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# The Emergence of Digital Image Value Property Rights Created by Interactivity between Users and Items in Online Game

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**ABSTRACT**

Digital item transaction is one of broadband-networked society outcomes. Digital item refers to digital image belongs to Massively Multiplayer Role-Playing Online Games (MMRPOG). Digital item transaction has been explosively increased for the past two years especially in Korea and similar transaction increase has been noted in the U.S and other highly networked countries. Whether or not to recognize the value of digital image as property rights has been tabled as a controversial issue in places where digital item transaction is taking place. Without clear social consensus process, courts in Asia already clarified through the verdicts that digital item or digital image should be treated as property but ownership of digital item debate still continues. This paper attempts to explain how property rights of digital image has been shaped in the digital world and to verify our hypotheses that the value of digital image is being created by interactions between users and digital image and that the value of digital image is not inherent to the digital image. Interactions among game users in the cyber world have invented new value in the cyber space. The value of digital image is being newly designed through communication process and such an interactive process will result in users' different "perception of property rights". Those who interact with digital image more often express stronger perception of their own property rights of digital image. This paper summarizes online survey result conducted among 4,056 Lineage game users in Korea. This research indicated game users have their own perception of digital image or digital item established. The level of interactivity measured by time, modification, and criticality factors is meaningful variable that can predict the level of users' "perception of property rights". When the value and the property rights of digital image are reconstructed from real world's legal perspective in the future, the concept of value recreation and the concept of value reconstruction through human communication should be taken into account.

**Keywords**

Digital image, lineage, interactivity, property rights

**INTRODUCTION**

Digitization of information has caused a myriad of social changes but our social systems have not been responding to such changes in a timely manner. This social gap has been confirmed by some courts' general understanding of intellectual property rights and copyrights of digital image based on their analogue legal framework.[1] Advanced technology has been accelerating and enabling cyber world to be recognized as another real world to people. Those who arrived in the new space, have continuously customized the cyber world by bringing their own social norms and cultural codes into the new space.

As a result of this, the cyber world civilized by digital information calls for new social norms and regulations pertinent to virtual reality that are different from the real world. One of cyber world regulation issues is digital image as property rights in the cyberspace. Online gamers' digital item transaction with other online gamers and non-gamers has been

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[1] Intellectual property rights related legal systems have been strengthened, new clauses about digital information's storage and transaction matters have been legislated worldwide and disputes regarding these matters have increased since 1996. These efforts could not solve the issues caused by digital information because a series of new beings or objects are being created that cannot be defined with only intellectual property rights. One of examples is game items. More information can be available from www.lovol.net (in Korean)

already taking place. This transaction covers both cyber world and real world by exchanging cyber world currency to real currency, Korean won, in Korea and US dollar in the US. As of today, around 130 game item agencies in Korea have created more than 40 million USD item trade market in Korea.[2]

Property rights in real world have been in principle judged by "whether or not an item's value was paid and therefore owned". Digital image's property rights in cyber world have generated conflicts between the concept of ownership and the concept of value. The recent debate on the concept of digital items' property rights in the MMORPG revisits to the tension between the concept of ownership and the concept of value. Game developers believe they own the digital items since developers created the digital items while game users believe users own the digital items since users created the value of the digital items.

The inquiry of relationship between property rights of digital image and value of digital image, or digital item in this particular context, represents the history of "property rights" in the transitional process from industrial society to information society. The concept of modern property rights has originated from recognition of personal property rights, as a result of each individual's labor in the land of public good (Locke 1988).

Property rights debates over emerging general digital image shall embrace the concept of interactive intellectual property rights. The more the Internet becomes commercialized, the more the property rights of digital information and digital image become considered as natural rights. Like English enclosure movement, the process of fencing off common land and turning it into private property, what are going to be recognized as new property rights in the second enclosure movement in the digital world?

In this paper we argue exclusive property rights formulated by John Locke's individual personal property rights over the fixed objects is being changed to interactive property rights. Interaction became one of new labor forms that formulate property rights in the digital environment. This research is going to investigate how user's "interactions with digital information or digital image" create new form of property rights and value.

Digital information or digital image is interactive and fluid that is different from the value generated by the product in real world. In case of a book, readers can be inspired after reading the book but the content of the book will not be changed by readers' inspiration. On the other hand, the value or content of digital product can be changeable through users' responses and interactions. Digital information or digital image is variable and therefore, its value is being varied. Especially, the value of digital image is measured independently from media that delivers information.

There is no exclusive digital image existing in a certain place in cyber world and therefore, it is difficult to claim exclusive property rights over the digital image. Digital image can be observed and interacted with. Digital image can be operated and transformed. Due to this characteristic of digital image, those who acquire digital image can have "it" passively as well as do things with "it" actively. In other words, the property rights of digital image depend on interactions between the user and digital image or digital information.

Interactivity has been treated as the most important attribute out of new media's characteristics. This is distinct from two-way. The latter focuses on information flow that is different from one-way information delivery while interactivity defines relationship between user and information based on free information transaction. There are various arguments on "interactivity" by many academics (Bretz 1983; Rafaeli 1985, 1996; Rogers 1986; Rice 1984; Raymond 1997) and Laurel's interactivity concept turns out to be the most useful one in terms of interactivity measurement with digital image.

This research is to analyze gamers' property rights of digital image, or digital item, in the online game by applying Laurel's interactivity concept measured by three variables such as frequency, range, and significance. This analysis complimentarily incorporates modifiability, selection and level of modification presented by Goerts, into 'range'. More concretely, time (how long it takes users to own the item), modification (how much the item has been modified.), criticality (how important it is to users perceptually). Time, modification and criticality factors provide criteria to measure users' active response to digital image and users' subjective value estimation.

The analysis of digital image's property rights explored with Macpherson' proposition that property rights is defined as "mine", "yours" "who owns what" in the complicated social relationship context based on interactivity. (Macpherson 1993) This research defines "interactivity" as relations between users and digital image. The level of recognition over property rights in the "interactivity" context was investigated by following hypotheses; 1st, Online users will recognize the value of digital image or digital item, as much as they recognize the value of real world products. 2nd, Recognition of

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[2] The number of agency has been increasing and the size of market has been continuously increasing, too. This number was based on "Hankyoreh" in 2002.

digital image's property rights depends on the level of interactivity with the digital item. The more online users interact with digital image or digital item, the more online users have more recognition on their property rights. Interactivity as criteria to measure value of digital image can be extended to the game community in general and therefore understanding of digital image's property rights can be varied by the level of interactivity with different game community in general. regulations pertinent to virtual reality that are different from physical world. This can be extended to an individual's property rights issue in the cyberspace.

## RESEARCH METHODS

### Research Subjects

Digital images this research looked into were digital items presented in Lineage[3], online game. Lineage has the highest number of game users in online games in Korea and real world legal disputes related with digital image in cyber world became common matters in Korea. This is one of exemplary cases for future digital image's property rights disputes and set a cornerstone to make new property rights model in a transition period from industry society to information society.

### Research Methodology and Process

Online survey was conducted among lineage game users for this research. Interactivity of users was operationalized and measured by time, modification, and criticality. These criteria were separately defined in advance based on item's feature analysis. Digital items that can be distinguished by their names, prices, and effectiveness in the game were selected upon the expert gamers' advice.

### Online Survey Participants' Demographic Data

The total number of online survey respondents was 4880 but only 4056 survey responses were used for analysis. The number of male was 3807(93.9%) and the number of female was 249(6.1%). The outcome of survey participants appeared to represent Lineage gamers' gender ratio. Majority of participants are younger than mid 20's(71.5%) and high school students rank the highest with 1192(29.4%). Those who are older than 30's are 271(6.7%). The period of game exploration is also varied. Less than one year is 384(9.5%), More than one year and less than two years is 689(17%), More than two years and less than three years is 1226(30.2%), More than three years is 1226(30.2%). Most respondents to online survey turned out to be more than one-year-gamers and have broad understanding of game community. 70% of online survey respondents' levels in the game are more than 40, which is recognized as pretty high level.

## RESEARCH OUTCOME

### Online Game World and Mature Citizenship

Main activities of Lineage game users are as follows; hunting monster (23.3%), upgrading level (23.3%) upgrading digital item (14.8%), making friends (14.6%) etc. Most survey respondents acknowledged their own responsibilities for outcome of games including control over their own game time and things took place through games. 66.6% gamers think gamers themselves should control the games and 62.5% gamers believe that they have responsibility to set up self-regulation for better game community governance while each 10.2% and 9.8% respondents indicated that game developers who provide games should control the games and that game developers set up rules for game community governance. This shows that gamers have mature citizenship in the online game community.

### Property Rights in the Game World

Perception of digital image's property rights has been explored through perception of digital items presented in online games. There were multifarious responses to concrete questions on digital item possession. 1623(40%) respondents told that they have already experienced real currency digital item transaction and 517(12.7%) indicated that they are going to continuously transact the digital items while 1916(47.2%) told that they are not going to transact the digital items. However, those who are not going to transact the digital items do not necessarily object to real currency digital item transaction.

Gamers in online game community clearly recognize property rights of digital item in the game community. Only 6% respondents believe game developers own digital items while 46.5% respondents think gamers can have full authority over their own digital items and 19% respondents understand even real currency transaction is possible. Even though 22.4% respondents answered that the end-user agreement set by game developers should be respected, they also apparently recognize their own property rights over digital image or digital items. Especially, there was strong recognition that gamers should own digital item.

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[3] 2002. December. Number of paid membership is 3 million and simultaneous online users 70,000 – 80,000.

The following table 1 shows responses to who should own digital items as property rights. This illustrates gaps between gamers' understanding of ownership of digital item and game developers' understanding of ownership of digital item. Game developers have insisted on game developer's property rights over digital item through their end-user agreements.

| Property Owner | Number of Respondent | Percentage |
|---|---|---|
| Game Developer | 49 | 1.2 |
| Gamer | 2817 | 69.5 |
| Character(Avatar) | 1075 | 26.5 |
| Public Good | 115 | 2.8 |
| In total | 4056 | 100 |

**Table 1. Perception of "Who Should Own Game Items As Property Rights"**

### Emergence of Digital Image Property Rights

This research proposed that the value of digital image should be being created by interactions between users and digital image and that the value of digital image is not inherent to the digital image. To verify this hypothesis, interactivity has been analyzed by three factors, time, modification and criticality. Each factor was measured by survey questions that can estimate respondents' psychological impact level under the circumstances when gamers lost their various digital items. In other words, relevance between perception of digital item's property rights and three factors of interactivity was explored based on the gauged feeling of loss in case of different digital item loss.

Five different digital items that require different time period for acquisition in game community were selected and asked respondents of their feeling of loss to estimate digital item's value according to gamers' perception of "property rights based on time". Similarly five different items that can indicate different levels of modification and criticality (price) were chosen for the test. Table 2, 3, 4 demonstrate how respondents' perceived property rights of digital items can vary according to time, modification and criticality dimension, factors of interactivity.

In terms of time analysis, 2774(68.4%) exhibited they would feel deprived most in case of longer time-taking digital item loss. However, the shortest time-taking item loss still shows comparatively deeper feeling of loss than other digital items' loss. This could explain that an individual's psychological interpretations in terms of property rights can be translated into perception of property rights in digital image.

(1 indicates longer time, 5 shorter time)

| Time spent | Number of Respondent | Percentage |
|---|---|---|
| 1. +0 bow made by materials acquired for several  days | 2774 | 68.4 |
| 2.Dei[4] captured for several hours at hunting place | 448 | 11 |
| 3.Dei captured at Fire Dragon's Village | 179 | 4.4 |
| 4.+0 steel boots made of steel bought with remaining Adena | 97 | 2.4 |
| 5.+0 bow transferred of from a friend who is to become an elf | 558 | 13.8 |
| In total | 4056 | 100 |

**Table 2. Perception of "Property Rights Based on Time Factor"**

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[4] 'Dei' is a Scroll of Enchant Weapon, and it can upgrade weapon +1 degree

(1 indicates high level of modification, 5 low level of modification)

| Modification | Number of Respondent | Percentage |
|---|---|---|
| 1. Axe character grown up to five under scarecrow's protection | 2020 | 49.8 |
| 2. +6 Doberman[5] tamed and named | 1352 | 33.3 |
| 3. + 6 Doberman tamed but not named | 404 | 10 |
| 4. Transformation spell through hunting | 207 | 5.1 |
| 5. +0 Boots through hunting | 73 | 1.8 |
| In total | 4056 | 100 |

**Table 3. Perception of "Property Rights Based on Modification Factor"**

Criticality (price) of digital items was realistic value of digital image endowed by gamers, in other words, real currency transaction price. In terms of criticality analysis, respondents' reactions, feelings of loss, to five items were clearly distinguished. Respondents would feel deprived most in case of the most expensive digital item loss. This phenomenon was similarly repeated when respondents were asked to estimate time to acquire five different priced items in real world.

(1 indicates higher criticality/more expensive, 5 lower criticality/cheaper)

| Criticality | Number of Respondent | Percentage |
|---|---|---|
| 1. +6 upgraded Japanese Sword | 2566 | 63.3 |
| 2. Blessed Gel[6] by hunting | 1356 | 33.4 |
| 3. + 4 upgraded Knight's gloves | 41 | 1 |
| 4. Dei by hunting | 60 | 1.5 |
| 5. Gel by hunting | 33 | 0.8 |
| In total | 4056 | 100 |

**Table 4. Perception of "Property Rights Based on Criticality (Price) Factor"**
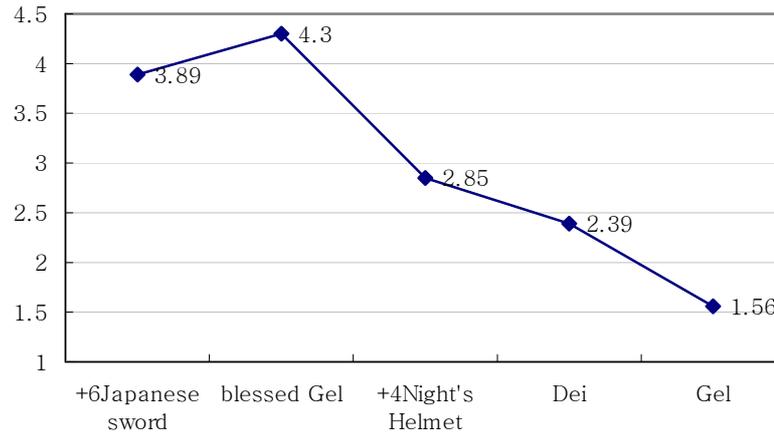
The relations between time-to-acquire-digital-item and digital item's value estimation displayed linear relations. When respondents were asked to evaluate time to acquire different digital items subjectively, respondents denoted their shared understanding of time to acquire items and value consistently. Linear relations are confirmed between time to acquire digital items and price, from the most expensive digital item in the market, +6 Japanese sword, to the cheapest digital item in the market, Gel (Scroll of Enchant Armor).[7]

Most expensive items in the item transaction market are longer-time-taking items. In reality, higher price of items evinced that they are difficult to gain and the more an item is difficult to get, the more the item is expensive.

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[5] Doberman is a monster in the game, and it can be tamed and be a pet by a player

[6] Gel is a Scroll of Enchant Armor, and it can upgrade armor items +1 degree

[7] When this research was initially conducted, the price of +6 Japanese sword was more expensive than ChukGel(Blessed armor magic spell). While this research was being conducted, the price of ChukGel has been transacted as similar price with Japanese sword.

**Figure 1. The relations between Digital Item Price (Value) and Time-To-Acquire-Digital-Item**

In the figure 1, +6 Japanese sword marked at 3.89 and Blessed Gel (Blessed Scroll of Enchant Armor) marked at 4.3. These numbers should be looked into carefully. Before real currency digital item transaction market was not popularized, the price of +6 Japanese sword was more expensive and Japanese sword as effective tool in the game was also difficult to get. But Japanese sword was considered comparatively easier to get in the market as soon as real currency digital item transaction market was available to gamers in general than Blessed Gel that is acquired through strong monster in the game. This manifests market conditions have been automatically functioned by law of supply-demand in Lineage economy system.[8]

**Value and Evaluation of Digital Image**

Gamers' interactivity with digital items depends on levels or how much gamers are involved with game community.[9] Those who have higher levels in the games means they have had more interactivity with games. In other words, those who have higher levels have been more exposed to Lineage's norms or culture. This can lead to another hypothesis that gamers with different levels show different responses to in-game value system created by gamers. According to Table 5, 1882(46.4%), whose level is from 41 – 47, responded that item reflects gamers' efforts and therefore gamers can exercise their full authority over their own property, digital item. However, those who have lower levels responded digital item transaction should be prohibited because it is forbidden in the end user's agreement.(910, 22.5%) or digital item is owned by game developers and therefore it should not be transacted by individual gamers.(243, 6.0%) This outcome tells that most gamers identify rights to transact digital items as gamers' rights and especially higher-level gamers take it for granted to transact digital items as their rights.

|       | Level Group |          |      |          |       |             |
|-------|-------------|----------|------|----------|-------|-------------|
|       | Low         | Mid-Low  | Mid  | Mid-High | High  | Total       |
| 1     | 11.9%       | 11.5     | 9.9  | 4.8      | 2.3   | 6.0%(243)   |
| 2     | 27.7%       | 34.4     | 25.3 | 21.2     | 16.3  | 22.5%(910)  |
| 3     | 10.7%       | 18.8     | 21.6 | 20.2     | 17.3  | 19.0%(771)  |
| 4     | 43.4%       | 32.1     | 37.4 | 48.2     | 56.0  | 46.4%(1882) |
| 5     | 6.3%        | 3.1      | 5.9  | 5.8      | 8.1   | 6.1%(247)   |
| Total | 100% (159)  | 100 (520)| 100 (578) | 100 (1738) | 100% (1058) | 100% (4053) |

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[8] When online survey was conducted, exchange rate between Adena (Lineage currency) and Won (Korea currency) was 13:1. +6 Japanese sword was then half million Adena, Blessed Gel was then 400,000 Adena, Knight's glove 150,000 Adena, Weapon spell and armor spell were each 80,000 Adena.

[9] Levels were divided into five categories, 1-15, 16-30, 31-40, 41-47, and 48-60 upon game experts' advice. Time and property status were reflected as criteria to divide the above categories.

**Table5. The co-relevance between Gamers' Level and Digital Item Transaction**

1 Group: Digital item is owned by game developers' and therefore it should not be transacted by individual gamers.
2 Group: Digital item transaction should be prohibited because it is forbidden in the end user's agreement.
3 Group: Digital item transaction by real currency is allowable if it is not prohibited in the law.
4 Group: Digital item reflects gamers' efforts and therefore gamers can exercise their full authority over their own property, item.
5 Group: Lineage has no meaning if there is no real currency item transaction.

Majority of respondents (3274) objected to patch application that can cause changes in game community norms or items' values. This responses disclose first, gamers are concerned more in their item devaluation rather than fun in the game through new patch application and second, gamers negatively interpreted uncontrollable game developer's power over their own properties against their wills. Gamers' responses to game developer's patch application were different according to different levels. Figure 2 displays the relevance between the level of objection to patch and game levels.
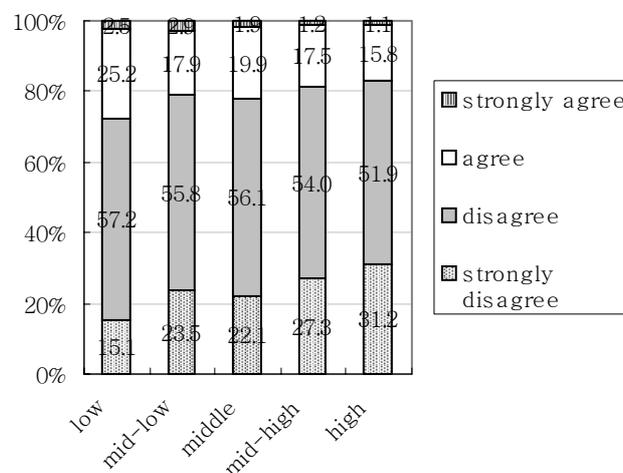


**Figure 2. Evaluation on Patch Application According to Levels**

The higher the gamers' levels are, the more objections to patch application were presented. Interestingly, the ratio of patch application support from low-level gamers was comparatively higher. This reveals that higher-level gamers are more affected by patch application than lower-level gamers since higher-gamers possess more digital items and Adena (Lineage' curency).

**DISCUSSION**

This research is to delve into how non-material digital image's property rights have been conceptualized and recognized by game users through game users' interactivity. It is inevitable to face inexplicable situations in digital age when the concept of exclusive property rights grounded on material objects was attempted to explain information society. It is time to excogitate new concept of property rights grounded on interactivity in other words users' more involvement with non-fixated and changeable objects.

Game users' digital item transaction cases and understanding of property rights associated with the digital item transaction evinced the possibility of new concept of digital property rights. The following questions were probed through this study; how gamers understand the concept of digital item's property rights in online game and how gamers' interactivity influences perception of property rights.

Outcomes of this research confirmed that most gamers already recognized their own individual property rights of their own digital items achieved through interactions. Gamers show stronger perception of property rights when they have higher interactions with the digital items according to time, modification, and criticality factor. It reminds that experiences in the game not only remain in the cyber space but also expand to physical space in real world.

Experiencing virtual world through online games should be cognized beyond sensuous interactions and it is proactive interactions with environment. It can be similarly apprehended the way modern property rights was separately divided into "ownership" and "value". That is to say "value" of digital image in virtual world can be created though human being's communicating process and become object of "ownership".

This study was designed to corroborate that interactivity in digital environment is another form of labor that creates property rights and to propose that concept of value recreation and concept of value reconstruction through human being's communications should be ruminated as critical criteria when value and ownership of digital image are approached from real world legal perspective in the future.

## REFERENCES

1.  Hankyoreh (2002) 'Class in the Cyber World' www.hani.co.kr December 30

2.  Heeter, Carrie. (1989) "Implications of new interactive technologies for conceptualizing communication" in *Media use in the information age: Emerging patterns of adoption and consumer use*. Edited by Jerry L. Salvaggio,, Jennings Bryant. New jersey: Hillsdale.

3.  Katsh, M. Ethan. (1995) *Law in a Digital World*. Oxford University Press

4.  Lastowka, F. Gregory and Hunter, Dan  "The Laws of the Virtual World" California Law Review

5.  Laurel, Brenda. (1986) "Interface as mimesis". in *User centered system design: New perspectives on human-computer interaction.* Edited by Norman, D. A., S. Draper. Hillsdale: Lawrence Erlbaum.

6.  Locke, John. (1988) *Two treatises of goverment*. Edited by Peter Laslett. Cambridge: Cambridge University press.

7.  Macpherson, C. B. (1972) *Democratic Theory: Essays in Retrieval.* Oxford Univeristy Press

8.  Rafaeli, S. (1988) "Interactvity: from new media to communication". in *Advancing communication science: merging mass and interpersonal process:* 110-134. Edited by Hawkins, R. P., J. M. Wiemann., S.Pingree. CA: Sage.

9.  Rice, R. E. (1984) "Development of new media research" in *The new media.* Edited by Rice, R.E & Associates. CA: Sage.

10. The Korea Economic Daily (2002) 'Online Game Item Transaction Explosive, Social Issues like Violence and Fraud Increased' http://www.hankyung.com/ December 9