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# Mental simulations, imaginations and emotions – a short empirical legal study<sup>1</sup>

## *The historical background of imaginations*

Initially, human imagination was analyzed mainly in the context of visualizing certain images, and of what the nature and the structure of this content is. It was only later that the attention began to concentrate on its correlation with psychological science.<sup>2</sup>

The ancient Greeks are considered the precursors in the study of imagination. In particular, Aristotle, who was the ancestor of this problem, and who was the first to point to the inextricable link between memory and images. According to this thinker, images arise in our consciousness only in the form of thoughts, which is why, when we notice what the image represents, we come into contact with memory, which is defined as „fixed image considered as an image of the object from which it comes from”.<sup>3</sup> In addition to shaping the relationship between images and memory, Aristotle modified the hitherto reasoning of Platonic ideas by „replacing them with concepts that arose from the participation of images derived from the sensuously knowable world”.<sup>4</sup>

It is worth noting, that the Aristotelian trend in the context of deliberations in the field of imaginations was continued for a long period of time – up until the Middle Ages, when it was placed under a more thorough research by

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<sup>2</sup> W. Łukaszewski, “Wyobrażenia i działania”, *Nauka*, 2006, no. 1, pp. 113–120.

<sup>3</sup> P.J. Jaroszyński, “Wyobrażenia”, PEF, <http://www.ptta.pl/pef/pdf/w/wyobraznia.pdf> [accessed: 15.11.2020].

<sup>4</sup> *Ibidem*.

St. Thomas Aquinas. The passing omgf time and changes which have taken place over the centuries have not remained uninfluenced by the phenomenon of imaginations. In his deliberations on senses, St. Thomas Aquinas pointed to the role of the imagination as a guarantee of „objectification of known images”.<sup>5</sup> Thus, it can be noted, that ideas have evolved and have been assigned a specific role, i.e. shaping images cognised by humans, which participate in the process of intellectual cognition.

Further significant modifications in this subject were made by Immanuel Kant, professor during the *Enlightenment* era from Königsberg. According to his work – *The Critique of Pure Reason* – magination is the „fundamental capacity of our mind”, with which we begin the process of organizing variety, which comes to us from all angles.<sup>6</sup> The fundamental achievement of this philosopher scientist, as far as the thematic scope of this work is concerned, is the distinguishing the tripartite division of mental phenomena and distinguishing feelings (cognitive experiences) – will and sensation.<sup>7</sup>

Kant’s definition of images is undoubtedly worth mentioning. He claims that they are „definitions of the inner sense”, which consist of partial representations combined into individual sequences by means of a synthesis of reproduction”. Kant studied imaginations as well as other psychological phenomena. He made the tripartite division and systematization od these phenomena and he carried out research on the role of each of them in the cognition process. Following this reasoning, it can be noticed that in the case of imagination it fulfills the function of a creative „engine” in Kant’s theory, which is undoubtedly connected with the moment of the creation of both our existence and the entire human world.<sup>8</sup>

For the purpose of this work, it is necessary to note that the tripartite division of psychic phenomena, the role of imaginations and ideas as proposed by Kant functioned rather homogeneously until the 19<sup>th</sup> century.

### *Imaginations in the theory of Leon Petrażycki*

Leon Petrażycki was an educated person – he studied abroad, in famous academic centers such as Heidelberg and Paris.<sup>9</sup> In the later years of his life, after

<sup>5</sup> P. Sulenta, „Problem prawdy ujęć zmysłowych w interpretacji św. Tomasza z Akwinu”, *Scripta Philosophica. Zeszyty Naukowe Doktorantów Wydziału Filozofii KUL*, 2012, no. 1, pp. 11–29.

<sup>6</sup> J.P. Hudzik, „Koncepcja wyobraźni w filozofii Kanta”, *Sztuka i Filozofia*, 1994, no. 8, pp. 93–122.

<sup>7</sup> B. Brożek, *Umysł prawniczy*, Kraków: CC Press, 2019, pp. 78–86.

<sup>8</sup> J.P. Hudzik, *op. cit.*

<sup>9</sup> I. Ivannikow, „Leon Petrażycki o roli psychiki w stanowieniu prawa”, [in:] *Leon Petrażycki i współczesna nauka prawa*, ed. T. Giaro, Warszawa: Wolters Kluwer, 2020, p. 211–233.

receiving a thorough education, he became a professor of law at the University of St. Petersburg, and then, due to the political situation in the country, at the University of Warsaw.<sup>10</sup> He dealt with legal studies as well as motivational and ethical issues related to law and psychological sciences.

From the beginning of the twentieth century, Leon Petrażycki devoted his works to an exhaustive criticism of the Kantian division, proposing an original, extremely innovative typification of “basic forms of internal experiences”, distinguishing among them emotions, i.e. sensory impulses driving mental experiences, feelings and sensations, which he defined as unilaterally passive experiences and purely active processes of the will.<sup>11</sup> It follows, the criterion of division adopted in his theory is related to the nature of a given experience, and depends on whether it is passive, active or bilateral, i.e. passive-active.

Therefore, in order to understand the essence of his division, it is necessary to quote short definitions that illustrate how Petrażycki understands the above concepts. According to his teachings, sensations are “the simplest cognitive experiences, arising under the influence of external or internal stimuli, i.e. physical processes that originate externally to the organism and affect the external peripheral nerve endings (e.g. sound waves, light waves, mechanical pressure), or take place inside the body (e.g. digestion, muscle contractions, secretion)”.<sup>12</sup>

Petrażycki uses the definition of feelings as per the scientific psychology: “experiences of pleasure, contentment, bliss (‘positive feelings’) and experiences of pain, dissatisfaction, suffering (‘negative feelings’)”.<sup>13</sup>

According to the scholar, will processes and will are “specific experiences (which can be identified and distinguished clearly only through careful self-observation and internal comparison), experiences of a strictly active nature”, which “present themselves to us as active pursuits of our ego, directed towards evoking, creating something in the near or distant future”.<sup>14</sup>

Emotions (impulses) are “all phenomena of the human and animal psyche of a two-way passive nature”.<sup>15</sup> Leon Petrażycki considers emotions to be the most important from the internal experiences point of view, as they are the foundation for mental experiences. Their primary task is to adapt a person to living conditions. All other forms of mental experiences play an auxiliary

<sup>10</sup> J. Stanek, *Rosyjski realizm prawny. Psychologiczno-socjologiczna szkoła prawa*, Warszawa: Wolters Kluwer, 2017, pp. 211–223.

<sup>11</sup> L. Petrażycki, *O pobudkach postępowania i o istocie moralności i prawa*, Warszawa: Księgarnia T. Wojnara, 1924, pp. 6–19.

<sup>12</sup> *Idem*, *Wstęp do nauki prawa i moralności*, Warszawa: Księgarnia F. Hoesicka, 1930, pp. 215–231.

<sup>13</sup> *Ibidem*, pp. 232–250.

<sup>14</sup> *Idem*, *Teoria państwa i prawa w związku z teorią moralności*, vol. 1, Warszawa: PWN, 1959, p. 5.

<sup>15</sup> *Ibidem*, pp. 22–70.

role. In these dependent forms, he includes imaginations, to which he also gives a lot of consideration in his works. He included imaginations in the group of will processes. Petrażycki defines imaginations as a kind of a mental image created as a result of experiencing and influencing sensations, perceptions and previous experiences.

Petrażycki proposed the following basic division of imaginations:

- 1) imaginations of pleasure and suffering;
- 2) action imaginations/procedures;
- 3) purposeful imaginations;
- 4) imaginations of subjects and obligations.

The common feature of each of these types of images is that they correlate – more or less closely – with emotions. It is a two-way relationship; firstly, emotions stimulate the induction of both certain mental and physiological processes and specific will. On the other hand, Petrażycki believes that one of the basic functions of images is to evoke emotions/impulses by images, which are the motives/motivators of our actions. The influence of emotions on imagination and ideas, later confirmed by many scientists, including Nico Frijda, who is the creator of the emotional behaviour regulation concept.<sup>16</sup> A specific motivation can be assigned to individual types of ideas.

Considering the conditions of the notions of pleasure and suffering in his work *On Motives of Behaviour and on the Essence of Morality and Law*, Petrażycki points to their basic dichotomous division – images of possible future pleasures and possible future suffering. Moreover, the images may also refer to past experiences and pleasure or suffering associated with it.<sup>17</sup>

As far as the first category of images distinguished by Petrażycki is concerned, they operate in the area of feelings and emotional motivation. He claims that emotions are caused not only by current feelings of pleasure and suffering, but also by images of pleasure and pain (suffering). Imaginations can evoke either apulsive (attractive) or repulsive (abhorrent) emotions. As for the images fulfilling their aforementioned function of evoking emotions, it is necessary to state, that they are not the only factors that evoke emotions and guide our behaviour.<sup>18</sup>

The purposeful imaginations are also relevant from the motivational processes point of view. Petrażycki believes that those processes in which “imaginations are the stimuli for emotions that stimulate a certain behaviour”<sup>19</sup> is the intellectual-emotional motivation. However, the purposive images have been

<sup>16</sup> N.H. Frijda, *The Emotions*, Cambridge: Cambridge University Press, 1986.

<sup>17</sup> L. Petrażycki, *O pobudkach postępowania...*, pp. 6–19.

<sup>18</sup> *Ibidem*.

<sup>19</sup> *Idem*, *Teoria państwa i prawa...*, p. 11–28.

classified into a certain subcategory – purposive motivation. The essence of the purposive notions is to imagine achievable goals/results which we can achieve with the help of certain actions or lack of thereof, and the presence of certain emotions that can facilitate appropriate actions to achieve the goal. These images can also evoke repulsive or apulsive emotions, which points towards another function of images in Petrażycki's theory – creating model behaviours.

Another type of ideas distinguished in this scientist's theory are action imaginations, otherwise known as imaginations of procedure. Action imaginations are, according to Petrażycki, "images of a certain external or internal behaviour (e.g. in the field of thinking)".<sup>20</sup> While defining the characteristics of this type of behaviour, Petrażycki claims that he means images of "such behaviour, towards or against which given ethical emotions operate".<sup>21</sup> Both action and purposeful imaginations are closely correlated with intellectual and emotional motivation and are considered to be a certain form of it, because they are part of action motivation. They consist of imagining the appropriate actions or deeds.

Imaginations of action and ethical emotions, i.e. those that cause attractive and repulsive feelings together form the so-called ethical experiences that have a huge impact on the ethos of human behaviour.

In the context of the perception of subjects and responsibilities, Petrażycki distinguishes the following types of imaginations:<sup>22</sup>

- 1) objective – imaginations of our actions, to which we can add ideas such as the time of action, place of the commitment, images of objects – things associated with a certain action;
- 2) subjective – imaginations of subjects of legal or moral obligations, i.e., for example, of a given person who should behave in a certain way;
- 3) ethically/legally significant facts – imaginations made in abstract legal or moral experiences, which may be unconditional, e.g. "Do not kill", or conditional;
- 4) normative facts – imaginations of certain facts that regulate the content and validity of obligation, for example, how to behave in a specific situation.

This type of imagination is typical of experiences related to law, morality and ethics. Depending on the sub-type of imaginations, it serves various purposes, although the common denominator influences the legal and ethical order and shapes a positive or intuitive law.

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<sup>20</sup> *Ibidem*, pp. 23–29.

<sup>21</sup> *Ibidem*, pp. 30–64.

<sup>22</sup> L. Petrażycki, *Teoria państwa i prawa w związku z teorią moralności*, vol. 2, Warszawa: PWN, 1959, pp. 5–8.

## *Mental simulations – the concept of the 20<sup>th</sup>/21<sup>st</sup> century*

Among contemporary scientists who undertook the analysis of the concept of imaginations in the 1970s, names such as Urlic Neiser, Stephen Kosslyn and Zenon Polshyn can be distinguished. Each of the above-mentioned scientists attempted to define the imaginations and the nature of mental imaginations – a dispute took place between Kosslyn and Polshyn on the grounds of this. The former believed that the images were analog in nature,<sup>23</sup> while the latter was in favor of the task nature of mental images.<sup>24</sup>

None of them, however, referred to the concept of mental simulations, only „mental images” were mentioned. For the scope of this article, it is relevant to analyze the origins of the mental simulations concept, its types and potential use.

The concept of mental simulation is a relatively recent theme in science. Shelley Taylor – an American scientist, who specialised in the psychology of health is considered to be the propagator of this concept. In 1989, she proposed the concept of mental simulations for the first time, defining it as „imitative mental representations of some event or series of events”<sup>25</sup> or as „the process of visualizing the future and then regulating behaviour in such a way, that the assumed future becomes reality”.<sup>26</sup> In her work on the use of imagination, Taylor distinguished three types of mental simulations, taking into account the criterion of attitude towards a given future situation – it can be both positive and negative. As far as positive images, they can be divided into: outcome simulations and process simulations. On the other hand, she calls negative simulations ruminations.<sup>27</sup>

Ruminations – are considered by the researcher to be the unique type of outcome simulation; they are intrusively recurring thoughts of negative nature, usually associated with harmful events or situations from the past. Taylor considers that the type of imagination of failures may be motivating in some cases, while in the long-term aspect of performing rumination, reflecting on negative

<sup>23</sup> S.M. Kosslyn, „The information represented in visual images”, *Cognitive Psychology*, 1975, no. 7, pp. 341–370.

<sup>24</sup> Z.W. Polshyn, „The imagery debate: Analogue media vs. tacit knowledge”, *Psychological Review*, 1981, no. 88 (1), pp. 16–45.

<sup>25</sup> S.E. Taylor, L.B. Pham, „Mental simulation, motivation and action”, [in:] *The psychology of action. Linking cognition and motivation to behavior*, eds. P.M. Gollwitzer, J.A. Bargh, New York 1996, pp. 219–235.

<sup>26</sup> E. Jarczewska-Gerc, *Rola wyobrażeń w osiąganiu celów. Symulacje mentalne*, Warszawa: Difin, 2015, pp. 18–19.

<sup>27</sup> W. Łukaszewski, „Pragmatyczna strona wyobraźni”, *Przegląd Psychologiczny*, 2008, vol. 51, no. 2, pp. 181–196.

events from the past is not beneficial for anybody.<sup>28</sup> When exploring these considerations, we can see the advantage of negative aspects of rumination, which mainly include the lack of progress in deal with the specific situation, as well as the potential inhibition of carrying out positive simulations – i.e. a goal or a result.

Outcome simulations are images that represent the final effect of our efforts, which may have both positive and negative valorisations (ruminations). This approach states that by applying an active focus to the result that will be achieved, we can make it real. This approach is created and promoted by many authors of books in the field of personal development. Following on Taylor, in order to better understand the essence of such simulations, it is advisable to cite the examples given by Norman Vincent Peale, which show the correlation between the outcome simulation and the potential success. In his work *Positive imaging: The powerful way to change your life*, Peale suggests to “keep the image of your success, visualize it live, and then when the desired success comes, it will seem ordinary, because it reflects the reality that already it previously existed in the mind during the simulation”.<sup>29</sup>

Process simulations are images that are mainly focused on presenting “the structure of activities ensuring the possibility of achieving the goal”.<sup>30</sup> So first a goal is set, and then there is an active exercise of the defining “steps” that must be taken to achieve that goal. Undoubtedly, when using the process simulation, you have the advantage of prior analysis of activities and emotions that are associated with a given phenomenon in the future, which gives a better chance to control them when the goal is actually achieved.

An unquestionably important issue related to this division of mental simulations is the question of their effectiveness. Not all mental simulations are equally effective because people react to them differently.<sup>31</sup> In order to assess this effectiveness, Taylor, Pham, Rivkin and Armor conducted a research for several years. While the impact of rumination is considered moderately effective or even harmful in the long term, outcome and process simulations are assigned specific achievements and results. The research focused on the analysis of different types of mental simulations and their effects on behavioural self-regulation and the achievement of goals.

In their research, which concerned, inter alia, the use of mental simulations during the preparation of students for exams in college, i.e. their de facto impact

<sup>28</sup> E. Jarczewska-Gerc, *op. cit.*, pp. 18–19.

<sup>29</sup> N.V. Peale, *Positive imaging; The powerful way to change your life*, New York: FCL, 1982.

<sup>30</sup> W. Łukaszewski, ‘Pragmatyczna strona wyobraźni’, *op. cit.*, pp. 181–196.

<sup>31</sup> S.E. Taylor, L.B. Pham, D.I. Rivkin, A.D. Armor, “Harnessing the imagination: Mental simulation, self regulation and coping”, *American Psychologist*, 1998, no. 53, pp. 429–439.

on the exam results, divided students into two groups – one of them was to apply process simulations, and the other outcome simulations. The results obtained clearly indicated better assessments of people who used the process simulations. Students belonging to this group not only received better grades, but also allocated more hours and days to study for the exam.

According to these studies, in terms of effectiveness, following Taylor, a conclusion can be drawn that the simulation of the process is more effective, while it is necessary to regulate behaviour and control emotions in connection with stressful events (and an exam is undoubtedly such an event).<sup>32</sup>

Not all studies carried out by Taylor indicate greater effectiveness of process simulations, although in most cases mental simulations help to visualize a difficult event by someone, which is very often associated with stress, therefore it is more advisable to use process simulation.

After Taylor's research in the 1990s, at the beginning of the 21<sup>st</sup> century, an increasing number of people became interested in the subject of simulation, including Alvin Goldman, Gilbert, Troppe, Libermann.<sup>33</sup>

From their research, several features can be distinguished, which undoubtedly characterize mental simulations. First of all, attention should be paid to the time at which they can be performed, what events are processed during simulation and how they correlate with the human neurological and biological system. Hence, one should indicate:

1. The time the simulation refers to – it can refer to both the future and the past, it can be both a kind of retrospection and a perspective for the future.<sup>34</sup>
2. The type of events that a person can process during a simulation – these are events that may be both psychologically close and psychologically distant to a person, however, simulations are carried out in a more broad, abstract sense – specific details are rarely processed.<sup>35</sup>
3. The relationship between mental simulations and the system of neurons in a human – mental simulations, apart from their psychological and motivational aspects, are correlated with the exact sciences, and more specifically with neurobiology, where it has been proven that the unified neural

<sup>32</sup> *Ibidem*, pp. 429–439.

<sup>33</sup> A. Waytz, D.I. Tamir, H.E. Hershfield, "Mental simulation and meaning in life", *Journal of Personality and Social Psychology*, 2014, no. 42, p. 410–425.

<sup>34</sup> C. Routledge, T. Wildschut, C. Sedikides, J. Juhl, "Finding meaning in the past: Nostalgia as an existential resource", [in:] *The psychology of meaning*, eds. K.D. Markman, T. Prohix, M. Lindberg, Washington: American Psychological Association, 2013, pp. 297–316.

<sup>35</sup> N. Libermann, Y. Trope, "The psychology of transcending the here and now", *Science*, 2008, no. 322, pp. 1201–1205.

network is actively involved in all types of simulations.<sup>36</sup> The prefrontal cortex plays an important role in the processes of observation, supervision and planning of human activity. It significantly influences thinking processes and will processes, which include mental simulations. Consequently, when people imagine themselves in the future or in the past, the appropriate neural network, or even all, is clearly involved.

4. The type of simulation – they can be both conscious and unconscious; unconscious happens more often than conscious. Unconscious simulations occur in everyday situations involving movement, speech and social interactions.<sup>37</sup>
5. The segmental nature of the simulation – they can simultaneously engage appropriate groups of neurons related to organs, skills and senses such as: hearing, sight, touch, emotions, motivation and motor skills (the ability to perform actions related to movement).<sup>38</sup>
6. The subjective nature of mental simulations – Francis Galton, in his research of visual images, proved already in the nineteenth century that when a specific research group is asked to imagine the same, the images made by this group have significant differences between themselves.<sup>39</sup>

I believe that it is necessary to pay attention to the subjectivity of mental simulations and their geneses, because it concerns each of us individually, and it is not a common feature like the other phenomena mentioned above.

Undoubtedly, people have always had the ability to visualize objects or to act out situational scenes in their minds. However, each of us handles mental simulation differently – some are very good at it, while others have a hard time doing it. The ability to imagine detailed “mental images” or the lack of it is correlated with the psychological theory of cognitive styles.

In psychology, two basic types of visualization are distinguished: visualization of objects-objects, and spatial visualization related to the use of images to present correlations between individual objects. When exploring these issues, it is necessary to point out that people who tend to visualize objects can visualise details easier, while people who think spatially pay more attention to the arrangement of objects or the correlation between them. Maria Kozehevnikow in her article gives examples of people who work in some professions, that they

<sup>36</sup> M.E. Raichle, A.M. MacLeod, A.Z. Snyder, W.J. Powers, D.A. Gusnard, L.G. Shulman, “A default mode of brain function”, *Proceedings of the National Academy of Sciences of the United States of America*, 2001, no. 98, pp. 676–682.

<sup>37</sup> B. Brożek, *op. cit.*, pp. 88–89.

<sup>38</sup> F. Landriscina, *Simulation and learning. The role of mental models*, *Journal of E-Learning and Knowledge Society*, 2009, no. 5, pp. 23–32.

<sup>39</sup> F. Galton, “Statistics of mental imagery”, *Mind*, 1880, no. 5, pp. 301–318.

have the ability to visualize given categories – engineers can serve as a model example of people with spatial visualization, while artists represent the group of people for whom the visualization of objects comes more naturally.<sup>40</sup> Contemporary psychological sciences have confirmed and expanded the thesis of Francis Galton about the significant individualism of mental simulations.

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Mental techniques, and simulations in particular, give humans a wide range of applications. They can be used in virtually every area of life. They help in the event of stressful situations; you can see their potential impact in almost every stage of decision making. In particular, simulations influence decisions related to consumer preferences and are very often used by advertisers to induce a positive perception of a given item by the consumer.

It is also necessary to show the main role of mental simulations – their main task is to prepare us for what happens in the future. This function is performed by both outcome simulations and, more importantly, process simulations, which prepare us for this step by step.

Due to the continuous analyzes of the simulation phenomenon, it is possible to distinguish areas in which detailed studies have been carried out, which confirm the effectiveness of simulation in these areas.

In addition to the example described in Taylor's research, presented above in this article, regarding the use of mental simulations in coping with stress, mental simulations are also useful in the processes of quitting smoking. In 2011 a study was carried out by Izabela Syta. Participants were asked to use three types of simulation: a positive result, a negative result and a process. Additionally, a control group was selected, which did not perform any simulations. The results of this study clearly indicated a reduction in the number of cigarettes smoked by the participants of this study and in the process simulation group over 80% reduction in the number of cigarettes smoked compared between day 1 and day 30 of therapy.<sup>41</sup>

In addition, there satisfactory results were also achieved when using simulation in sport as an "addition" to exercise. All groups of respondents, which were divided into the best, middle and weakest group, reduced their average running time quite significantly and improved the level of sports skills.<sup>42</sup>

Mental simulation can also be used as a substitute for experience. Heather Kappes provides four examples where mental simulations have similar

<sup>40</sup> M. Kozhevnikov, "Cognitive styles in the context of modern psychology. Toward an integrated framework of cognitive style", *Psychological Bulletin*, 2007, no. 133, pp. 464–481.

<sup>41</sup> E. Jarczewska-Gerc, *op. cit.*, pp. 81–84.

<sup>42</sup> *Ibidem*, pp. 123–133.

cognitive consequences, such as in the case of corresponding real-life experience. These include: simulated evidence replacing physical evidence, simulated practice replacing physical practice, simulated consumption as a replacement for the actual consumption, and simulated goal achievement which replaces real goal achievements. So, in these areas you can choose between the use of mental simulations and physical experiences, as they are substitutes.<sup>43</sup>

The success of using mental techniques that are related to simulation, i.e. mental contrast and implementation intentions, is visible mainly in weight loss, healthy lifestyle, taking appropriate supplementation and exercising.

According to these results presented in the above-discussed studies, it is worth to use mental simulations in everyday life, as it may result in bringing you closer to your goal and finding a quicker way to achieve it.

### *Simulations and ideas in Petrażycki's theory*

There is no doubt that mental simulations are currently the concept most resembling the ideas presented by Petrażycki's in his theory. Therefore, an attempt should be made to define the identity of these concepts, decide on whether they can be used interchangeably, have similar characteristics, and on the role of images and simulation. In order to perform the analysis, it is first of all necessary to compare the characteristics of the imaginations as per Petrażycki and the mental simulations proposed by Taylor and other researchers.

First, when it comes to the time a person refers to when making simulations and imaginations, simulations can apply to both the future and the past, and the same is true of imaginations. Images of the future take the form of images of future possible unpleasantness or pleasures. Imaginations relating to the past and "recreating the content of old cognitive acts in previous assemblies", Petrażycki describes as memories that are acquired "with the help of memory".<sup>44</sup> Additionally, it is necessary to notice, that the images are just as visible as real situations and memories.<sup>45</sup>

Considering the type of events to which mental images and simulations refer, both may concern psychologically closer or further situations and objects. However, it is worth noticing, that to a large extent, Petrażycki emphasizes the dichotomy of images in the context of experiencing repulsive or apulsive feelings.

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<sup>43</sup> H.B Kappes, C.K. Morewedge, *Mental simulation as substitute for experience*, *Social and Personality Psychology Compass* 2016, nb. 10, p. 405-420.

<sup>44</sup> L. Petrażycki, *Wstęp do nauki...*, pp. 218–219.

<sup>45</sup> M.K. Johnson, L. Hasher, "Human learning and memory", *Annual Review of Psychology*, 1987, no. 38, pp. 631–668.

Another topic worth pointing out is the issue of awareness and unawareness of mental imagery and simulations. While mental simulations can be conscious and unconscious, images, according to Petrażycki's theory, are characterized only by consciousness. He gives an example of such "unconscious" mental projections: during hypnosis, in the psyche of the hypnotized person, only images and emotions imposed by the hypnotist can be found, the person's actions are unconscious and they not aware of performing them.<sup>46</sup> The issue of awareness and the lack of it is also related to the nature of the processes of the will – they can be purposeful only. Due to the fact, that images were classified by Petrażycki under the will processes category in the division of the forms of human mental experiences, it is important to mention, that they are purposeful or motivational in nature. This is important because most human activities take place without a specific goal, i.e. they may take place unconsciously or be stimulated by emotions.

Imaginations, just like mental simulations, involve particular sensory areas – for example, they can be visual, auditory, psychological or mixed, depending on the imaginations made. In the context of making images, Petrażycki notices that objects or persons that are known to us are "seen" in more detail in images than only and exclusively in images that are caused by feeling.<sup>47</sup>

Undoubtedly, both mental simulations and imaginations are subjective. This largely depends on the individual personality traits of a person and the involvement of the network of neurons and transmitters in the brain of an individual.

It then follows, that one can suggest that conscious mental simulations are to some extent the equivalent of ideas presented by Petrażycki's in his theory. Due to the continuous development of science and neurobiology, it can be said, that imaginations take into account the individual process which takes place in the brain when making such a simulation, and therefore simulations can take on a more advanced form than imaginations. However, basic characteristics remain the same for both of these categories.

### *How do emotions influence perceptions?*

The author of the article between August 20, 2020 and September 1, 2020 conducted a research on the influence of emotions on perceptions and judgment. The respondents were randomly divided into four research groups: group no. 1 np (people who do not practice law), group no. 1 p (individuals in the legal professionals), group no. 2 np (people who do not practice law) and group

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<sup>46</sup> L. Petrażycki, *Teoria państwa i prawa...*, pp. 19–22.

<sup>47</sup> *Idem, Wstęp do nauki...*, pp. 217–222.

no. 2 p (individuals practicing law). There were 34 people in group 1 np – 22 of them were women, 12 men, while group 1 p consisted of 28 people – 13 women and 15 men. Group 2 np, comprised of 28 people – 14 women and 14 men, and group 2 p of 22 people – 13 men and 9 women.

As a part of this research, two versions of the same legal case were prepared – one with a very detailed descriptions of events and emotions, and the other one containing facts only, without unnecessary descriptions. The respondents were asked to play the role of a judge, to pass a judgment in the presented case and to justify it briefly. Groups 1 np and 1 p received an emotional description version of the case, while groups 2 np and 2 p received a matter of fact description version. The study was conducted via Google Forms, which were appropriately named – for the 1 np and 1 p groups the name of the form was „Your judgment of justice”, while groups 2 np and 2 p received file titled „Your judgment on justice”. Both case studies have been included as an appendix to this work. Apart from the content of the case, the respondents were asked to provide their gender, age, education and place of residence.

It is necessary to point out that in group 1 the answers varied according to gender. 46% of women would have issued an acquittal, 31% applied extraordinary leniency, and 13% found the protagonist of the case guilty, without issuing a conviction, but referring her to psychological/psychiatric therapy or ordering the supervision of a probation officer. One person proposed a conditional suspension of the execution of the sentence. In the case of male respondents, the breakdown of results was slightly different: 50% of them was in favor of leniency, 25% was for acquittal, one person suggested a sentence without extraordinary leniency and another a referral to a psychiatric hospital.

When analyzing the results of group 1p, there is no need to divide responses by gender, as the answers provided, regardless of gender, were fairly similar. The results are as follows: 53% opted for leniency, 18% for imposing a penalty without leniency (men only), 11% proposed changing the legal classification to Article 148 § 4 of the Penal Code, which suggested the application of a lower penalty, 7% of people, due to the age of the accused, proposed a precautionary measure in the form of a stay in a psychiatric hospital, while one person proposed a change of qualification to Article 155 of the Criminal Code and a sentence of one year of imprisonment suspended for 5 years, another suggested the suspension of the sentence, and third a waiver of the penalty due to age. No one in this group offered an acquittal.

The next research group was group 2 np. The majority of the proposals for the sentence that were made by respondents in this research group included: extraordinary mitigation of punishment/placement of Aleksandra in a psychiatric

institution – 46%, conditional suspension of the sentence – 2 respondents and proposals of punishment without any mitigation – 36%. 2 people suggested an acquittal, pointing out that Aleksandra was acting in self-defense. An interesting phenomenon observed in this group was the distribution of responses per gender of the participants – 57% of females suggested extraordinary leniency, while only 21% were in favour of no extraordinary leniency. These numbers were slightly different for male participants – 50% of them stated that Aleksandra is guilty and should not be granted a reduced sentence while 35% believed that liberalization in the form of mitigation is necessary. Another phenomenon relevant from this division point of view is the fact, that the majority of male respondents who passed the judgment of guilty beyond reasonable doubt the sentence was very high – life imprisonment, 25 years of imprisonment, supported by statements such as: „the highest possible punishment”.

On the other hand, in group 2 p., all respondents found Aleksandra guilty of a prohibited act and proposed the following sanctions: extraordinary leniency – 9%, 8 years imprisonment – 36%, 10 years of imprisonment – 23%, 12 years imprisonment – 9% and 15 years imprisonment – 23%. In this group, similarly to group 1p, it was not necessary to differentiate respondents by gender, as all answers were similar, although it should be noted, that in general, women opted for lower sentences.

The aim of this study was to check if and to what extent emotions influence the perception of a given situation and judgment. Comparing the results of four research groups, it can be concluded that:

1. Undoubtedly, the emotional aspect significantly influences the interpretation of the situation and the process of passing a judgment. The study proved that it is significantly influenced by the level of details in the description – either imbued with emotion or are strictly factual. As far as the case study for group 1 is concerned, it is clear that the respondents were driven by emotional response, caused predominantly by the images of Aleksandra's suffering, as she was abused by her father for years. This results in greater empathy for the girl, and as a consequence, in the first case scenario, most of the study participants proposed leniency, acquittal and various suggestions to change legal qualification to allow for the issuance of a lighter sentence. This phenomenon of a certain „solidarity” with the accused is noticeable both among the legal and non-legal professionals.

However, the second case study, where the description was purely factual, without details of psychological and motivational aspects of Aleksandra's actions and detailed descriptions of her father's behaviour towards her or her relatives, it is clear that the story did not evoke such level of empathy as observed in

the case study no. 1. This results in a higher level of punishment proposed (even the upper statutory limit) and a firm lack of justification for Aleksandra's behaviour – she was called a „patricide”. Similarly to case study 1, such an attitude was also noticed in groups 2 np and 2 p.

2. The study showed some gender-differentiated responses. Women as judges in the case study provided (mainly those who were not professionally associated with law, but also lawyers in group 2p) were most likely to pass a lighter sentence than men. This is probably due them trying to somehow understand Aleksandra's situation, who was abused by her father, and imagining themselves, their daughters or friends in her place. Therefore, a certain emotional bond was established between the participants of the study and the Aleksandra, which significantly translated into the way the case was perceived and judgements were influenced, because the respondents showed more empathy.

3. It is necessary to present another result, which is, just like the previous one, related to the gender differences between the respondents. For instance, the most severe sentences were given in group 2, who evaluated the case study based on facts, and were proposed by men aged between 41 and over 60. They suggested a penalty of 25 years imprisonment, a penalty of life imprisonment and the “highest penalty”. Usually, as their justifications, they provided phrases such as “patricide”, “severe sentence, because he was her father”, “if she had a problem, she should have gone to a psychiatrist instead of killing her father”. As demonstrated, the emotions expressed in the above examples were undoubtedly caused by the very act of daughter killing her father. The respondents in this age group, who were not presented with a justification or an explanation of the circumstances of the father's abuse, answered adequately to their role/position in the society. Usually men in this particular given age range have their own families and find an act of murder on a father unacceptable, regardless of the circumstances. Hence, in this case, one can notice the respondents relating to the situation and demonstrating negative emotions and feelings towards Aleksandra, which translates into a higher penalty.

4. In groups 1 p and 2 p, i.e. groups of law practitioners, there is a tendency to pass a more detailed justification of the judgement. Additionally, when comparing the results of groups 2 np. and 2 p., it can be noted that law practitioners were more inclined to propose a specific sentence (e.g. 8 years imprisonment), while respondents not associated with the legal profession proposed mainly extraordinary mitigation, and rarely gave a specific number of years of imprisonment. In addition, it is necessary to note that the legal practitioners from the 2 nd group imposed more severe sentences. Despite that the harshest sentences were postulated by several people in group 2 nd, they all found Aleksandra

guilty of the crime committed. Secondly, only 9% of respondents expressed the wish for extraordinary mitigation of punishment, while in the case of group 2 np over 40% asked for it.

5. A certain differentiation between various age groups has also been noted in this study. In the case study no. 1, more than 53% of Aleksandra's acquittals came from people between the age of 21 and 30. 23% by people aged between 31 and 40 suggested the same sentence. In the case of group 2, 66% of the youngest respondents – that is aged between 21 and 30, regardless of their involvement in the legal profession or the lack of thereof, issued a verdict of extraordinary leniency, or sent Aleksandra to a psychiatric institution. It follows, that younger people tend to judge more leniently – this is probably due to their life experience as well as the fact, that they are in the similar age group to Aleksandra, and when imagining her circumstances, they saw what prospects still lie ahead of her. Considering how Aleksandra was treated by her father, they did not want to deprive her of prospects for a better future.

6. No difference was noted which would indicate responses being dependent on the place of residence. Participants living in villages and towns up to 50 thousand, inhabitants of cities of up to 100 thousand and inhabitants of cities up to 250 thousand residents and above did not have very divergent views as to Aleksandra's guilt and the severity of her punishment.

7. Moreover, a significant discrepancy in the answers due to the education of the respondents has not been noticed. People with primary, secondary, vocational and higher education participated in the study, and their answers are mostly similar in the context of guilt and punishment for the accused. Their language style and proficiency were noticeably different, but this does not lie within the scope of this study.

## *Conclusions*

The main goal of this work was to explore ideas in Petrażycki's theory and their correlation with mental simulations. Images, which were a the main concepts in Petrażycki's theory, undoubtedly have an inherent relationship with emotions, which was also confirmed by the results of the study. This correlation is two-sided. Despite the fact that Petrażycki distinguishes several groups of ideas, each of them plays an important part in motivational processes as well as in evoking emotions.

Another relevant property of images is their link with mental simulations, which are their more developed forms. It is necessary to mention a very important difference – images, according to Petrażycki, can only be made consciously, while mental simulations can be both conscious and unconscious. The

spectrum of the use of mental images or simulations is very wide; they can be used effectively in every aspect of human life. In addition, their use has documented effects on permanent modification of human behaviour leading up to achieving a specific goal. Mental simulations and mental techniques, i.e. their derivatives, constitute a relatively new scientific concept in various types of motivation and coaching theories, and in particular, process simulations and result simulations. Proposing the replacement of a physical experience with mental simulations in some circumstances is a novel approach, presented in the work of PhD Heather Kappes, who has proven, that they brings results.

When exploring this subject matter, it is impossible to not to indicate the subjectivity of ideas. From the research of Francis Galton in the 19<sup>th</sup> century, mental imagery/simulations have not changed their character and remain a very individualized form closely related to the human mind.

The reflection of the subjective nature of images and their correlation with emotions can be found in the results of the research conducted for the purposes of this article. The results clearly indicate a noticeable differences between responses, depending on gender and age, and also by being a member of the legal profession or not. Moreover, as demonstrated in case study no. 1, emotions strongly influenced judgment, while in case study no. 2, the respondents were practically unaffected emotionally.

I believe that the subject of mental imagery and simulations are so complex concepts, that it still requires a lot of research and analysis before we can fully understand the essence and potential and use of both, not only in law and morality, as Petrażycki suggested to some extent, but also in the everyday life of each and every one of us.

## *Appendix 1*

### *Case No. 1*

Włodzimierz Nowak was a respected resident of a small town, where he served for many years as a councilor and an activist for the local community. He lived with his daughter, Aleksandra. The girl's mother had left for the USA 10 years earlier, leaving her daughter under the sole care of her father. Neighbors have always seen their family in a positive light. Włodzimierz was overly protective of his daughter and interfered in every sphere of her life. The girl became even worse over time, as the father began to sexually abuse her regularly. It happened even without her realizing it: he would force her to drink an evening tea, after which she quickly fell into a deep and strong sleep, and in the morning she would feel sore. At first, Aleksandra was not fully aware of her father's

monstrous actions, she didn't know that other fathers are not like that with their daughters. After a while she realized this, when her father began to intimidate and humiliate her. In addition, he even limited her contacts with her peers and their extended family. In the second year of high school, she fell in love with a classmate. They could only meet briefly during their journey to and from school. One time Aleksandra decided to invite him home, in the hope that she would be able to stay with her beloved for longer. She thought that her father would not dare to hurt her in front of strangers. He, however, banished the boy, forbidding him to ever come anywhere near Aleksandra again, or else he would „remember him for good”. After the boy left hastily, the father forcibly stopped Aleksandra, who wanted to run after him, severely beat her, insulted and sexually abused again.

Aleksandra hated her father more and more. At the same time, she began to become convinced, that her father's difficult character must have caused her mother to leave and delay coming back home. Meanwhile, Włodzimierz became even more possessive of his daughter. He installed her tracking apps on her phone and a keylogger, which gave him access to all her messages and location. He traced the route she took home from school and as soon as she went the long way, he called her and ordered her to return immediately. She was punished for the smallest mistake. On November 25<sup>th</sup>, during a telephone conversation Aleksandra's mother repeated many times, that she would not return to Poland because she was afraid to return to Włodzimierz. On November 27<sup>th</sup>, Aleksandra returned home from her school tutoring, and her father was waiting for her impatiently. After his daughter's arrival, he stirred up a conflict about her late return home and demanded detailed explanations of what she was doing, with whom she was and why she come back so late. Violent complaints and another attempt to fully control her life exceeded the limits of Aleksandra's mental endurance. She grabbed a mortar mill and just as her father turned her back on her, she gave him a blow to the back of the head. After that, she ran to her room and shut the door. After an hour, she cooled down and noticed there was no movement in the house. She went into the kitchen and saw her father lying in a pool of blood. The impact resulted in his instant death. Aleksandra decided to hide the body.

She dug a hole in the garden where she dragged her father's body and buried it. A passing neighbour saw her digging in the ground. After a few days of Włodzimierz's absence, colleagues and neighbors began to ask Aleksandra about him. She said that her father had to suddenly leave to visit his brother, who lives in a remote town. While needing to urgently contact Włodzimierz, who did not answer the phone, his associate called his brother, whom, according

to his daughter, Włodzimierz had left to visit. The brother informed him, that Włodzimierz wasn't there, hadn't been and hadn't had contact with him for two months. The brother and a colleague immediately filed a missing person report. As a part of their official duties, the police inspected and searched the house, interviewed Aleksandra and their neighbours, including the neighbor who saw the girl digging a hole in the garden. During the first questioning, the daughter repeated that her father had gone to stay with his brother. A decision was made to check the garden, as per the indication made by the neighbour. While reviewing the state of the garden, a buried corpse was discovered. Following this discovery, further analysis of the house were carried out and traces of blood were found in the kitchen. The prosecutor charged Aleksandra with committing a crime under Art. 148 § 1 of the Penal Code Whoever kills a person shall be punishable by imprisonment for a period of not less than 8 years, the penalty of 25 years imprisonment or the penalty of life imprisonment. The defender in his final speech indicated that the accused was a victim of domestic violence, therefore, he requested that the penalty be waived or its extraordinary mitigation of punishment.

Do you think Aleksandra is guilty or not? What judgment would you make as a judge in this case? Please provide a brief summary of your judgment.

## *Appendix 2*

### *Case No. 2*

Włodzimierz T. was a resident of the town of K., where he was a councilor and an activist for the local community. He lived with his daughter, Aleksandra T. The girl's mother went to work abroad and she did not intend to return to Poland. At first, the father was overly protective of his daughter. After a few years, he began to sexually abuse her regularly. When Aleksandra T. realized that her father's actions were shameful and protested, he began to humiliate her. In the meantime, the father kept tightening the control over Aleksandra. On November 27<sup>th</sup>, Aleksandra T. returned from her school tutoring and her father was waiting for her in the house. After his daughter came back, he stirred up a big argument, during which she grabbed a mortar grinder and stroke her father on the back of his head, then locked herself in the room. The blow to the head resulted in Włodzimierz's instant death. An hour later she came back into the kitchen and saw her father dead, so she decided to hide the body. She dug a hole in the garden, where she dragged her father's body and buried it. A passing neighbour saw her digging in the ground. In the following days, Aleksandra's father did not appear at work, which provoked the interest of his colleagues and neighbours.

Aleksandra informed everyone that her father had to leave suddenly to visit his brother in Z. A colleague called Włodzimierz T's brother and found out, that he had not had contact with Włodzimierz T. for two months. Włodzimierz's brother and the colleague filed a missing persons report. As part of their official activities, the police inspected and searched the house, questioned the daughter and neighbours. During the first questioning, the daughter repeated that her father had gone to stay with his brother.

This part of her testimony was deemed untrue, as it contradicted the testimony of Włodzimierz's brother, who hadn't seen him in a while. A decision was made to check the garden, as per the indication made by the neighbour and a buried corpse was discovered. Following the discovery of the body, further analysis of the house were carried out and traces of blood were found in the kitchen. The prosecutor charged Aleksandra with committing a crime under Art. 148 § 1 of the Penal Code Art. 148 § 1 Whoever kills a person shall be punishable by imprisonment for not less than 8 years, the penalty of 25 years imprisonment or life imprisonment. In his final speech, the defender indicated the personality of the accused who was a victim of domestic violence, therefore he asked for the penalty not to be imposed or for an extraordinary leniency.

Do you think Aleksandra is guilty or not? What judgment would you make as a judge in this case? Please provide a brief summary of your judgment.

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## Abstract

### Mental simulations, imaginations and emotions – a short empirical legal study

Nowadays, due to the continuous development of psychological sciences, we observe an increase of the interest in imagination, and undoubtedly the role of imagination in mental simulations. When exploring the issues of the subject matter, it is necessary to note that the ideas of imagination and ideas were for a long time neglected in research and analyzes. To a certain extent, this is reflected in the literature on the subject of this research topic;

however, in my opinion, in both Polish and foreign literature, there aren't sufficient scientific studies devoted to this issue and its potential impact on the life of every human being. The principal aim of this work is to analyze the idea of imaginations presented in Petrażycki's theory – their nature, functions and types – and to discuss mental simulations and examples of their use. In addition, another relevant issue is going to be analysed – the connection and the relationship between imaginations in the past and mental simulations in present time. The article will present how to leverage these ideas.

**Key words:** Leon Petrażycki, imaginations, mental simulations, internal experiences