experience did not fully serve the needs of the position and additional external assistance was sought.
- The areas in which DPOs are mainly involved are the antitrust assessment, data flow mapping and policy review processes.
- The level of communication between the controller, the processor and the DPO is at satisfactory levels for most of the responders.
- Regarding the citizen's requests to the DPOs, data portability is in great demand alongside with the restriction of their data processing. The prevailing view is that GDPR was a necessary addition and will provide positives long-term results.
- There is an increase of business documents and a difficulty on managing them without proper records management policy and relative document management software.
- As GDPR clearly refers data destruction when the life period of a record is ended, there is a gap in Greek legislation regarding the best way to safely dispose records with personal data.

C. Outcomes from the Companies questionnaires

The companies' questionnaire aimed at gathering information on how the Regulation is being implemented in technological, organizational, legal, economic and finally at policy level.

The most important outcomes were:

- The actions for the implementation of the Regulation were carried out in collaboration with external consultants.
- 17 out of 18 companies consider themselves to be GDPR Compliant.
- 11 out of 18 refers that the cost in order to be GDPR compliant exceeded the 15,000€, while for 7 of them was less.
- Their communication with the Hellenic Data Protection Authority in general is less than 3 times a year and only in case of contact of the Authority with the company and not the other way around.
- The most difficult process were the steps of Minimizing Data Processing and the Data Flow Mapping.
- The preparation of the companies in order to be in compliance with the new Regulation started mainly 12 months before the Regulation come to force on 25 May 2018.
- External legal advisors were used for the creation of the legal documents.
- The impact of the Regulation on businesses was mostly positive despite the difficulties of the implementation.
- There was an increase on records causing companies to identify the use and the value of records management services.
- Regarding document disposal, a large percentage of the companies used confidential destruction without following the relative articles of the Regulation.

VI. CONCLUSION

According to what has been reported, recorded and researched so far, the implementation of the Regulation is an area of great study with multiple perspectives.

The most important result, apart from the need for technological, organizational and legal changes from companies in order to be in compliance with GDPR, is the necessity for people who work with personal data to become more familiar with the new Regulation. This will eventually result to changes in the way people process the personal data of subjects embracing the new regulation.

The application of the Regulation has benefits and disadvantages. On the positive side, data privacy is protected with high fines for anyone who doesn't comply with the new Regulation. On the other hand, there is a significant cost to those who want to integrate and to be compliant with the new Regulation.

It is important for companies and the public sector to understand that training upon data protection and following the developments of the new Regulation should be a continuous process. Technological modernization will help to meet the security needs while Records Management culture will help them to comply efficiently with the new Regulation.

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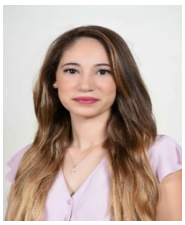
VIII. AUTHORS

Nikos Kareklas holds an MSc in Information Science from the CITY University of London, England (School of Mathematics, Computer Science and Engineering) and is a graduate of the Department of Library Sciences and information systems of the Technological Educational Institute of Athens. From 2016 until today he is a laboratory collaborator of the Department of Archives, Library and Information Systems of the University of West Attica and since 2019, a Ph.D. candidate in the Department, investigating the use and the value of new technologies in Records Management which is his field of expertise. He has a rich professional career operating as Information Manager in many innovative projects in Greece such as the modernization and upgrading of the Elefsis Refinery, which is considered until today the largest private industrial investment in Greece. For many years he was the Director of the Records Management department of WWW, one of the few companies in Greece engaged in the professional management of archive material. Since 2019, he is the General Manager of GreenFence Company that operates in the field of confidential destruction of data and recycling. His current research interests relate to the integration of new technologies such as Blockchain and Artificial Intelligence into Records Management as well as the implementation of GDPR in Greek Companies and the creation of a new model for processing active documents.



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Fani Giannakopoulou is a postgraduate student at the master program, Information Management in LAM's. She holds two BA degrees one in Library and Information Systems, (University of West Attica) and one in Philosophy, Pedagogy and Psychology (University of Athens). Her work experience includes the library of the European University Institute (Florence) and the National Library of Greece.

Journal of Integrated Information Management electronic journal

The application of the PLUS model in a prison library: an information literacy microteaching

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Article Info

Article history:

Received 2 May 2020

Received in revised form 20 May 2020

Accepted 30 May 2020

https://doi.org/10.26265/jiim.v5i1.4426

Abstract:

Purpose *– This article aims to detail a plan for the application of the PLUS information literacy model in the context of a prison library. A brief overview of the literature will highlight the importance of (co-)developing activities based on multiple models and learning theories. At the same time, the article argues in favour of the idea that the implementation of information literacy programmes in the context of excluded and socially vulnerable groups can substantially help to improve their self-image and their smooth integration within the restrictive walls of the prison, as well enhancing their capability of returning to society and functioning as law-abiding members.. This will be followed by a presentation of the steps for implementing such a work plan in a prison library, with the aim of helping second chance school learners prepare a presentation on racism. The article is based on an assignment prepared for the "Information Literacy" course at the Department of Archival, Library & Information Studies, during the spring semester of the 2019-2020 academic year.*

Design/methodology/approach *- The research hypothesis for the project is situated within the context of a prison library. There, the educator teaching the subject of Sociology (Social Literacy) at the Second Chance School (SCS), will express their wish that each learner prepares a presentation - on the subject of discrimination (e.g. gender, political beliefs, religion, social exclusion, minorities, etc.). To this end, the educator will propose that learners seek guidance from the librarian on a topic pertinent to the concept of discrimination (racism). The approach followed by learners when preparing their presentation will be based on the PLUS model of information literacy. Subsequently, the steps taken by the librarian will be presented to them, and their choices will be justified on the basis of the literature concerning the design of learning processes. Methodologically, the study is based on the synthesis of fundamental theories of adult education with the PLUS information literacy model.*

Findings *- The development of work plans in an informational organisation environment, inspired by microteaching, can serve as a good example for promoting the application of informational models to their operation and services. This article, presenting every step of this process, can serve as a pilot for the application of a work plan by educators and information scientists.*

Originality/value *- There are few examples of applications of informational models in educational processes for socially vulnerable or excluded groups. This article also enhances awareness on issues pertaining to libraries and education within prisons not just in Greece, but also abroad. Let us not forget that, in the 21st century, there still exist countries in which the human rights to education and information for detained people are still being violated.*

Index Terms — Information Literacy, Information Literacy Models, PLUS model, Adult Education, Prison Libraries.

I. Introduction

The need for knowledge and information is long-standing and perpetual. All societies throughout history have developed ways to produce and communicate information which is essential for various processes and needs for socialisation and survival in communities. In late capitalist society, where technologies, sciences, and the internet have taken a central role in people's lives, information is of utmost importance. Given the enormous volume of information each person is confronted with on a daily basis, and given their educational, cultural, and awareness level, the cultivation of skills for identifying, retrieving, evaluating, analysing, and using key information from the early stages of formal education is essential. Described in basic terms, this entire field is dominated by information literacy and gradually, over the past few years- is being shaped into a dynamic field of research and technological development, that of Information Science.

Beginning with the introduction of the concept of "information literacy" in the United States of America in 1974, there have been several different attempts to define it. The rapid evolution of Information and Communication Technologies (ICTs) may have also contributed to this. Briefly browsing through definitions in the field it is revealed that "informational education"/"critical information literacy" is concerned with the recognition, identification, evaluation, and use of information, while also it includes the field of lifelong learning, individual empowerment, and promotion of social integration and welfare internationally **[1]**.

The development of various programmes of information literacy, combined with the need for timely information, have led to the creation and implementation of specific models of information literacy such as Big 6 Skills, Bruce's Seven Faces of Information Literacy, Research Cycle, Focus on Research, SAUCE, PLUS, SCONUL, etc. Clearly, both the development of these models and the selection of a model of implementation by information scientists or educators is carried out within a specific frame of reference which includes population groups (e.g. pupils, students, community, vulnerable group(s), etc), conditions (place, time, facilities), and needs (education, training, information, etc.), with varying levels of effectiveness **[2]**. Certainly, information literacy models are not a one-way street for education neither they are considered educational models themselves. Since, there are many different teaching and learning theories that have as their starting point either the education or information science, when an information literacy model is combined with them, it may lead to an efficient, information related pedagogical approach **[3]**.

The case study presented in this article concerns the application of the PLUS model of information literacy skills in the context of a library functioning inside a prison. PLUS was developed in Scotland by James Herring, who specialises in informational education and who led the department of Information Management at Queen Margaret University in Scotland. He retired in 2012 from Charles Sturt University, where he taught. The model he developed categorises the process of information skills training into four main pillars: a) Purpose, b) Location, c) Use, and d) Self-evaluation. PLUS emphasises reflecting and evaluation skills. The steps do not have to follow each other linearly, while it is also possible to return to a previous step when needed. The structure and analysis of the four information skill pillars will be presented below, in the section discussing the case study in detail **[4]**, **[5].**

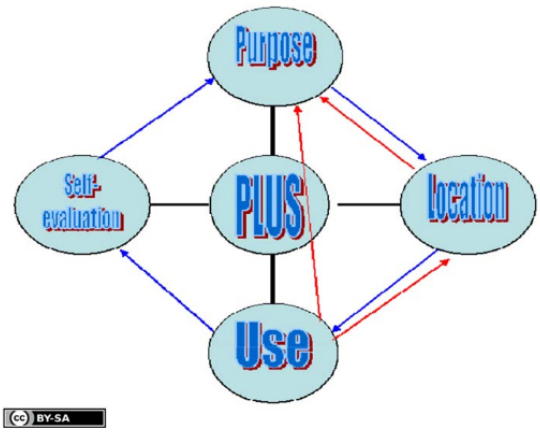

Figure 1. Purpose Location Use Self- Evaluation Model **[6]**

The article is entitled by the term "microteaching". Microteaching is a common educational technique for teaching "how to teach" other peers with planning and presenting a lesson **[7]**. Inspired by these educational practice, we proposed an applied education plan about "teaching" our peers for information literacy models.

II. Prisons, Libraries and Adult Education

The deprivation of liberty in prisons for people who commit illegal acts is a means of punishment for them as well as an example to avoid for other citizens **[8]**. Through the centuries, the methods and policies, used by those in power to impose punishment for illegal behaviors, and the very concepts of "illegality" or "crime" are constantly shifting, creating a field historically rich in debate and criticism.

Western societies paid much attention to the issue of inmate education in prisons, chiefly during the time of abolition of corporal punishment and torture, both of which were common practices prior to the 19th century **[9]**. The reintegration of former prisoners into society was closely linked to education and began, over time, to be considered a fundamental right for prisoners **[10]**. At the end of the 18th century, three initial attempts at prisoner education began, but certainly, far removed from the practical and conceptual content of prison education today **[11]**. The late 19th and early 20th century are defined by intense efforts to systematise and develop a consistent policy of education programmes for adult prisoners, steadily focusing on social integration and the minimisation of repeat offending **[12]**. Adult education in prisons continued to gain ground in the West during the 1970s a trend that was adopted by many countries. The United Kingdom, the Scandinavian countries, and the United States pioneered this shift, along with a series of international and European guidelines and legislation **[13]**, **[14]**. The key concern underpinning the implementation of education in prisons was the universal right of inmates to equal opportunities to multi-dimensional personal development and the opportunity to education.[1]

It is easy to identify the relevant reference to education in prisons by the Council of Europe, which states, among other things:

"*All prisoners shall have access to education, which is envisaged as consisting of classroom subjects, vocational education, creative and cultural activities, physical education and sports, social education and library facilities*".[2]

This recommendation is significant for this article, specifically because it refers to the right of prisoners to the use of a library, which will be discussed below.

In Greece, the right to an education is enshrined in Article 16 of the Greek constitution, while the penal code and applicable provisions determine the way in which prisoners can access education. The history of prisoner education in Greece will not be presented here, nor will there be any

[1] United Nations International Covenant on Civil and Political Rights, Article 10: 1966.

[2] "Education in Prison", Council of Europe Recommendation, No. R (89) 12: 1990.

extensive reference to the various educational opportunities in and out of prison, but it is important to note that the responsibility for this area is shared between the Ministry of Education and Religious Affairs, via the Secretariat General for Lifelong Learning, together with the Ministry of Justice. Furthermore, the qualifications offered are equivalent to the different levels of education attainable via typical and non-typical routes outside of prisons.

In Greece, the founding and operation of Second Chance Schools (SCS) in prisons began in Larisa in 2004, and is an innovative and substantive practice for the reintegration of prisoners. SCS within prisons operate with the same educational and learning goals as outside of prison. There are currently 68 SCS in Greece, 12 of which operate within prisons **[15]**.

As previously mentioned, one of the rights of prisoners is to use the library and to have a life of dignity. It could be argued that the operation of libraries within prisons follows the evolution of the penal system and the provision of education within it. In the United States, the first adequately organised prison libraries were created in the 19th century, while during the 20th century, this was promoted as a key goal **[16]**. The United States, Canada, England, and the Scandinavian countries pioneered both prison education and library use, and provide an organized library system similar to that outside of prisons.

In Greece, the first prison library was created during the 1990s at the Youth Prison in Kassaveteia, Volos **[17]**. However, despite relevant legislative provisions, studies have shown that there is a gap in the development of policies, specialised staff, and funding **[18]**.

III. Theoretical Frame (The Base of the Project)

Learners at the SCS of a prison are instructed by the educator for "social literacy" to each prepare a presentation on issues of racism. The entirety of the project takes place in a prison library, with the support of a librarian. The design of the study in the library is project-based, as there is evidence that this method, in the context of SCS, promotes substantive collaboration between educators and learners and offers a range of techniques which may foster the development of learning goals, as part of an educational process. Moreover, this method is considered a best practice both within and outside of SCS, because it complements the work being done in the classroom **[19]**.

For the purpose of this study, the literature suggests three main theories of learning which have influenced the development of educational models: a) Andragogic (Malcolm Knowles); b) Social Change (Paulo Freire); and c) Transformative Learning (Jack Mezirow) **[20]**. It is clear that the learning process in adult education has been mainly influenced by the principles of behaviourism and constructivism. In every scientific field, there is usually a wide-ranging debate and criticism and as expected the aforementioned theories have also been criticized, both in terms of conceptual approach and practice **[21]**. The proposed implementation plan utilises Paulo Freire's theory of Social Change, due to the fact that it mainly addresses excluded and vulnerable groups. This theory consists of three stages: a) research (identifying and naming the problem), b) topic (analyzing the causes of the problem) and c) reflection (finding solutions to the problem) **[22]**. In addition, the work plan for the information literacy programme in the prison library makes use of the fundamental principles of empirical learning theories, such as that by Peter Jarvis specifically the theoretical assumption that the learning process for each individual begins from a state of conflict, when the learner is confronted with a new experience **[23]**, **[24]**. The educational plan that will be described below follows the logic structure of the Plus Model, taking into consideration various elements which these three aforementioned theories propose.

Lastly, in Second Chance Schools, the subject of sociology is part of "social literacy" and is taught with a view to respond to the needs of learners, so that they can understand social phenomena, while equally important is their significant social experience as adults **[25]**. In this context, racism is a multifaceted phenomenon which creates social conflict; therefore, it is essential that it is being studied as part of SCS programmes **[26]**.

IV. Implementation of the Project in the Prison Library

The proposed implementation plan includes activities which are interrelated and introduce workflows which permeate or circle back, as in Herring's illustration (Figure 1). The activities/stages creatively intermingle over the course of the project and each one forms a basis for transition to the other (Figure 2).

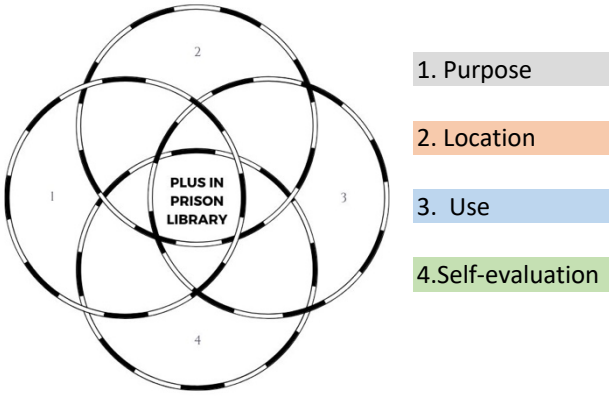

Figure 2. PLUS in the Prison Library

Details of the structure, skills, goals, and information questions covered by the library activity in prison, as mapped to the PLUS framework by Herring **[27]**, are depicted at the tables below (Tables 1, 2, 3, 4).

Firstly, librarian will meet before the project with the "social Literacy" educator for a briefing about the curriculum content and the educational scope of learners visit at the library. This collaboration is very important for the effective and sustainable learning outcomes **[28]**. Then, Learners will come to the library space and sit in a circle together with

the librarian. After a short introduction about the library and the purpose of their visit, participants will be asked to briefly introduce themselves. Introductions contribute significantly to the cultivation of trust between learners and the librarian, and also help the librarian identify basic social and learning characteristics which will aid in the development of the information literacy project. Moreover, the aim of the visit will be made clear, similarly to a learning contract, so that all trainees may participate equally in the process. The introduction will last ten minutes.

Following the above introduction, the first stage will be brainstorming and planning for the assignment. With the guidance of the librarian, participants will brainstorm ideas for defining racism and will present personal experiences of this issue. At this point, it is expected that a shared experience will be identified, that of social exclusion because of delinquent behaviour and incarceration. In addition, it is expected that, especially among certain groups of prisoners (e.g. Roma, Albanians, etc.), yet more facets of racism will have been experienced. Certainly, it is essential that a critical discussion of these experiences will precede this stage, as it has been noticed that, in the context of educational processes, racism is either denied or presentation of experiences takes too long. Participants will then be split into groups of three, based on their different experiences. This means that each group will comprise of people with different experiences, so that they can discuss this multi-faceted phenomenon), according to their personal experiences of racism and to present the similarities, differences, and consequences of racism to the entire group. Following these presentations to the entire group, the aim of and the questions on racism will be defined and each learner will be asked to create a presentation. At the same time, through discussion, it is possible that the complexity of defining racism will be brought to the fore. This first stage is expected to last 25 minutes.

PLUS Structure / Educational Plan Stage	
1. Purpose / Introduction - First Stage of the Project	
Skills / Aims	**Questions**
Knowledge skills for defining the topic and identifying pre-existing knowledge	How is the concept of racism defined?
	What pre-existing knowledge is there on racism?
Thinking and reflection skills using brainstorming	How do I present my personal experience(s) on the topic?
	What can I learn from my fellow learners and their experiences of racism?
Skills for formulating questions	What questions do I have about racism?
Skills for sourcing information from print and electronic materials	Where can I find information on racism in the library and online?

Table 1. Purpose / Introduction - First Stage of the Project

The second stage involves activities making use of library facilities. Learners will be once more split into two groups, and will seek information on their topic, under the guidance of the librarian. The first group will seek information from a total of 25 different books placed by the librarian on a table -. Some of these books will be about racism, while some will not be irrelevant to the subject. Learners will be asked to understand -from the books' titles, summaries, prefaces or introductions- whether the sources are relevant and useful for preparing their presentation. At the same time, the second group will carry out a search for online sources, initially on Google, and, after they have identified at least ten websites on the topic of racism, they will visit the library blog -already created by the librarian-, which will direct them to specific websites with related information. After comparing the sources which they will have identified to the sources provided by the librarian, they will be asked to select the ones which will be useful for their presentation. Each team will be given 15 minutes to complete the process and then ten minutes to present to the entire group the materials they will have identified, as well as the reasons for selecting the ones they will use. The librarian will coordinate them and will ask questions on the assumptions made by each group. This second stage is expected to last a total of 25 minutes.

PLUS Structure / Educational Plan Stage	
2. Location / Introduction - Second Stage of the Project	
Skills / Aims	**Questions**
Skills for using the library space, accessing information through the catalogue, in books, indexes, and online	How will I look for the information I need?
	Which keywords will I use in my search?
Skills for selecting and evaluating the relevance of information sources to informational needs	Does the material I identified cover my needs, in terms of content, accuracy, validity, language?
	Is it useful for my questions?
IT and internet use skills	How do I access a search engine?
	How can the library website/blog help me?

Table 2. Location / Introduction - Second Stage of the Project

After a 10-minute break, followed by an overview of the work done up to this point, the team, guided by the librarian, will proceed to the third stage, which involves the composition of an individual presentation by each participant. After having learned about different types of

information sources and the ways in which useful and reliable sources can be identified, each learner will then be asked to identify additional sources and to prepare a presentation, which is the central task of this project. Using a behaviourist approach, learners will be able to refer to the library blog for a model presentation plan, which can be used as a guide. The librarian will be present in the room during that time and will address any issues or questions which may arise from the individual work of each learner. In more detail, a best practice educational model that derives from behaviorism is the following: (a) Entrance to teaching - Informing learners about what they will learn (in this case how to make a presentation), as a product of mandatory consensus; (b) Continuation of teaching - Presentation of the lesson step by step with speech, pictures, maps, experiments, blueprints, and mainly the library blog. Use of many examples, so that through the accumulation comes the "cognitive explosion". Provide explanations of how and why with the help of examples; (c) Folding of teaching - Repetition with the use of the learning hierarchy (learning, retention, discrimination, generalization). Checking the retention of knowledge with closed questions; (d) Exit from teaching - Practice with identical exercises, such as the initial one, without additional requirement and without parasites, immediate feedback and reinforcement **[29]**. The total time allocated to creating the presentation will be 45 minutes.

PLUS Structure / Educational Plan Stage	
3. Use / Second - Third Stage of the Project	
Skills / Aims	**Questions**
Reading skills and identification of specific information in print and electronic material	How can I quickly decide whether the information is useful?
	Where can I find needed information?
	How can I extract meaning from the source about my topic?
Skills for comprehending material	Do I have questions about the information I have found?
Skills for rejecting informational material	Is the material I have identified relevant to my topic?
Skills for evaluating the validity of informational material	Who is the author of the material?
	Is the information biased?
	Is the information outdated?
Skills for comprehension and use of the informational material and creating a presentation	What notes should I keep from the information I have gathered?
	How will I use the material in my presentation?
	Which method will I use to create the presentation?
Skills for knowledge synthesis	How will I synthesise the material with the questions and aims set for the presentation?
Writing and presentation skills	How do I structure a presentation?
	What style and way of writing will I use?

Table 3. Use / Second - Third Stage of the Project

Following a five-minute break, learners will move on to the fourth and final stage, which involves a (self-)evaluation of the process in the library. Each participant will present their experience to the group, explaining whether they found it useful and will be asked to complete an anonymous questionnaire with five closed questions, so that the librarian can receive feedback on the continuation and redesign of activities of this type. The total time for the last stage will be 15 minutes.

PLUS Structure / Educational Plan Stage	
4. Self-evaluation / Fourth Stage of the Project	
Skills / Aims	**Questions**
(Self-)evaluation skills, skills for recognising weak and strong points and points to improve	What have I learned through this process?
	Was it useful?
	Did it fulfil my motivations and aims?
	Did I prepare the presentation correctly?
	Did I use up-to-date and relevant information?
	What must I do differently next time?
	Can I do it on my own?
	How did I interact with the team?
	How did I interact with the library?
	How did I interact with the librarian?

Table 4. Self-evaluation / Fourth Stage of the Project

Once the process has been completed, the librarian will compile a report in the form of a descriptive evaluation of the project, which will be shared with an SCS educator. In this way educator can have an overview and an additional tool for discussion in class. After the learner's presentations at the classroom, the librarian along with the educator met again to debrief and evaluate together the project. The effective collaboration between them entails multiplier

benefits both for them and for their learners **[30]**.

V. Conclusion

The substantial linkage of models of informational education with various learning theories and educational models can lead to the upgrade of both the educational process and service provision in an informational institution. In the case presented here, within a prison setting, learners in a second chance school visit the prison library and implement a project with the aim of creating a presentation on racism for the subject of "social literacy". The use of multiple tools and methodologies for the application of the PLUS information literacy model may bring about important changes among learners, not only in terms of information literacy, but also in terms of knowledge of and feelings towards using the library. The cultivation of a climate of acceptance and safety is a prerequisite for all of the above.

The contribution of the prison library to the wider set of policies exercised by the state -justice, education, society- is central, and has a pivotal role in the development of knowledge, attitudes, skills and more widely the information literacy of detainees (Figure 3). It is essential that, in Greece, modern policies with substantial state provision be developed on this issue, taking advantage of new technological developments and informational needs.

Figure 3. Prison Library and State Policies

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Journal of Integrated Information Management electronic journal

S. Pearce's model for studying objects and its application to a baptismal cross

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Article Info

Article history:
Received 2 April 2020
Received in revised form 30 April 2020
Accepted 12 May 2020

https://doi.org/10.26265/jiim.v5i1.4333

Abstract: *This paper applies S. Pearce's model for studying objects to a family heirloom, a baptismal cross. This model is a mnemonic device, not a system of inviolable rules. Furthermore, it is shown that the interpretative process needs to encompass not only information about the object, but also a new perception of the range of philosophical and technical concepts that shape the interpretation of material culture. It is also necessary to stress the understanding and applying the theory of the model for studying objects, realising the degree to which discussing objects contributes to and illuminates different aspects of material culture, given that learning is influenced by personal elements, too, as demonstrated by contemporary museum studies and studies of material culture.*

Purpose: *To contribute to the study of material culture, as well as to explore the possibility of delving deeper into a number of its fields through a single object.*

Design/methodology/approach: *To apply S. Pearce's model for studying objects to a family heirloom.*

Findings: *The unexpectedly rich interdisciplinary approach that emerged from the study of an object with no "museum" value, as well as its capacity to "narrate" stories.*

Practical value: *Understanding and applying the theory of the model for studying objects, realising the degree to which discussing objects contributes to and illuminates different aspects of material culture, given that learning is influenced by personal elements, too: one's interests, inclinations, the manner in which one prefers to learn, etc., as demonstrated by Falk & Dierking [1].*

Originality/value: *Examining how an object, using S. Pearce's model for studying objects, a foundation stone in the study of material culture, can be perceived through a broader and more interesting feel for its inherent meaning, instead of exclusively through its narrow morphological sense, remains relevant.*

Index Terms — material culture, museum studies.

I. Introduction: Objects as Records of Material Culture

As, in the context of the postmodern conception of material culture [2,3], the relativity of the value of objects is globally acknowledged and, too, the fact that there are no "pundits" who determine their rating scales[1], there is a growing interest in everyday objects with a particular meaning for their owners.

Figure 1. Baptismal cross

One such example is the baptismal cross examined in this paper (Fig. 1), which is a case study of S. Pearce's model for studying objects, itself the basis for the study of objects as records of material culture by other disciplines, such as Archaeology, History, Museology, and in areas such as the management of museum collections (Fig. 2).

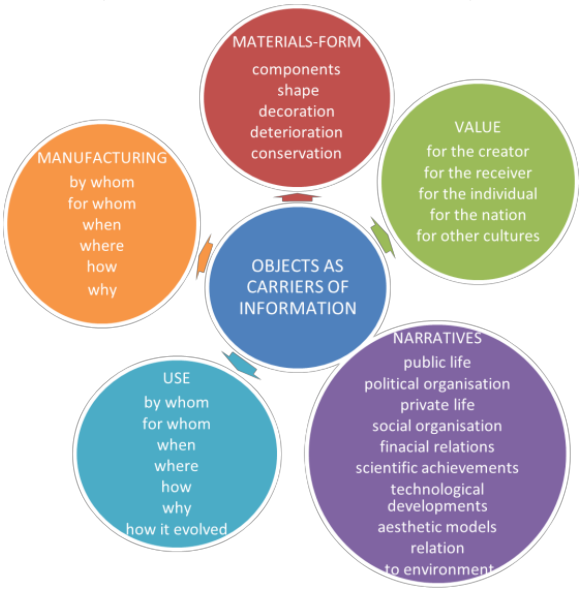

Figure 2. Objects as carriers of information.

Source: D. Kyriaki-Manessi, K. Kyprianos, A. Tranta, A. Koulouris, *Βιβλιοθηκονομία και οργανισμοί πληροφόρησης στον 21ο αιώνα* - Library science & information centres in the 21st century, Athens: Kritiki Publications, under publication, ISBN: 978-960-586-354-8.

> "Objects, like ourselves, have a finite lifespan, although their lives are frequently much longer than ours are. There is a moment when each object is

[1] A "hierarchical scale of civilisations" of this nature is reflected in J. Stephanoff's painting, "An Assemblage of Works of Art in Sculpture and Painting", which adorns the cover of J. Mack's book [4].

> "finished", that is, when the manufacturing processes necessary to its creation have been completed. As it moves through time, it acquires (to a greater or lesser extent) a history of its own, passing from one possessor to another, perhaps from one kind of use to another, and from one place to another. Some objects, especially those to which special values are attributed, have very long and complex life cycles" [5, p. 25].

Why *are* objects significant? Adopting the concept of reading as a means of interpreting material culture, where it parallels a reading text in terms of semiotics [6], the objects ordinary people make and use in their daily life are the most important documents they leave of their passage in this world, so that, if we learn to understand (to 'read') what objects can tell us, then can shed light on many aspects of these people's life, personality, strengths and weaknesses, on their thoughts, on their perceptions, on what they consider valuable and important, on how they shape their world, says Hennigar-Shuh [7]. "Spend some time learning to look at things," he goes on to suggest. In the broadest sense, any cultural phenomenon (whether tangible, intangible, simple or complex, an event or an object, in other words anything that can be carrier for recording messages) is considered as being a "text". The book *1000 Extraordinary Objects* (Taschen, 2000) illustrates the concept of telling of stories through objects by proposing one thousand miscellaneous everyday objects that reveal various dimensions of different cultures in a unique way.

II. The value of objects as potential narrators of stories

The value of objects as records and as potential narrators of stories is widely accepted in the museum community, as «objects are at the root of the concept of museum. They are at the centre of each exhibition, as […] they are the starting point for elaborating the exhibition scenarios […] on the basis of the "real" object's value as a carrier of information" [8, p. 68]. Through objects, people structure their relation to the material world [9]; they acquire ties to stories and events, as well as to the people and societies that created them. Objects are records that allow us to study the people and the period, the society and the conditions in which they were created. The Museum is considered as being a repository of knowledge and information, primarily with objects, remnants of material culture, playing a key role in the effort to understand and represent the world. The collection and display of objects of diverse origins and functions aim to create an image of the world. It is because of this that M. Foucault defines museums and libraries as "places of heterotopia", that is to say spaces containing other spaces, an element that characterises Modern Times[2] [10, p. 7]. This means that museums contain objects of different eras which are displayed in the same space. Thus museums often "condense" the narration of the world's history through objects they have in their collections[3]. A well-known example of displaying personal items in a museum exhibition is that of "The People's Show" [11]. Other interesting examples are those of temporary exhibitions centred on the stories told by immigrants through their personal belongings; we first come across this trend in the Museum of London's exhibition titled "The peopling of London" [4], which brought together oral memories collected through interviews with immigrants, an element that simultaneously marks another trend of the time: the preservation of the intangible cultural heritage. Similarly, in the exhibition "Keys to Memory" organised by Sweden's Malmö Museums and which opened on International Museum Day in 2000[5], the objects on display were not traditional museum pieces but personal items, the idea being that each object told a story, which its owner recounted in an interview. The exhibition-installation titled "The Key in the Hand" displayed at New York's Metropolitan Museum of Art is also of particular interest. In the words of the critic presenting it: «Within the 2015 Venice Art Biennale's Japan Pavilion, artist Chiharu Shiota has amazed visitors with an extraordinarily immersive presentation. Using two boats, vibrant red yarn, a net of interlaced metal, and more than 50,000 unique used keys, Shiota created "The Key in the Hand", an exhibition meant to inspire viewers to think about the importance of memories and the unknown. The display features the intertwined keys hanging over the boats on bright red yarn and onlookers are able to walk beneath the maze on a winding path. The tens of thousands of keys were collected from individuals across the globe, helping to unite them in a common project. "Keys are familiar and very valuable things that protect important people and spaces in our lives. They also inspire us to open the door to unknown worlds. With these thoughts in mind, in this new installation I would like to use keys provided by the general public that are imbued with various recollections and memories that have accumulated over a long period of daily use. As I create the work in the space, the memories of everyone who provides me with their keys will overlap with my own memories for the first time. These overlapping memories will in turn combine with those of the people from all over the world who come to see the biennale, giving them a chance to communicate in a new way and better understand each other's feelings," explains Shiota in her initial message when asking the public to donate keys»[6]. We can draw examples from Greek museums from two temporary exhibitions. The first, titled "People and icons:

[2] The existence of the very concept of museum is founded on "the idea of accumulating everything, of establishing a sort of general archive, the will to enclose in one place all times, all epochs, all forms, all tastes, the idea of constituting a place of all times that is itself outside of time and inaccessible to its ravages, the project of organizing in this way a sort of perpetual and indefinite accumulation of time in an immobile place, this whole idea belongs to our modernity" [10].

[3] See, for example, http://www.bbc.co.uk/ahistoryoftheworld/about/british-museum-objects/ (last accessed: 30/4/2020)

[4] N. Merriman (1995). Hidden history: the Peopling of London project, *Museum International*, 47:3, 12-16, DOI: 10.1111/j.1468-0033.1995.tb01249.x (last accessed: 30/4/2020)

[5] MIME Migrating Memories. - A Case Study from Malmö Museums, Swedenhttp://icme.mini.icom.museum/wp-content/uploads/sites/16/2019/01/ICME_2005_millinger.pdf (last accessed: 30/4/2020)

[6] Artist Collects 50,000 Keys Across the Globe for An Immersive Exhibition on Memories - https://mymodernmet.com/chiharu-shiota-the-key-in-the-hand/ (last accessed: 30/4/2020)

Refugees' heirlooms" and held at the Byzantine and Christian Museum in Athens (27.6-29.8.2009), highlighted important milestones in the journey made by people with their relics from their countries of origin to the countries of their new settling, from the early 20th century to the present. These objects, accompanied by documents, archival photographs, oral testimonies from refugees and Museum staff and audio-visual material, were brought together to create the exhibition's environment[7]. The second exhibition titled "Demetris Koilalous – CAESURA, the duration of a sigh" and held at the Benaki Museum's premises on Pireos Street (27.3-26.5.2019), was a photograph exhibition centring on the transitory state of the refugees and migrants who arrived in Greece in 2015 and 2015 after crossing the Aegean Sea[8].

III. S. Pearce's Model and the Case Study

While models for studying objects had been elaborated before, the one that prevails as being the most complete is that of S. Pearce [5, Appendix]. It is a mnemonic device, not a system of inviolable rules, as she herself admits, which examines how the viewer can apprehend an object not in its narrow morphological sense, but in the broader and more interesting sense of its inherent significance [5, p. 367]. When applying this model, emphasis is placed on the need to broaden the interpretative process so as to include not only auxiliary information about the object, but also a new perception of the range of philosophical and technical concepts that shape the interpretation of material culture [5, p. 372], while also accepting that the value of an artefact is interpreted differently by each observer [5, p. 375].

The object comprises material, history, surroundings, significance

1. Material-process of making and ornamentation
2. Material-design/pattern of the material, decoration
3. Material-characterisation a) origin, b) industrial techniques
4. History: a) its own history, b) subsequent history, c) practical function
5. Surroundings-microenvironment, macro-environment
6. Surroundings-object's siting/location
7. Significance
8. Interpretation

I chose to attempt using S. Pearce's model to study a family object, a baptismal cross [Fig. 1, Fig. 5], that recounts moments from the story of a family's past, of *my* family's past, "in ways which would otherwise be impossible" [5, p. 76], since, as very characteristically expressed, objects are "external souls: external, because physically distinct and separate, but souls because the meaning projected on to them brings them into the interior of our personal lives" [5, p. 73].

A. Material- ornamentation

The cross of this article's case study (photograph) is made of a thin sheet of gold with suspension loop at the top. Its total height is 4.35 centimetres (including the suspension loop of 0.7cm), while its width is 2.9cm and its weight is 2.70g. The colour of the gold is a reddish yellow. No carats are mentioned, because at the time it was made (in the early 1930s in Athens) it was not customary to stamp jewellery according to its content in pure metal, as became the case later on.

B. Material-design/pattern of the material, decoration

Its arms are slightly flared, almost trapezoidal, each ending in an almost semi-circular extremity. At the arms' intersection, there is a circular inset for a ruby with a diameter of 0.4cm, cut into facets. There is a hole on the reverse side, presumably in order to allow the light to reflect its red colour.

C. Material-characterisation

Appadurai defines the commodity situation in the social life of any 'thing', this typical element in the capitalist order of things, as "the situation in which its exchangeability (past, present, future) for some other thing is its socially relevant factor" [12, p. 13].

Figure 3. Gold cross with ruby in the centre Paul and Alexandra Canellopoulos Museum, Athens (Greek Jewellery. 6000 of Tradition, catalogue n° 211).

It should be noted that "most communities ascribe considerable value to artefacts made from bright and flashing materials, like gold, pearl shell, colourful feathers or ivory, and this value rests as much in the lust of the eye as it does in the comparative rarity of these materials. Rarity is, nevertheless, in itself a source of value (...) [and] gold is, geologically, a relatively rare material on earth. Also, it is an incorruptible metal with an intrinsic luminosity that makes it shine, while its yellow hue is reminiscent of the sun. This allusion is encountered in the crescent-shaped jewellery discovered in Northern Europe [13, p. 171]. Contrary to the Mycenaean world, where gold was probably limited to a social elite, in Western Europe it seems to have played a role in the religious practices of society as a whole [13, p. 171]. The fact that it occurs in a natural form and that in this form it can be hammered easily contributed to its use in making jewellery from as far back as the Late Bronze Age, when it was already associated -a linkage encountered throughout time- with the ruling class: in the rich Varna Necropolis, in

[7] See https://www.byzantinemuseum.gr/en/temporary_exhibitions/older/?nid=1020 (last accessed: 30/4/2020)

[8] See https://www.benaki.org/index.php?option=com_events&view=event&id=5914&lang=en (last accessed: 30/4/2020)

Bulgaria, the man buried with an impressive number of gold coins and bronze tools must have been a chieftain or a priest [14, p. 29, ill. 6]. The number of gold artefacts dating back to the Neolithic era in Greece more than doubled following the arrest of an antiquities dealer in 1997 with a treasure of 54 gold ornaments from around 4500 to 3200 BC [15]. Ever since, throughout time and in all civilisations, gold has been a symbol of prosperity and economic power, while until recently the value of money was backed by a gold equivalent. Rubies are second only to diamonds in terms of mineral hardness on the Mohs scale, with a hardness of 9. Along with sapphires, they belong to the corundum group, a variety of minerals composed of aluminium and oxygen (Al^2O^3). More specifically, a ruby is corundum in which the Al^{3+} in the crystal lattice have been replaced by Cr^{3+} ions, which is why it has an intense red hue [16, p. 232]. Depending on their content in chromium and iron, rubies can be all possible shades of red: from pink to orange and from red through to maroon. The most sough-after hue is a clear red, called blood-red. The etymology of the word refers to the Latin term *ruber-rum*, which means red. The most important deposits are in Upper Myanmar (Burma) in the Mogok Valley, but other important mines also exist in Thailand, Sri Lanka and Tanzania. Only around 1% is suitable for the jewellery industry. Large rubies are scarcer than large diamonds. The stones of a clear, transparent quality are cut into shapes σχήματα με έδρες, while less transparent rubies are cut into "cabochon" (a particular cut without facets resulting in a smooth domed surface, usually of a circular or oval shape). World-famous rubies include the Edward's Ruby (167 carats) at the British Museum of Natural History in London, the Rosser Reeves Star Ruby (138.7 carats) at the Smithsonian Institute in Washington DC and the De Long Star Ruby (100 carats) at New York's American Museum of Natural History[9].

D. History

The cross is inextricably linked to Byzantine iconography, although it already pre-exists from Minoan [17, p. 96, ill. 36:E] and Mycenaean imagery [18, Motive (FM) 54]. In Ancient Egypt, the charged ankh symbol, which symbolised the power of the gods to sustain life and revive human souls in the afterlife, had a similar shape as can be seen, for example, in an amulet made of glazed faience[10]. As a symbol, it became charged with a special connotation due to Christ's crucifixion and took on the role of Christianity's quintessential emblem. The combination of the ankh with the cross in the Fayum portraits is of particular interest [19]. "Here, [the ankh's] elongated head has become a circle, making the object look like the Greek letters *chi* and *rho*, forming the monogram of Christ". On the shrouds, all these symbols, the hand raised in blessing, prayer or to ward off evil, and the ankh-cross, "coexist with Egyptian imagery (...) are we seeing here a syncretic mixture of faiths?" [19, p. 118]. The combination -which is not considered a contradiction- of pagan and Christian symbols is encountered in other cultures, too, such as in Madagascar, and in particular in rituals relating to death [4, p. 82]. This intermingling may have been the reason for it to acquire, from the early years of Christianity, the role of an amulet among ordinary people [20, p. 158], even though the official church condemned the notion of talismans and charms. In the writings of the Holy Fathers it is stated with a rather ironic tone: *…ουκ οίδας πόσα κατώρθωσεν ο σταυρός; Τόν θάνατον κατέλυσε…τόν Άδην άχρηστον εποίησε… καί εις σώματος υγίειαν ουκ έστιν αξιόπιστος*; (...did you not see how much the cross was capable of? It ended death... it rendered Hades useless... and where the body's health is concerned it is not reliable? See *Patrologia Graeca 49*, v.240). The connection of the cross to baptism dates as far back as the early Christian years. During the first christenings, which were performed on Epiphany Day, the godparent did not offer a gift of a cross-ornament, but red ribbons were wound in the shape of a cross over the convert's clothes. The first baptismal crosses-ornaments date back to the 6th century, such as a bronze pectoral cross, in all likelihood a baptismal one, bearing an inscription on each of its sides: on one side, the inscription is of an apotropaic nature -the "amulet" element is encountered once again- and on the other it ties in with the service of the Great Blessing during the feast of Epiphany [21, p. 498, cat. n°679]. The linkage between cross and amulet is encountered in the crosses-reliquaries, talismans par excellence of the Byzantines, who wore them like a kind of religious pendant hanging on the chest and which contained fragments of the Holy Cross and various other relics [21, p. 188]. During the Middle Byzantine period (843-1204 AD), these religious pendants were the most prevalent object of personal piety. They were used by all social classes and ages irrespective of gender, while their burial function has been documented archaeologically [21, p. 502, cat. n°688]. Also, crosses have been found in cemeteries of the Middle Byzantine period, laid on the sternum of children's skeletons as burial gifts [21, p. 500, cat. n°638, 685]. This could be a distant echo of a much older custom, when "children were protected against harm by amulets worn round the neck; the practice was common throughout the ancient Egyptian, Greek and Roman cultures and continued among Christians" [19, p. 37]. Gold amulets were also common in Roman times [22, p. 173-4]. The belief that the cross both protects and is the bearer of good luck is still prevalent today: let us not forget that on Epiphany Day, the day when, as already mentioned, baptisms took place during the early years of Christianity, whoever catches the cross thrown into the sea during the blessing of the waters is thought to be the recipient of good fortune throughout the year to come.

As has been pointed out, objects almost always have their own, very personal life cycle, a biography, which is not simply linear but, rather, diachronic and multi-layered, which begins at the moment of their manufacturing and stretches out to their most recent (but not necessarily final) use. During each phase of this life, may assume a different meaning and use and becomes charged, accordingly, with the corresponding historical, social and ideological contexts [24, p. 57]. The story of this cross (Fig. 1) begins in the 1930s

[9] See http://webmineral.com/data/Corundum.shtml/ (last accessed: 30/4/2020)

[10] See https://www.britishmuseum.org/collection/object/Y_EA54412 (last accessed: 30/4/2020)

in Athens. Its first owner was my uncle, Ioánnis (Yiannákis) Mariolópoulos (1935-1938), to whom it was given by his godparents at his christening. When he was three, Yiannákis fell ill. His mother, my grandmother Máta (1909-1984), decided not to heed the diagnosis of the paediatrician who had looked after my older aunt, Lilí (1932-2010), and Yiannákis up to then and, influenced by her circle of friends and relatives, decided it was expedient to change paediatrician, considering that a doctor who was "all the rage" would be better than the family practitioner. Irony of fate, the diagnosis of the "better" doctor turns out to be misguided and the child dies. As of that moment, my grandmother wore Yiannákis's cross continually. Despite going on to have a further two children, my mother, Eléni, and my younger aunt, Danái, she never, ever parted with it: today, judging in hindsight, I believe that the grief at the loss of her child - in any case tragic - was further heightened by her feelings of guilt for choosing the wrong paediatrician. Thus, the cross she literally and figuratively bore represented not only the child she had lost, but also her own path of anguish and guilt. When she, too, died, on 13 May 1984, the cross passed into the hands of Lilí, the eldest sister, as traditionally it is the oldest child to whom befalls the duty of the family's "continuity". Having witnessed my particular relationship to my grandmother, who raised me, and being for her the substitute for the child she never had, Lilí gave it to me quite a few years ago. Nobody has worn it since my grandmother's death, so a certain "sacredness" has been attributed to it, in the sense of the sacred-profane dichotomy, an idea originally posited by É. Durkheim [25].

E. Surroundings-microenvironment, macro-environment

Today, the cross has, in a sense, returned to the time when it was made, as my home, where it is kept, is an apartment in a block of flats of the 1930s.

F. Surroundings-object's siting/location

Its microenvironment is its small box in the roll-top desk of the same era, while we could consider that its macro-environment is the Christian world and baptised Christians - whether they wear their baptismal cross or not.

G. Significance

The word "cross" as a signifier has many signifieds. It literally signifies the instrument of execution of Jesus Christ, the Holy Cross, and the object that symbolises the Christian faith, but it also has metaphorical meanings as the expression "to carry a cross" denotes the hardships one has to bear. Also, the expression "cross in hand" signifies a person's honesty, while "to kiss the cross" is to swear something and "to cross oneself" translates a sense of wonder. On a different level, the cross against candidates' names on the ballot papers indicates the voter's preference, the Southern Cross is a constellation and the "cross of the sea" is a different name for starfish. It should be noted, too, that the "stavroulaki" or "stavroudaki" (both of them diminutives of "stavrós", the Greek word for cross) is worn as an amulet [23, 1667]. In the symbolism of gender, the pictogram with a cross on the lower side of the circle is known symbolises the female gender. Additionally, it was customary for illiterate people to sign with the mark of a cross.

H. Interpretation

We have already seen the four owners of this specific cross (Yiannákis, Máta, Lili, myself). Of us all, only Lilí, being older than Yiannákis, knew the trajectory of the cross from the very beginning. My grandmother, Máta, experienced its first two lives (when her child received it and then, after his death, when she did). I have memories of my grandmother, whom I remember wearing it, but I have only heard about the initial phase. With the exception of a few photographs, it is the only object belonging to Yiannákis and is one of the few testimonies about his existence – even his grave, in Athens' First Cemetery, was lost during the German Occupation.

According to structuralism [2], this particular cross bears the following dualities: child/mother - male/female - life/death - baptism/crucifixion - death/resurrection - despair/hope - joy/sorrow - mourning/redemption - contemporary/old - familial/individual - valuable/cheap.

In this cross, the lives of my grandmother and her children, but also my own, are entwined. It connects us like the links of a chain. In the same way that I, as the penultimate link in this chain, learnt stories about Yiannákis, whom I never met, I hope that my child, too, will wish to learn the story of my grandmother, whom he didn't get to know. After all, objects relating to the dead may be interpreted emotionally as a sort nostalgic expression of our wish for them to return [4, p. 81].

This paper contributes to the study of material culture, by exploring the possibility of delving deeper into a number of its fields through a single object. It is examined how an object, specifically a baptismal cross, can be perceived through a broader and more interesting feel for its inherent meaning, instead of exclusively through its narrow morphological sense, using S. Pearce's model for studying objects, a foundation stone in the study of material culture. By implementing S. Pearce's model, it is shown that the interpretative process needs to encompass not only information about the object, but also a new perception of the range of philosophical and technical concepts that shape the interpretation of material culture.

Figure 5. A case study of a baptismal cross according to S. Pearce's model for studying objects.

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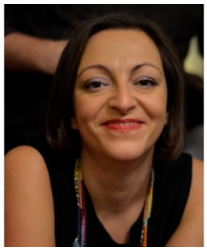
V. Authors



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Journal of Integrated Information Management electronic journal

Extended subject – matter under intellectual property law: The paradigm of copyright, trademarks and patents regarding Computer Icons and Graphical User Interfaces

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Article Info
Article history:
Received 1 May 2020
Received in revised form 25 May 2020
Accepted 30 May 2020

https://doi.org/10.26265/jiim.v5i1.4446

Abstract:

Purpose *– Intellectual property law has developed legal rules that carefully balance competing interests. It is a fact that the main goal has long been to provide legal protection to maximize incentives to engage in creative and innovative activities, while also providing rules and doctrines that minimize the effect on the commercial marketplace and diminish interference with the free flow of ideas in general. This article examines the extension of the subject - matter that can be protected under intellectual property law. The extensive view of protectable subject - matter via intellectual property has blurred the clear delineation between patent, copyright, and trademark law. This has led to overlapping protection which allows multiple means to protect the same subject - matter. Such protection is problematic because it interferes with the carefully developed doctrines that have evolved over time to balance the private property rights against public access to creations protected by intellectual property.*

Approach and Originality/value *- This article discusses a new topic concerning the extension domain of subject - matter protected by patents, trademarks and copyright law regarding computer icons and graphical user interface. Furthermore, it examines the overlaps that exist and the resulting problems regarding these specific areas of intellectual property law.*

Findings *- The extension of the subject - matter protected under patent, copyright, or trademark law should only occur if it does not subvert the balance of intellectual property law per se. The reason is that uncareful expansion could cause unintended over-protection of the rights of creators and innovators in contrast to the public interest. The paradigm of CIs and GUIs fits perfectly with the view expressed above.*

Index Terms **—** intellectual property, subject – matter, extension, Computer Icons, Graphic Users Interface.

I. INTRODUCTION

Intellectual property refers to creations of the mind that have been granted property law protection **[1]**. The main scope of intellectual property law is to distinguish between mental creations that are legally protected as property and those that are not protected as such. The importance of such intangible property creates a dilemma, however. Proponents of broad legal protection for intellectual property generally argue that such protection is necessary to incentivize investment in creative and innovative activities that ultimately benefit society **[2]**. Failure to provide property protection "may negatively impact the ability to generate a return on investment and hence substantial capital outlays for such activities might be diminished" **[3]**. In contrast, proponents of more limited intellectual property rights argue that in a free society any state granted property rights in intellectual creations should be minimized. This will enable the free flow of ideas and information for the benefit of society **[4]**. This argument has merit because allowing private parties to own ideas and information can interfere with marketplace competition and with public access to intellectual property. Such access is important to enhance creative and innovative advances. The free flow of information and ideas is also necessary for a robust free society to flourish[1] **[5]**, **[6]**.

The last few decades legislative enactments and judicial decisions have adopted an extensive view of intellectual property. The subject - matter eligible for protection has continued to extend significantly. This extension has erased the clear delineation between patent, copyright, and trademark law. It has also led to overprotection of intellectual property in the form of overlaps that allow multiple bodies of intellectual property law to simultaneously protect the same subject - matter. Such overlapping protection, according to our opinion, is

[1] In the United Sates the importance of preventing the government from interfering with the free flow of information is exemplified by the First Amendment to the Constitution, which prohibits the government from abridging freedom of speech and of the press. U.S. See Virginia State Bd. of Pharmacy v. Virginia Citizens Consumer Council, 425 U.S. 748,760-62 (1976) (holding First Amendment free speech rights extend to commercial speech). See also New York Times Co. v. Sullivan, 376 U.S. 254, 270 (1964).

problematic because it interferes with the carefully developed doctrines that have evolved over time to balance the private property rights in intellectual creations against public access to such creations. These overlaps, arguably, are "the unintended consequence of the fragmented nature of the field of intellectual property law"[2].

This article will examine the policies that underlie the various branches of intellectual property law. It will discuss the extension domain of subject - matter protected by patents, trademarks and copyright law regarding computer icons and graphical user interface. Finally, it will examine the overlaps that exist and the resulting problems regarding these specific areas of intellectual property law.

II. COMPUTER ICONS (CI)

Computer icons are the "functional buttons" on contemporary desktop computer screens. As computing devices with graphical user interfaces become more and more popular, computer icons are increasingly in the eyes and minds of consumers. Although many are generic and primarily functional, some of these icons can embody trademarks, copyright, inventions and other protectable intellectual property rights. In highly competitive fields such as software, internet and portable electronic device industries, computer icons can be important and valuable financial assets.

A. Computer icons as trademarks

Trademarks are used to distinguish the goods or services of one source from those of others[3] **[7]**. They can include words and designs and often include logos. Consequently, trademarks are a common form of protection for computer icons. For example, Microsoft registered the now-familiar design for the Windows "Start" button as a trademark in association with computers and other goods and Apple registered the "settings icon" design for managing user system settings and preferences.

Figure 1. Microsoft "Start" button (early design).

Figure 2. Apple's "settings icon" design.

Trademark protection can extend to a variety of designs, including numerous registrations for icons that represent applications or other components of graphical user interfaces. However, trademark rights can be infringed on if a third party (competitor) uses a mark that is likely to mislead consumers into believing that the competitor's goods or services originated from the trademark owner. Therefore, where computer icons can distinguish one source of goods or services from another, trademark protection can be very valuable to prevent confusion with competitors.

B. Copyright in computer icons

Copyright can be used to protect original artistic works. Computer icons that include original artistic works can therefore be protected by copyright. In the early days of graphical user interfaces, Apple sued Microsoft **[8]** in a United States court for alleged infringement of copyright that Apple claimed in its Macintosh displays. In that litigation, United States courts recognized that Apple had copyright in a trash can icon in its Macintosh displays. It is to be noted, copyright only protects original works, and infringing copyright requires copying a protected work. Therefore, competitors can often design around protected works to avoid infringement, and copyright has rarely been asserted in court cases involving computer icons.

C. Patents in computer icons

Trademark, copyright, and industrial design protection are all limited in the extent to which they can protect functional features — this is where patents concur. Patents protecting functional aspects of computer icons can be very valuable because their claims do not need to be limited to particular appearances. For example, a patent was granted to IBM with claims to methods for using an icon to inform a user of the progress of a task on a computer system. An example of such an icon from that patent is shown below, but the claims of that patent extend to icons of many different appearances **[9], [10].**

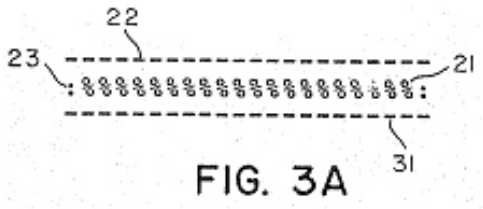

Figure 3. Figure 3A from patent no. 1317678 (Canadian Patent Office) - Icon to inform a user of the progress of a task on a computer system.

Looking at another example, although Apple registered the appearance of its slide-to-unlock design in an industrial design registration, a series of United States patents also claim the slide-to-unlock function — thereby illustrating that different forms of intellectual property can be used to

[2] See Beckerman – Rodau A., *The problem with Intellectual Property Rights: Subject Matter Expansion*, Yale Journal of Law and Technology, vol. 13, issue 1, 38-39.

[3] The term trademark covers any sign capable of being represented graphically which is capable of distinguish goods or services of one undertaking from those of other undertakings. See Cornish W.R. Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights, 3rd edition, Sweet & Maxwell, London, 1996, 581.

protect the same computer icon[4].

Figure 4. Patent No. D675,639

III. GRAPHICAL USER INTERFACE (GUI)

The graphical user interface is a form of user interface that allows users to interact with electronic devices through graphical icons and audio indicator such as primary notation, instead of text-based user interfaces, typed command labels or text navigation. GUIs were introduced in reaction to the perceived steep learning curve of command-line interfaces, which require commands to be typed on a computer keyboard[5]. The actions in a GUI are usually performed through direct manipulation of the graphical elements. Beyond computers, GUIs are used in many handheld mobile devices such as MP3[6] players, portable media players, gaming devices, smartphones and smaller household, office and industrial controls. The term GUI tends not to be applied to other lower display resolution types of interfaces, such as video games or not including flat screens, like volumetric displays because the term is restricted to the scope of two-dimensional display screens able to describe generic information, in the tradition of the computer science research.

There are certain mechanisms that are commonly used to legally protect GUI. The most common is copyright and patents.

A. Copyright

Software code can and should be copyrighted, however copyright is not a very powerful way to protect a GUI. Many years of legal copyright precedents were established before anyone envisioned the need to copyright graphical user interfaces, so the courts are still sorting out the application of copyright law to modern software development. This means that there is still uncertainty as to how any UI copyright protection you obtain will be interpreted in court.

In general, the expression of an idea can be copyrighted, but not the idea itself. So, one can copyright the idea of a clickable button, but not the artistic design of a specific button; for example, Apple's original Trashcan icon is protected by copyright. Similarly, one cannot copyright use of a pop-up dialog box to explain a concept but can copyright a specific written explanation.

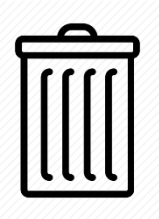

Figure 5. Apple's original Trashcan icon

The more artistic and original a design is, the more protection copyright may offer. But protection offered by copyright is limited and, while copyright may protect some individual design elements, copyright is not a good way to protect an overall user interface.

B. Patents

Patents are the best tool for protecting a GUI. Legally, patents are better suited for protecting things that perform a function (copyright was originally intended to protect non-functional art, literature, etc.). Individual patents can also be written in a way to protect overall look and feel as well as individual design elements. Secondly, the infringement threshold is lower. Copyright infringement requires copying, while patent infringement can be proven if a design is sufficiently similar but is not a copy. Thirdly, patents do not have a fair use provision. Fair use allows limited use of copyrighted material without asking for permission; for example, directly quoted sources in an article are permissible under fair use, but there is no right to reuse patented material in a similar way. Consequently, software developers have accumulated thousands of patents and most court cases over user interface intellectual property are patent infringement cases. Apple vs Samsung[7] is the best-known example.

GUIs can be protected by design or utility patents:

-Design patents are "issued for a new, original, and ornamental design embodied in or applied to an article of manufacture." Design patents are issued for designs that are novel, non-obvious, and non-functional.

-Utility patents are "issued for the invention of a new and useful process, machine, manufacture, or composition of matter, or a new and useful improvement thereof." Utility patents are evaluated based on the "operability of the invention, a beneficial use of the invention, and practical use of the invention".

IV. THE EXTENSION DOMAIN OF INTELLECTUAL PROPERTY LAW

The existence and recognition of property is a

[4] The USPTO granted Apple's application for Patent No. D675,639. The patent describes the “ornamental design for a display screen or portion thereof with a graphical user interface”.

[5] The first features of graphical user interfaces appeared as early as in the 1960s within the project of Doug Engelbart´s augmentation of human intellect at the Stanford Research Institute. This project was called “On-Line System (NLS)” and contained hardware devices and the basic structure of GUI software. Until the 1970s, the computer was not anything but a huge calculator. However, since then a major technological achievement has occurred: the transition of the interface from command lines (based on the communication with the device through various written commands) to a graphical interface made computers accessible to the general public.

[6] MP3 (or mp3) as a file format commonly designates files containing an elementary stream of MPEG-1 Audio or MPEG-2 Audio encoded data, without other complexities of the MP3 standard.

[7] In 2011, Apple sued Samsung in US court for patent infringement over design similarities between the iPhone and various Samsung Android phones. This was the opening shot in a series of legal battles fought in multiple countries over three years, costing the two companies nearly a billion dollars. When the dust settled, Apple was largely the winner, the courts finding that Samsung had copied Apple design features.

fundamental aspect of a free market economy. The difficulty of extending property protection to intellectual property lies in striking a proper balance between granting enough protection to spur innovation, while not impinging too greatly on the public benefits arising from the creation of intellectual property. Development of creative and innovative products will occur even in the absence of any property protection for intellectual property. However, absent without such legal protection, less investment in creative and innovative development will occur because a lack of economic benefits will create a disincentive to engage in certain types of creative and innovative activities. This can be a detriment to the public by reducing the public storehouse of knowledge. The goal of any legal protection is to find the optimum balance so that enough protection is provided by the law to maximize investment of time, energy, and capital in creative endeavors while minimizing any restriction on the public's freedom to use products resulting from such creativity.

Historically, law has categorized creations of the mind into different types of property. Typically, patent law, copyright law, and trademark law have provided the main legal regimes under which property status is granted to intellectual creations Each of these bodies of law, at its most fundamental level, is designed to protect different types of products of the mind.

A. Patent Law

The most common type of patent - a utility patent - protects things that are primarily functional as opposed to things that are primarily aesthetic in nature. The patent law states that "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof" is patent-eligible subject matter[8]. Granting of a patent provides typical property rights. These rights include the right of the patent owner "to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States". On the other hand, design patents provide property rights analogous to the rights granted to utility patent owners. In contrast to utility patents, however, design patents protect the non-functional exterior aesthetic or ornamental appearance of an object rather than its functional aspects.

The main question lies in the categories of subject - matter eligible for utility patent protection. In the landmark Supreme Court decision Diamond v. Chakrabarty the court, quoting from the legislative history of the current patent law, stated that subject -matter "include anything under the sun that is made by man"[9] **[11], [12]**. Other courts have recognized the need to limit the scope of patent-eligible subject matter in order to prevent undermining the policies upon which patent law is based[10] **[13], [14]**. Historically, judicial decisions have stated that printed matter, methods of doing business, naturally occurring things, mental processes, scientific principles, mathematical algorithms, laws of nature, physical phenomena, software and abstract ideas were not eligible subject - matter even if the invention or discovery literally fell within one of the statutory categories of eligible subject – matter[11].

B. Copyright law

The core focus of copyright is the extension of property rights to artistic and literary works, including books, music, and works of art **[15]**. Once a work of authorship is protected by copyright, the owner of the work is granted typical property rights in the work that entitle someone to control use and distribution of the work. However, copyright law specifically does not protect "any idea, procedure, process, system, method of operation, concept, principle, or discovery". Therefore, ideas and information, as well as functional aspects of a copyrighted work, are not protected via copyright law.

In principle, copyright law originally protected printed material. As the subject - matter of copyright expanded, it was historically oriented -in contrast to patent law- toward protecting primarily aesthetic works rather than primarily functional works. Additionally, copyright can extend protection to the "writtings" of authors. In our days, however, the scope or definition of writing has evolved to such extent that it incorporates a large category of subject - matter that is not limited to primarily aesthetic works. The result is that today computer software, building designs, 3-D commercial products such as jewelry, directories, compilations of facts, financial reports, photographs, sound recordings, even the barristers' examinations among other things, are subject - matter within the domain of copyright law[12].

Lately, mass produced commercial products, such as

[8] See Title 35, part II, Chapter 10, subsection 101 of the United States Code, which reads: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

[9] See Lefakis L.K., Biotechnology Patents (in Greek), Sakkoulas Publications, Athens – Thessaloniki, 2004, 98. For the case see Diamond v. Chakrabarty, 447 U.S. 303, 317 (1980) ("The grant or denial of patents on micro-organisms is not likely to put an end to genetic research. The large amount of research that has already occurred when no researcher had sure knowledge that patent protection would be available suggests that legislative or judicial fiat as to patentability will not deter the scientific mind from probing into the unknown any more than Canute could command the tides.").

[10] See Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980) ("[L]aws of nature, physical phenomena, and abstract ideas" are not patent eligible subject - matter. neither a newly discovered mineral or a newly discovered wild plant is patent eligible subject - matter; a mathematical relationship such as E=MC2 is not patent eligible subject - matter). See also Bilski v. Kappos, 130 S. Ct. 3218, 3221 (2010) (citing and agreeing with Chakrabarty that "laws of nature, physical phenomena, and abstract ideas" are not patent eligible subject - matter).

[11] Beckerman – Rodau A., ibid, 56-57 and especially fn. 78-86.

[12] Beckerman – Rodau A., ibid, 63-64 and especially fn.119-130.

computer software[13], which are primarily functional or useful, exemplify subject - matter embraced by copyright law that should be more appropriately limited to the domain of patent-eligible subject - matter. Nevertheless, the beginning of a disturbing trend towards extending specialized copyright protection to specific useful products or articles may be in its infancy[14].

C. Trademarks

Trademark law focuses on the relationship between symbols, words, and short phrases that are associated with or identify products or services sold in the marketplace. Over time consumers in the relevant marketplace associate a particular symbol, word, or phrase with a product or service. This mental association, which is protected by trademark law is protectable property interest. A trademark owner is entitled to control use of a trademark in the commercial context against unauthorized third-party use that is likely to cause confusion, or to lead to an error, or to deceive. Violation of the trademark owner's rights can result in monetary damages or injunctive relief[15].

However, a recent extensive view of trademarks, has created a shift in how trademarks are viewed today. The black letter rule that a trademark can only be assigned with the goodwill it encompasses reflects the traditional view that the property interest in a trademark is the mental association that arises in consumer's minds when a trademark is associated with a particular product[16] **[16]**. Although this rule continues to be cited by courts, it is often ignored as trademarks are increasingly viewed as property without regard to a particular mental association existing between the trademark and the product on which it is used. This can be seen in the marketplace, where well-known trademarks are often the subject of naked licensing for use by other non-competing and unrelated industries. This is reinforced by dilution law, which focuses on recognizing the trademark per se as a protectable property interest that can be protected from third party use even in the absence of any likelihood of consumer confusion or competition.

V. THE ISSUE OF OVERLAPPING PROTECTION

It has been a common practice for different aspects of a product to be protected by different branches of intellectual property law. For example, "if a sculpture is made into a lamp the sculpture is still protectable via copyright law **[17]**. The functional aspects of the lamp's illumination circuitry could receive utility patent protection. A name or logo placed on the lamp could be protected by trademark law if it indicates the source or producer of the lamp. Likewise, the non-functional ornamental exterior appearance of a functional product such as a camera is within the domain of design patent protection, while the optics and electronics that enable the camera to take pictures are within the domain of utility patent law"[17].

In the United States, simultaneously protecting the same aspect of a product, as opposed to different aspects of the product under different branches of intellectual property law, had been disallowed by the courts **[18]**, **[19]**. However, most recent case law has allowed such simultaneous protection **[20]**, **[21]**. To some extent, the historical rejection of simultaneous protection was consistent with and a result of the clear distinctions between the subject - matter protected by patent, copyright, and trademark law. The broad modem extension of subject - matter protectable by each of these bodies of law has made significant overlaps inevitable. Therefore, the same creative innovation may be simultaneously protected by different branches of intellectual property law. In some circumstances, these overlaps can create overprotection by "undermining rationales on which a particular body of law is based and by avoiding some of the carefully developed doctrines designed to limit protection under a specific body of intellectual property law"[18].

The EU law, on the other hand, provides a special *sui generis* regime of protection which is established on different principles than the patent protection. The European system is not based on the examination of novelty, but it may be characterized as the registration system where the criteria of novelty and "individual character"[19] are examined only if the invalidity proceedings have been initiated by a third party.

The legislative work on the EU design protection system commenced in 1990s. In 1998 the EU Design Directive[20] which requires the EU member states to adjust their national design laws to the harmonized requirements was adopted.

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[13] Computer programs or software are merely instructions that enable a computer to operate. Software is an integral part of a computer that has limited value other than to enable computer hardware to operate.

[14] The copyright law currently contains specialized protection for boat hulls or decks. Pending legislation would amend this section of the copyright law to provide a protection for certain fashion designs. See Beckerman – Rodau A., ibid, 66, who states "[s]uch a product or industry-specific approach, if expanded, could result in an endless legislative process that would continually enact new laws to protect new products or industries. The resulting morass of law would create ever expanding complexity and inefficiency and might also cause overprotection of some intellectual property.".

[15] For more see Cornish W.R. ibid, 614 – 639.

[16] The scope of what can be a trademark today has expanded beyond the typical word, phrase, or unique design that comprises most trademarks. In Qualitex Co. v. Jacobson Products Co., the U.S. Supreme Court, adopted a descriptive approach to determining what can potentially be a trademark in lieu of limiting marks to specific categories. Almost anything, including a specific characteristic of a product, can potentially be a trademark if it signals to consumers that the product comes from a specific producer or seller. See Qualitex Co. v. Jacobson Products Co., 514 U.S. 159 (1995).

[17] This example was taken from Beckerman – Rodau A., *ibid*, 73.

[18] For example, protection of the ornamental appearance of a consumer product under design patent law lasts for 14 years. 35 U.S.C.A. § 173 (West 2010). However, under certain circumstances, protection of the ornamental appearance can be extended by simultaneously obtaining copyright protection that typically lasts for the life of the design creator plus 70 years after his or her death.

[19] See Art. 4 and 5 Design Directive; See also Art. 5 and 6 of Community Design Regulation.

[20] 98/71/EC.

Later, in December 2001, the Community designs system was established by the Community Design Regulation[21]. It was put into practice during 2002 and the first design applications were filed in January 2003. Nevertheless, the Community designs system has not been developed with the intention to replace the existing national systems of the design protection. Instead, both systems exist together and independently of each other. The main advantage is also the fact that these systems are based on the same principles (e.g., the substantive criteria for the legal protection are identical) **[22]**.

VI. Overlapping protection regarding Computer Icons and Graphical User Interfaces

As illustrated above, there is no single mechanism to achieve complete protection for a CIs and GUIs. Instead, each intellectual property right provides a different form and term of protection for the different elements of an application. In order to receive the broadest possible protection, it is important for someone to choose the most effective right for each element, in order to achieve as complete a protection as possible for the whole. This can be a time-sensitive and potentially costly process.

Design patents and copyrights both cover nonfunctional intellectual property. Specifically, design patents cover the ornamental appearance of products. Copyrights today cover the non-functional appearance of utilitarian or functional products. Hence, the U.S. Patent and Trademark Office takes the following position: "There is an area of overlap between copyright and design patent statutes where the author/inventor can secure both a copyright and a design patent. Thus, an ornamental design may be copyrighted as a work of art and may also be subject - matter of a design patent. The author/inventor may not be required to elect between securing a copyright or a design patent"[22].

The result of this overlap is that the same intellectual property may simultaneously be protected by both patent and copyright law. This can allow a manufacturer to obtain a design patent covering the unique appearance of a product". However, when the patent term ends, the ornamental appearance will not pass into the public domain because copyright protection has a substantially longer term than design patent protection[23]. As a result, the appearance of the product can be protected against any third party copying or independently creating the same product appearance during the patent term, since patent infringement does not require copying. After the patent expires, the design creator can no longer object to a third party independently creating the same product appearance but he or she can continue to object to a third party copying the product appearance for many additional years under copyright law. Additionally, the extension of the subject - matter within both patent law and copyright law has lessened the traditional divide between industrial product design traditionally covered by design patent law and the protection of artistic works under copyright law. For instance, Google claimed copyright protection for the following layout of their search engine page interface as it appears on a computer screen. Additionally, they sought and obtained a design patent that protects the same subject - matter (with the exclusion of the words and numbers that are shown)[24].

Figure 6. Google search engine portal

Icons used on a computer screen, as shown below in figures have also been protected by design patents[25].

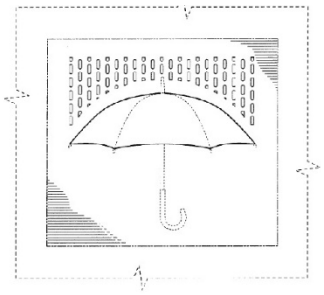

Figure 7. Icon protected by design patents example

Copyright protection is also asserted for computer icons such as the following weather icons[26]:

Figure 8. Icon protected by design patents example

Any creativity contained in the above graphical interface and in the icons is more appropriately protected by copyright law rather than design patent law. Icons are pictures that are appropriately protected as pictorial or graphic works of art under copyright law provided they meet

[21] Regulation (EC) No. 6/2002.

[22] U.S. Patent & Trademark Office Manual of Patent Examining Procedure § 1512 (8th ed. 2001 rev. July 2008).

[23] A general term is author's life plus 70 years.

[24] See U.S. Design Patent No. D599,372 (filed Mar. 7, 2006) (issued Sept. 1, 2009); U.S. Design Patent No. D454,354 (filed Aug. 25, 1999) (issued March 12, 2002); U.S. Design Patent No. D401,231 (filed Aug. 12, 1996) (issued Nov. 17, 1998).

[25] See U.S. Patent No. D697,530.

[26] These icons are copyright (2003) by Stardock Corporation. They are available at http://www.stardock.com/weather.asp (last visited September 22, 2020).

the required creativity standard. The medium in which the icon is created (drawing, painting, printing or display on a computer screen) should not affect whether copyright protection is available. Likewise, computer interfaces, such as the Google interface shown above, "are more appropriately protected as literary works, compilations, pictorial, or graphical works"[27].

VII. Conclusion

Intellectual property law is premised on incentivizing innovative and creative activities by providing limited property rights for the fruits of such activities in order to increase the creative and innovative knowledge for the improvement of society. A careful balance has been developed under each major body of intellectual property law (patent, copyright, and trademark) in an effort to provide property rights that promote creative and innovative conduct without such rights interfering greatly with public access to the results of such conduct.

It is common knowledge that protectable subject - matter under intellectual property law has greatly expanded in recent years. To some extent, this expansion reflects "an excessive or unitary focus on protecting the property rights of innovators in an effort to incentivize investment in creative and innovative activities"[28] . This approach leads to overprotection when it fails to properly balance the resulting property protection against the right of the public to use the results of such creative and innovative activities. Additionally, this extension of covered subject matter - under each specific area of intellectual property law has occurred with little regard to its effect on the other areas of intellectual property law. The unintended result has been the ability to protect certain subject - matter simultaneously under patent, copyright and/or trademark law. Such overlapping protection undermines the careful balance individually developed under each separate branch of intellectual property law. For example, patent law is based on the premise that upon expiration of a patent the covered subject - matter passes into the public domain. However, simultaneous protection under copyright law means limitations on public access will continue after patent expiration since the term of copyright protection significantly exceeds the length of protection under patent law. Likewise, simultaneous trademark protection can further exacerbate the problem because trademark rights are not time-limited like patent and copyright rights.

Solving the issues due to overlapping protection -or at least not compounding any pending issue by further subject-matter extension- requires both legislation and jurisprudence to have a better comprehension of the balancing policy that ensures the implementation of intellectual property law. Legislative enactments and judicial decisions that extend the reach of intellectual property law should not be made *in vacuum.*

Therefore, my opinion is that the extension of the subject - matter protected under patent, copyright, or trademark law should only occur if it does not subvert the balance of intellectual property law *per se*. The reason is that uncareful expansion could cause unintended over-protection of the rights of creators and innovators in contrast to the public interest. The paradigm of CIs and GUIs fits perfectly with the view expressed above.

Acknowledgements: The author would like to thank Professor Andrew Beckerman-Rodau (Suffolk University Law School - Boston) for his invaluable help and advice on various legal and technical issues examined in this article.

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Journal of Integrated Information & Management

Volume 5 - Number 1 / Jan - Jun 2020

http://ejournals.uniwa.gr/index.php/JIIM