Investigating the science of mind: How does neuroscience fit into society and law?

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Abstract

This article interrogates the limits of integration of neuroscience and law. Brain studies offer substantial support to series of human experiences and behaviour. The intervention based on the understanding of the brain offered an explanation to the concept of mind, individual and group behaviour in society, and offering neurological explanations to the legal domain about the defendant. The brain studies offering technical explanations to the human mind and behaviour may further be used to attribute people from different social groups in a stereotypical way. Neuroscience is not limited to the laboratory and neuroimages but it has wider social implications. Discussing brain and law through the sociocultural and social identity perspective gives better understanding of mind, society and law.

Keywords: Brain, common sense, image, social groups, behaviour, society, law

The rise of neuroscience has also objectified and reduced people and hance the very idea of human beings as rational and social agent (see Pickergill, 2013; Rose & Abi-Rached, 2013. The brain in itself and its appearance are both the domain of neuroscience. Humans in their everyday life don't engage in social interactions through the vocabulary and picture of the brain. They engaged with thoughts, actions and experiences. Our phenomenology about any social object is the reality for us, rather than the neuroimaging of the brain. The imagination of human nature is more pronounced than the naturalization of the human brain in our everyday discourses and interactions. Neuroscience, with its tools and methodology, can be a good examiner of the brain but it is difficult to cross the dominant arena of intuitions about the notions of wills that humans express or control (see also Santosuosso & Bottalico, 2009). Brain

in the modern times starting from the systematic study by Galen to the later works on Phineas Gage brain to the current times with new tools has become a common word for different classes in different forms of understanding, but its content is still complicated and complex in our general understanding. There is no confusion that the brain follows its natural mechanism like any other organ, however, it is found to be directly connected to the consciousness, and any kind of abrupt changes in the brain structure directly affects its function and hence the behaviour. In one way, it can be speculated that the brain follows the pattern which shows its operation as causally determining the nature of existence of humans and in another way, it is following some law of nature which regulates it's working. It is difficult to conclude that the brain is either naturally performing or regulated by the uncontrollable laws not yet specified in the scientific understanding. However, neuroscience follows the scientific approximations of risky prediction, where theory or model pertaining to the brain activities, to be taken over by the new finding possibly with the new design and techniques.

Markova (2003) noted that "preoccupation with subjectivity, intersubjectivity and otherness was an essential aspect in the rise of European individualism" (p. 64). The reality and appearance of languages was used to hide what cannot be expressed in the wider social domain and the language of others, individuals developed an ability to self-analysis and others (e.g. Trilling, 1972). The whole system of personhood, self and being by using the language of established and dominant, in which disciplines played an important role, there was continuity of construction and deconstruction of identities. The rise of neuroscience in different domains, creates a possibility to define oneself in terms of language of appearance of artificial selves in the brain terminologies. The two-way understanding of self and others in terms of objectivity and subjectivity, where self and communal identities were not designed in terms of brain vocabularies, when compared to other (esp. from the oppressed group as Fanon highlighted in his book 'the wretched of the earth) whose identities and meaning of life were watered down

in terms of unscientific, apperceptual, and populist use of neuroscientific terminologies (e.g. shallow brain, underdeveloped cortex etc.). The possibility of clashes between law as specific social technique and neuroscience as use of specific technique (Kelsen, 1941) to understand the neural connection and brain function is inadvertent. The former is strictly social and the latter seems to be more scientific based on the criteria of objectivity and realism. Though, both can be taken as social techniques since the past research, precedents and intuitions are applied to understand any case.

The starting year 2020 seems to be dedicated to the varieties of threats, the prominent among them is the rise of Coronavirus, which became a pandemic. The rest was the actual anxieties connected to food, migrations, education, careers, family and healthy lifestyles. For some these anxieties were manageable and for others, in fact, a large number of the working class, is an unhealthy reality with no work, domestic abuse, caste and race-based humiliation, and dehumanization. What was invisible was the systematic oppression and bullying in the name of social distance, which is considered by the middle and political class to be the best social medicine. Actually, this form of social medicine is more therapeutic, imposed and regulatory for all but mostly oppressive for the working class. This led to forms of understanding of regulations and law, one which is objective and communicated from the higher authorities, scientists and politicians and the other was more localized, populist and constructed within the community with positive and negative value loading for other groups. Brain studies are one of the sought-after programs dispersed into varieties of domain. What was inward looking was expected to show the picture of how self-interacts with the objects in the social world.

This is the time where power is supposed to look outside its confinement and same with the sciences with which its neutral and limited image is defunct now and it is expanding its horizon and authenticity, to contribute to social sciences and law. The brain science is not

limited to the brain but its rich observations offer a significant contribution to the people's bio-social self and how people's sociality is formed. The hope is now how much these sciences can bring change like re-categorization, reformation, re-humanization, reconstruction, representations and so on. In the above context, brain scientists look for the possible effect of coronavirus on the body and the brain and some may connect it to social and political domain and critically see how the brain adapts to situations, discourses and everyday rules and regulations. Is it the brain which has a collective spirit or is it an individual brain to be studied in a laboratory by neurologists and neuroscientists? The concern here is to understand how law is understood and in what way science, society and law mostly form a status quo. As some has observed that typical criminal justice system structurally targets and oppresses people from marginalized communities[1]. The additional link with science and neuroscience essentialize the deep seated attitudes towards these groups. The structure and function of the brain, as it looks the same for all human beings, despite some differences because of the cultural variations, differences are seen among human beings' cognitive understanding of situation, individual and collective action. This hardwired notion of human brain, gene and behaviour is simultaneously determined (Prinz, 2012) or more appropriately emerges in the sociocultural context. Like the brain which has a shape and structure as shown by the neuroimaging techniques, abstract concepts like justice and law don't have the concrete images. We don't have a clear picture of what is the real form of these concepts, but still they are concepts and they have the inbuilt meaning communicated to us in some shape. For example, if we see my teachers' behaviour towards me equally responsive like all others in the class or not responsive to me or people from my ascribed groups as compared to other groups, we can conceptualize it as a just or

[1] Why Relying on Criminal Law Should Not Be the Answer to a Pandemic. In https://thewire.in/law/criminal-law-coronavirus-pandemic

unjust act respectively. In both the cases though, we all have almost the same brain structure. As Prinz (2012) showed through an example of democracy "democracy don't look like anything special, they have no characteristic shape on the map. But it is easy to grasp what democracies are by stimulating democracy procedures" (P. 129). However, some interdisciplinary studies in social psychology and brain science showed that there are variations in the size of brain parts when it comes to which political value one hold (Pedersen, Muftuler, & Larson, 2018; Kanai, Feilden, Firth, & Rees, 2011) or in terms of legitimacy and desirability of the social system (Nam et al., 2018).

The unique debate between science and social science centres on the actual theoretical position, their sub-discipline adopts to advance theory. In the case of mainstream science, the activities mostly are a form of continuation of the previous disproved or falsified theories, however, in the case of mainstream social sciences, it is loaded with varieties of perspectives, culture, language, positioning, dominating histories of schools of thought. The basic steps are there in both the cases such as methodology, strategy and theory building, but there are remarkable differences especially in the social sciences when it comes to positioning one's experience through the historical and collective lens. Any form of imposition of metatheory in social sciences becomes demeaning to the contradicting memories and experiences of people and the idea of understanding emotion, behaviour, cognition of people becomes limited. Those who claim to be scientific in their approach explicitly state their position to understand some phenomenon, but that still doesn't make that procedure coming under the category of mainstream science. The best possible way to work in social science is to be descriptive rather than enforcing causation. The more applied platform to sustain the societal system and regulate people through their action and avoidance is law which mostly utilize these descriptions and causal links, provided by the social scientist such as forensic psychologists or legal psychologists or scientists such as neuroscientists, to infer the cause from its vantage point.

Thus, mainstream science, as it contrives to be systematic and at the same time neutral in its objectivity endeavoured, its program is better understood when integrated through social science. Since social science has seen many variations and to some extent sciences too, when we analyse the existing discourses and culture in the history, including the present, its gaze and accommodation with the sciences seems to be anchored through different metatheories and subjectivities.

Vygotsky (1978) argued that mental activities (even the biological activities) appear first social and then are appropriated individually (see Teo, 2015, p. 245). The importance of sciences such as neuroscience in general and in the legal domain matters, as it was a form of biological science and study of brain anatomy (e.g. neurology), though it extended to other applied domain such as cognitive neuroscience, computational neuroscience and in general to the marketing and organizational area. However, the primary role of society, history and culture in the spirit of times shaped the subjectivity together with the importance of the biological markers (Teo, 2015; Rexilius, 1988). The emphasis on science or understanding human nature via any mode such as brain studies, doesn't limit the subjectivity of the person, biology of human is mostly limited to the structure and functional, and to generate a more expansive view of human being is possible with the culmination of interdisciplinary picture. People don't see themselves or others in terms of biological systems or as walking brains but as subjects whose area is not confined by the observant attributions but also the meaning of what it is like to be oneself. We will see later, how this worldview about oneself at the most defined by the social life of the person and beyond it is out of the scope of what it is like to be a human. Teo (2015) highlighted Tolman's (2009) view about the critical psychology of Holzkamp (1983; 2013) which showed the importance of society-individual nexus without neglecting the person's qualitative experience or the first-person psychology. The power perspective which is the inherent part of the status quo misses out the perspectives of others unless the need for self-

interest arises. Holzkamp (1983) showed that mainstream psychology serves the interest of the powerful and this was also shown in the critical view on neuroscience (e.g. Choudhary & Slaby, 2012; Pickersgill, 2013). The choice to change once life circumstances or veto from what is socially unacceptable is the sign of healthy society, however, Holzkamp (1983) showed how psychology in the process of serving the interest of powerful disguised in their methodology and hypothesis construction falls into the limited understanding of human as agent of social change, essentialize the ability, behaviour and brain. However, the rise of critical psychology in the recent past showed that in different circumstances and situations of status quo many indigenous groups, historically oppressed and socially outcast groups contributed to its foundation. Law driven by the colonial mesmerisation unheeded to the interest and dignity of the oppressed group became more oppressive, however, the rise of critical worldviews collected from many geographies and ecology together formed a grand approach to the thinking and activities of people and raised their commitment to their social group and social justice at the larger platform such as global south. Brain science in the majority of cases gives a detailed view of brain structure and function but expands to other areas where one can understand the organism-society interconnection. It is required that to have better understanding of a person, one should understand the person in a context both discrete and omnibus, which comprises a shaping and socialization of the person by the micro and macro level context starting from every day, routine, to broader and taken for granted assumption about the world and society. The person is not reduced to the brain as such but the brain is a unified system comprising the whole personality of the person. In this case then, brain study becomes part of systematic study which is not devoid of a larger sociocultural and political system. These forms of organismic orientation entitled by the psychologists weren't limited to neurochemistry, neuroanatomy, traits or personality profiles but to the unified aspect of an individual in a sociocultural context as an organized whole. How much the law uses the inputs from psychology (Justickis, 2008)

and brain studies is difficult to state, though scholars expressed the hope about the neuroscience and law collaborations (Pardo & Peterson, 2013; Peterson & Pardo, 2017). The importance of the brain was specified by Damasio (2012) as “now there is a growing fear that evidence regarding brain function, as it becomes more widely known, may undermine the application of laws, something that legal systems have by and large avoided by not taking such evidence into account. But the response has to be nuanced. The fact that everyone capable of knowing is responsible for his actions does not mean that the neurobiology of consciousness is irrelevant to the process of justice and to the process of education charged with preparing future adults for an adaptive social existence. On the contrary, lawyers, judges, legislators, policy-makers, and educators need to acquaint themselves with the neurobiology of consciousness and decision-making. This is important to promote the writing of realistic laws and to prepare future generations for responsible control of their actions" (P. 283). The point of contention is about the applicability of psychological knowledge and brain studies to the need of people, just society, responsible law and so on. They also nurture the status quo till the time it serves its purpose. The applicability of brain science to the legal cause is transformed through the public understanding where the people construct their reality about the technicalities of sciences through the mediation of available gatekeepers who are themselves not scientists. Applicability matters till it cures or provides a ready solution to the problem. In this context, the metatheory and the range of applicability of the mini theories of psychology and brain science to the status quo and majoritarian rules eventually legitimizes their influences. Does good networking and power systematically avoid the ambiguity in the dominant disciplines like neuroscience and increase the explanatory power of its theory?

One of the fundamental questions is what does brain studies explore? On the basis of established features, persons’ action is conceptualized in the name of human nature. We know that there are varieties of subjectivities involved in the people across different social groups.

So, the established conceptualization itself is a problem and the brain science limited view about the varieties of subjectivities in itself doesn't correspond exactly with the behaviour. The understanding of behaviour is done on the basis of a set of criteria or possible markers on the basis of which any categorization is done by the psychologists. These criteria are never exhaustive but some combinations of criteria give clues about the possibility of the existence of that psychological or psychopathological category. Research in neuroscience doesn't fully correspond to all the proxies established by the psychologists for any identified psychological categories but locate the activation in the brain when the person is in that projected state of mind. So, what is established through brain studies is also to be confirmed through the behavioural criteria. The identification of acts as right or wrong, moral or immoral and meaningful or meaningless, are the established one in some normative domain which seem to be adumbrated by brain determinists as projecting from the brain activation. It is important to note that these concepts and categories are situated in the social context of power relationship among institutions, science, social structure and law. They emerge from societies and other spaces of power and return to the society in a sophisticated and technical way to be understood and assimilated. The processes of establishment of psychological and brain categories again in the social space with the discourse of power is also called as psychologization, where these psychological categories through 'looping effect' (Hacking, 1994) comes to the discourses and practices and dominate the understanding about human being (Rose, 1996; Teo, 2015, p. 246).

We have seen in the earlier paragraphs that reliance on brain studies may give an incomplete picture of our thinking, behaviour and intentions. There is no clear explanation about the subjectivity involved in the experience and activity of a person, and what is seen is based on the normative rules. This gives edge to the legal domain to rely on their intuitive capacity which also depends upon the choice legal agents make. It is still not very clear how these choices are manifested in normal circumstances and some people don't choose as per the

expectation from society. As we see the commonality and specificity of action and thoughts, only specifying the amount of neural firing in the localized brain area doesn't solve the hard problem of what it is like to be conscious and as a choice maker. It is the established notion about humans which gives impetus to the status quo to regulate the role of a person in society by theorizing an ability of the person as not someone who contributes in the continuity of his existence. Even the person complying by the status quo, accepting his role in the society and oppression, is a kind of choice making to the will of the dominant identities. The brain science in itself is an interdisciplinary science whose metatheory is limited to the sciences and it is important to give a detailed understanding of working of brain, however, it is also needed that brain studies are not neutral but interpretative science and when interpretation is done through the logic powerful, it gives a diminished form of picture. Brain sciences, if combined with the history, context, culture and discursive practices of the oppressed may go beyond the psychologized mode of regulation.

The methodology for the established neuroscience, which comprises understanding the chemical activity in the brain region and the positioning of the brain structure, is clear and widely used, however, the methodology for the critical neurosciences or critical psychology which can be logically debated in the legal domain looks unstructured and without any clear picture. This limitation of procedure, makes the critical understanding of neuroscience vulnerable and within the confines of subjectivities of few people. The articulation that it is the problem and context of the study which derives the search for appropriate methods is not very popular among the mainstream where methods of science seem to be more objective, clear and easily adopted by the applied domain such as law. Though some have made clear that any method is suitable for critical understanding provided it is appropriate to the problem under observation and need of people (e.g., Martin-Baro, 1994). From whose perspective does brain science interpret its finding is a matter of availability of data which is based on the fMRI and

similar technique-based report of restricted samples (see also Poldrack, 2018). Usually the perspective of the subject is not paramount as what does the imaging technique picture, giving way to adhoc interpretations. The challenges of inter-subjectivity, embodiment, self and subjective feelings among the oppressed group and the population in general is not the platform on which the brain studies orient itself.

The role of Luria and Vygotsky approach in law and the brain nexus

If the law becomes liability and particularly colonial and imperial law, the resistance by the minority and any effort by the group members to comply by the mainstream law can be considered as acting White, acting dominant, acting oppressor (e.g. Ogbu, 2004)[2]. How the mainstream brain approach is going to explain this and how the approach adopted by Luria and hinted by Vygotsky corresponds to the existing sociocultural system and the shaping of the brain. The match or mismatch between the legal agents can also be cultural match or mismatch, where neuropsychological explanation offered by Luria may be helpful in understanding the perceptual readiness (e.g. Brunner, 1957) and difference in the understanding of one's sociocultural context. The critical psychological aspect of law is to offer resistance both at the level of understanding and practice in order to transform the existing understanding of classist ideology to the perspective of oppressed. Vygotskian approach to the development of mind in a sociocultural context gives more focussed understanding to cognition and brain. Luria derived his systematic approach to understanding the brain and affirmed the role of social context which was a minority view among the laboratory generation of brain scientists who believed in decontextualizing to understand the action, thought and language. Vygotsky approach provided a grand view to understand society and meaning of mind which also matches at the

[2] Ogbu, J.U. Collective Identity and the Burden of "Acting White" in Black History, Community, and Education. *The Urban Review* 36, 1–35 (2004). https://doi.org/10.1023/B:URRE.0000042734.83194.f6

meta-theoretical level with the approach nurtured in the tradition of liberation psychology and post-formalism of Freire (1970) and Kincheloe (1999). Inspired by Vygotsky (1978), Luria (1966/1980; 1973) engaged in the brain structure where he showed how the development of executive function is driven by the cortical maturation. Luria recognized a class of psychological function or executive functions which comprises planning, monitoring, and inhibiting thought and action (Fernyhough, 2010). Though these psychological functions are themselves a cognitive function, assumed to be the result of modularity of the human mind and specialized cells in the brain (see Fodor, 1983) which was rejected by Luria. Since Vygotsky account was not reductionist and he was well aware of crisis which the psychology faces such as historicism, a construction of path on which socialization of modern psychologists was laden without much cognizance about the history of oppression and drawing of critical contour towards the process of psychologization. Fernyhough (2010) noted that "Vygotsky's proposed solution to the "historical crisis" in psychology (Vygotsky, 1997), or the problem of providing non-reductivist scientific explanations which go beyond the mere description of complex psychological phenomena, was to seek the origins of such behaviour in realms beyond the biological organism" (P. 7). It was also stated that the higher mental functions are under voluntary control of organisms, accessible to consciousness and mediated by cultural artefacts such as signs (P. 10) and symbols. In other words, the higher mental functioning are conscious but mediated activities. The role and responsibilities of an individual in terms of being intentional and conscious are the higher mental functioning of the brain nurtured in the social and cultural context. The mind as a discursive entity was imagined in various theoretical traditions inadvertently linked to the Vygotsky and in Luria approach. Though linguists such as Bakhtin who focussed on the self-orientation in communication as compared to Vygotsky and Mead who seems to be other focussed (Markova, 2003), the mediated activities of society, history, agent or experienced others played important role in the higher mental functioning.

Bakhtin's emphasis on the development of self-regard was egoistic rather than shift in the ego with the intervention of other or what Markova (2003)[3] shown as an ego-alter process. This development of self-consciousness is not original as per the Vygotskian approach which aptly inspired Luria's neurology. Social understanding is mediated by the development of the child's higher mental process with active collaboration of the use of social and physical objects under the guidance of capable adults. For example, if the child's engagement with the moral science book is not demonstrated by the teacher or parent, the examination of correct and incorrect moral categories preferred in the cultural domain will not be possible. The regular engagement with the moral artefacts of society, makes the child sensible to the actions approved and not approved by the social agents, which seems important in the development of cortical zones of the brain. Similarly, the development of legal consciousness in the child and at the latter stages, depends just not on the processes of maturation but the active engagement with the moral agents of society and this insinuate the systematic development of the localized brain area seemingly responsible for the higher mental functions such as understanding of the social roles and emerging situations, acting as a responsible citizens, understanding of the terminal and instrumental values, sense of ethical and unethical functions and so on. So, these functions are conscious in itself and depend upon the agents who are also taken as altars, such as teachers, policemen, parents, children stories, movies. When something is habituated and taken for granted, the repositioning of one's attitudes are carried out with the help of these alters directly or indirectly. Vygotsky showed how higher mental processes are mediated by culturally relevant artefacts, conscious process and are under voluntary control as compared with the involuntary functions which are fundamental and based on reflex (see Vygotsky, 1978; Fernyhough, 2010). Since Vygotsky and Luria (1993) noted the importance of human use of

[3] See Thinking through the mouth (Chapter 4; P 89-117). In Markova, I, (2003). *Dialogicality and Social Representations.* UK: Cambridge University Press.

social and psychological tools such as signs and symbols including the languages, the different levels of development analysis as proposed by Vygotsky (1978) such as Phylogenetic, cultural historical, ontogenetic and microgenetic[4] had an important impact on the socialization of social mores, preferred activities and neurological systems. Luria showed that society and language are important mediating tools which shape the cortical functioning and so the brain becomes an emergent biological structure in response to the varieties of experiences. The victim and the offender brain difference seems to be the result of the above mentioned developmental and social reason under which the brain is shaped and mind gets its meaning. The overriding response of the body in one's action as debated in the legal domain through the linking of evidences, despite the full access to the system of control and knowledge about right and wrong[5]is the conscious mental function, where some environmental cues are chosen and registered at the cost of something which was more socially approved. Thus, the ability to choose and veto different stimuli is a higher mental process accessible to the conscious person and mediated by the discourses and social scripts. If someone misses those social scripts and majority of his/her time was out of the discourse of morality, any act committed still has to go through the legal schema in order to preserve the social and legal rights of the victim. The question comes up whether the retributive justice has any rehabilitation program for the offender and what kind of activities and discourses is attached to his/her new rehabilitator socialization while in the process of incarceration. It is also debated that there are some actions

[4] According to Palinscar (1998), "There are four aspects essential to developmental analysis from a Vygotskian perspective, all of which are interwoven. Phylogenetic development is concerned with what distinguishes humans from other animals. Of particular interest in this analysis is human use of tools—especially the psychological tools of signs and symbols, including language (Vygotsky & Luria 1993). A second level of analysis, cultural/historical, calls attention to the profound role that the practices of particular cultures and of the same cultural group play, over time, in development. Ontogenetic analysis calls our attention to ways in which individual characteristics, such as physical or mental challenge, age, temperament, and the fruits of individual history influence development. Finally, microgenetic analysis deals with the actual processes of interaction between the individual and his or her environment; hence microgenetic analyses take into account the interplay of individual, interpersonal, and social/cultural factors simultaneously" (P. 354)

[5] In Vygotskian terminology these are the mediating tools that shape the person conscious response to the world

whose commencement itself is gruesome and dehumanizing to the oppressed and victims that looking for its cause such as intention and knowledge will not surmount to any kind of rehabilitation to the victim. The overhauling of the system and latent beliefs about different social groups or individual members, discourses about the identities of the historically oppressed or about people from different groups. The sources of brain development towards the higher conscious process towards the society, structure, rule and regulations is the culturally based demands on the child and gradually it is the systematic similarity of consciousness and not the material brain or body and something intangible such as soul which constitutes one's identity. The identity gets its meaning when a person consciously acts in collectivity. Some of the thought experiments on tele-transportation in which the person's brain and body were deported, a molecule-for-molecule replica built on another planet (e.g. Parfit, 1984, p.199). It was assumed that exact duplication of the brain will exactly duplicate the psychological life (see Schechtman, 2014), however, the point of contention is about the reestablishment of social and legal norms and the role of the context in which the person forms meaning with others. Even if the matter is the same, the sameness of the consciousness towards the new space will not be the same, which effectively requires a meaningful engagement. Brain is not everything and what we deal with in the actual social space is the human agency of being in consensus with others. The difference in the opinion, diversion, revolutionary acts and interpretations of given symbols is itself part of broader human tendency as a conscious agent. The political methods and preferences to maintain status quo differ among different cultures. Some cultures believe in science and technology to enhance their status quo and legitimacy and some use science till the point it doesn't impels the public to question their legitimacy. In the above cases the former allows questioning and anomalies but not the latter, former also use manipulation and other tactic sometime to create condition of procedural fairness in order to suppress the rise of non-mainstream or dissenting voice, as compared to the latter which use immediate and

full coercive methods to suppress the rise of any alternative viewpoint not conducive to the state. The point is to show that the socio-political and sociocultural context are linked and from these vantage points science is limited or further located. Some of the personality theorist like George Kelly[6] called us naïve scientists who naturally look to the cause for the observable effect. This also connects to the public nature of social reality construction in which the person has the theory, based on his/her everyday social relationships. It may happen in both the above mentioned cultural contexts, however, what is most preferred by the scientific communities promoted by the state, whether in terms of science reeling where series of explanations with refuting and confirming evidences and data matters or what only matters in terms of technology replication and subjugating people diversity under the unique umbrella of coerciveness with redundant, ideological and fake explanations. So, what format of culture is most available to the people's development of their higher mental process, and shaping of their brain depends upon the varieties of routes to the cultural understanding and preferences. It is noticed that culture where laboratory sciences is part of their discourse, neuroscience easily comes to their understanding and so the legal domain as compared with the culture, where belief and practices are more based on the non-mainstream explanations. Though neuroscience has established its place universally, the belief and its use in the domain of justice and in general depends upon the place of laboratory science in that particular socio-political-cultural context comprising the nascent cultural values, universal values based on neoliberalism, or culture that mix different values as a form of hybrid values, which shaped the identity of the person. However, Luria didn't universalize the vocabularies of the brain but he emphasised how these cultural forms shape the brain development and the associated higher mental process. In order to understand how people, become an active legal agent, imbibe the values, socialize themselves with the role model and form meaning with the different social objects in terms of liking and disliking, it is

[6] Kelly, G. (1955). *The psychology of personal constructs*. New York: Norton.

important to understand the language process and the people everyday intersection with the artefacts which seems to neutral, dominant or regulatory and easy to operate. Mind can only be understood if all its biological, social, cultural or symbolic and subjective aspects are examined. The popular understanding that neuroscience itself is ever-growing and provides evidence of the determinism of the brain is a limited view, since neuroscience in the domain of law can only be understood if the above mentioned disciplinary aspects can be examined and demonstrated, both at the self-observational and social level.

Mind in the context

What is mind? How do we infer about the mind based on empirical observation through behaviour and brain studies? Why legal systems preferred the image of rational and objective reasoning, but judges exhibit the same subjective process (e.g. political views, class positions, religious beliefs, intuitions) as others (Fox, 1997)[7]? Does dualistic understanding of the mind rule our society? In what way are these dualisms inscribed as antinomies having polar opposite nature? That is, how any social categorisation becomes rigid in mind and taken as reality and how it can be re-categorised in the context of unbiased decision making, and how does the brain studies intervene? These are questions which require us to dwell deep into the metaphysics of mind, which is also a construct, and dominantly considered as a brain functioning.

In psychology and philosophy mind was discussed extensively and laid its extension to the other domains of social science and sciences. For example, in cognitive psychology, which usually critical psychologists and cultural historical psychologists (e.g. Vygotsky, 1978) took it as something reductive and lacked the connection with the social context, mind was

[7] Dennis Fox (1997). Psychology and Law: justice diverted. In Critical Psychology: am introduction. London: Sage.

predominantly taken as a native presider of human thought and action. It was assumed that it is the mind which formed the first causal principle to understand any action, though other explanations in the discourse and language were also laying its influence from the other critical social science disciplines. In the legal domain, it is very important to have the view of one's knowledge and intention causally connected to the action and its manipulations. The psychological influence and at the instrumental level the role of forensic psychology and forensic science brought the mind at the forefront in terms of assessing the preconceived thoughts and intentions. Further we will see how the mind mattered in the disciplinary discourse of psychology which eventually seemed to influence the legal decision making processes through its developed models about human perceptions and information processing processes, and its application through the emerging dolman such as an artificial processing of the information.

Mind as a concept in modern psychology

The perspective adopted in the process of interrogating the mind is psychological and deductive. However, it is also imperative to be self-reflective and critical while exploring the concept of mind. Mind as a nomological entity reflects characteristics which have many worldviews and none has formed the consensus after years of theoretical manipulations. In some of the perspectives, mind is a creative substance and rhetorically dealt, and so that happened in psychology. Psychology, at the outset, tried to structure the elements of mind metaphorized as consciousness. That is to say, the mind was taken as an active conscious process comprising awareness and deciphering its elements was an important task to objectify its status as realist scientific. Since definition of mind is not predetermined and permanent, the hesitation to go beyond the available methods limits its perspective as reductive only, if not eliminativist. The article tries to raise the debate between philosophy and psychology to an

extent where causes are not taken for granted and emergent because of the human cognitive system, but understood as connective phenomenon embedded in the sociocultural context (e.g. Valsiner & , 2000). Thus, the process of measurement of the intensity of the causes in psychology may be misleading, hitherto, this is not to deny the importance of causes which are intended mentally and connect to the outside physical and social world or both.

Is mind, a divisible matter within the body or indivisible and irreducible entity like any invisible soul or simply a term designated for some inexplicable feelings that we experience? Alternatively, is mind something metaphysical which is beyond the human perception which invisibly drives the behaviour? The realm of human psychology relies on experiences communicated in the form of behaviour which is observable through different metaphors of mind. In this regard, decades back, Gilbert Ryle (1949) critically demystified Descartes, centuries long, mind and body distinction, as a ghost in the machine where probabilities of making category mistakes were immense. The category mistake, as pointed by Ryle, occurs in many instances where structure of any entity, such as, mind, is searched in the same format as any other observable and tangible matter. This is a kind of error of classifying an object as belonging to a wrong logical type (see, Feser, 2005; Jacquette, 2009; Ryle, 1949).

Contrary to dualistic perspective as viewed by Descartes, eliminativists perceive, mind as nothing but an irreducible entity, for example, the brain, which creates sets of thought and conscious experience. Modern psychology, however, moved into the terrains of sensation, perception, learning, memory and thinking, probing the mechanism of information processing. Psychologists took the eliminativists and reductivists stance locating the cause behind any action in the mind. The efforts are made while studying it to come out with a reliable methodology which may be helpful in understanding the concept of mind. Mind in some of the philosophical quests was considered as originator of one's existence in terms of behaviour, where both mind and body were considered as substance. The present psychology as a

discipline, with its methods, tries to characterize human information processing as a universal process where the first person viewpoints seem to be missing. In the emerging new field of cognitive neuroscience which is an offshoot of cognitive psychology, the question of existence of mind and consciousness is dealt in a more sophisticated way by placing its roots in complex terrains of the brain.

Brain was considered to be a regulatory mechanism for one's own consciousness, which in turn, from time to time, labeled as mind (see Damasio, 2012; see also Searle, 1980). Some philosophers (e.g. Huxley, 1874) tried to call it epiphenomenalism, where the brain is considered to be the causal factor behind mind and consciousness. Mind was understood through varieties of perspectives, social, anthropological, physical, neuroscientific etc. Looking at mind as an active concept from the Kantian proposition, mind is unempirical, is a matter of reflection which was not at all coming into the peripheries of scientific investigation or scientifically orientated psychological investigation. If going by the side of this perspective, mind is not a variable to understand through physical sciences methods. The existence of mind and consciousness are debatable issues because the facts obtained through observation have its manifestations in observable behaviour only. However, there are instances when emotional contents were cognitively accessed, matched but that too picked up scientifically in terms of reliability of observation and confirmation. As pointed by Damasio (2012) in "self comes to mind" (P. 4) "without consciousness, that is, a mind endowed with subjectivity-you have no way of knowing that you exist". But how then does existence matter, even if we are aware that we are conscious? Does one's existence in the materialistic propositions, rests on the citadel of matters, that is, brain? The approach of neuroscientists accounted for the wonders of nerve cells in the brain that lead to various states of cognition and that is a very important part of mind. But to our knowledge they have actually failed to solve the mystery of something existing after the brain working. The basic question always comes that "why does the brain function that

way? And was that the only process in which brain functions leading to a number of human activities in the context? Why does the human brain doesn't function in any other way like some imaginative alien or may be like a snail?

The debates in the history of various disciplines often get stuck when something invisible is located scientifically. Exactly, it did happen in the pre modern times where concepts like mind were understood through different categories of methodological quests. The questions concerning the existence of mind in the time and space and its association with our behaviour became one of the essentialist probes to come out with an authentic picture of mind. However, the only problem was the tool to capture that authentic picture. In the modern positivist era, it was understood through some mechanism which showed its alignment with the dominant disciplines like physics. But it doesn't give us the confidence of identifying mind by its operationalized definition because operationalization itself was the problem. The mind and its measurement came out with multifaceted pictures. Some placed it in the category of purity and connection with the cosmos and some highlighted its politicized face emanating from the garb of society having theological motivations (Rolli, 2004).

The mind got many pragmatic extensions such as consciousness and its antinomy such as unconsciousness. In psychology the term mind was captured through its ingredients and essence such as one's preoccupation with his/her conscious limits. These conscious limits are the boundaries of experiences which eventually gets blurred in its transitions from past to present. According to Thomas Nagel (1974) in his important paper "What is it like to be a bat" distinguished between our phenomenal experience and its perfect theoretical description. Thus, Nagel asserted that not even the best theory could make us understand "what it is like to be a bat from a bats perspective?". This actually limits the boasting of psychology of capturing the essence of mind. This is more like a claim when one has a feeling of transcendence from one's body to the astral space, which we don't have much observational support. Mind as an

important concept in cognition, needs to be explored through different methodological perspectives. As a catcher in the rye, mind exploration can always be the process, as its definition, nature and spatial and temporal location, experientially, shall be diverted across the time. According to Jacquette (2009), mind, the ontology of mental phenomenon, is the fundamental problem in the philosophy of mind. The ontology of mind, in answering the mind-body problem has direct implications for whether the mind is or is like a machine, whether it is immortal, whether there are immaterial particulars, whether there is more than one kind of substance, whether experience is private or public, and whether there can be free will and moral responsibilities (see Jacquette, 2009).

Descartes' basic contention was the irreducible nature of mind to the brain or matter. Now the question is “Is the brain responsible for our consciousness of identity?” The problem of personal identity is the problem of explaining what it is that accounts for the fact that a person remains the same person over time despite dramatic change in his/her bodily and psychological characteristics (see Feser, 2005, p. 212). Does thinking follow universal patterns? Does every process of understanding the mind follow the same patterns/ methodology? What about other viewpoints? What about rationality which had become irrational under the comparative realm of dominant rationalities? If mind/consciousness and other related attributes of being are separated from the body then why do we get fatigued or tired and our body muscle pinch after long hours of sleeplessness? This I encountered personally while in the feeling of thinking late at night. This corresponds to the matter as major causal factors behind my tiredness. However, then one question again emerges : “Are they not just feeling or consciousness of being tired, fatigued or burnout? Why do I feel that I am tired? What is the origin of this feeling? Or possibly, I have not slept and my brain got overworked through firing of the brain cells, utilizing the glucose of the body, and made me feel the reality of being burnout or tired. When we speak of the mind, do we refer only to the living brain or

functioning of the brain, together with the activity of the central and peripheral nervous system? Alternatively, as many people and many religions teach, is there an immaterial spiritual self or soul, that inhibits or uses and directs the body, but is not itself physical or material and may survive bodily death?

To claim that the mind does not exist usually means that it is impossible to account for psychological properties exclusively by means of third person observational and experimental science. The concept of mind is dispensable if cognitive phenomena are more correctly explained by eliminating references to the mind and speaking instead of behaviour, brain events or information processing. Mind can be better placed in the category of consciousness, where the immutable category of brain is more situated into the cultural context, together with its interconnectedness and awareness with the space and time (See Gergen, 2010). The categorization of mind as an entity in itself and the motif to locate its cause in the brain is asymptotic and simply tautological, unless it is closely observed, under the umbrella of varieties of tests. The notions of evolution of mind (see also Dennett, 1995) in the history can also be deconstructed through variants of contexts such language development, movement in the spatial contexts, sociopolitical systems and the constructed history. The emergent structure of mind, self and identity also matters in the everyday discourses and interactions, and sometimes unnecessary deconstruction led to the unsubstantial, reductive and atomist understanding of the person. To understand the mind, identity and self of the person it also matters to move to and fro and build up the case for reconstruction. This is what happens in the brain in due course of time as consciousness shifts, new meaning emerges and the idea of humanity is reconstituted in contexts which itself is not stagnant (Fox, Prilleltensky & Austin, 2009). Mind is very difficult to be interpreted by the modern and prevalent tools of psychology because the semantics and syntaxes associated with the observable behaviour in any context changes. Also, mind was addressed by William James as a stream of consciousness which is in

flux, transition and doesn't get stagnated. Mind, it seems cannot be apart from the substance and social context. Thus, it may be the case that we assume it to be something tangible and visible, for example, consciousness, as a first frontier (Robinson, 2010), to understand and reinterpret it. From the above discussion, we can infer to some extent that the mind is still standing on the citadel of confusion with immense scope of inquiry in the future. The mind is still a concept in modern psychology and making it a construct or legitimate entity will only create friction in the progress of discipline and its alignment with other related disciplines.

Brain, Mind and Law

The dominance of legal positivists seems to occupy a majority of legal domain, developing a legitimate form of interdisciplinary connection between positivists science and law. In order to solve the uncertainty linked to the authenticity of facts, sometime pre-fabricated and laden with reified categorization coming out of the institutionalized form of diagnostics (see also Hare-Mustin & Marecek, 1997). The mind under the legal standards mostly corresponds to 'sensory, affective, cognitive, and cogitative categories' (Pardo & Patterson, 2013, p. xviii), which in some way form the evidential basis and give better scientific explanation of the subjectivities. Though debate extends to the authenticity of the underlying phenomenon or subjectivities, 'understanding the complex relationship' between the mind, mental state and action requires butter linkage to something not only empirically tangible but conceptually clear claims (Pardo & Patterson, 2013). Law stands on the platform of obedience, threat and power despite its agenda of justice. The paradox is complex to understand as power and obedience matters to the status quo and agents of society believe in the law to maintain the legitimacy of that status quo. Even the moral principle culturally embedded in the society may not be approved universally, the untouched appropriation of the same makes even the gruesome crime as legitimate. As in the case of lynching, honour killing, inadvertent intrusion into the

personal liberty etc. At the outset it seems incompatible how brain science matters in this debate and examples pertaining to the freely or politically chosen action. However, it is observed that brain science with its dominant metatheory of positivism aptly combined legal practice and judicial decision making. Though Mora (2016) pointed that humans are not just brain, brain functions are not human behaviour, and a pattern of activation is not an intention, the causal connection of the mind with the action taken for granted. This connection is observed in the legacy of lie detectors and other contemporary like brain fingerprinting, which is gradually taking a dominant role to understand the lie, deceptions and self-deception. The brain has its importance, but the ethics of data and measurement is a serious matter.

How much the term brain has become a buzzword among the common people, a fascinating aspect of the human body observed to play a vital role? Brain studies positioned the brain as an essential body part playing a regulatory function which needs to be studied through the available instruments in particular methodological perspective. The current time has made it more visible, reachable and interactive with the available imaging techniques. It's something which is both inside and outside. The brain was not as pronounced and powerful in front of the will of the person, rather it was in some belief system that it is a valuable organ which controls to some extent the functioning of the body. In the legal domain the individual responsibility matters in the judge's decision making but the individual's brain matters till the time it shows some defect due to which the normal functioning of the person got derailed. The conceptual confusions arising out of existence of mind, brain and individuals will connect to the historical and philosophical construction of mind and body duality. The mind and body duality has been the major stand which was powerfully placed in society. Though there were other viewpoints and worldviews who rejected this dualism and projected this world as consisting of singularity of matter or the mind. Despite so many years of struggle for reforms, the dualities persisted and naturally inclined into the consciousness of people. Duality resolves

the fixity of different meta-theoretical strands and keeps the knower in between the poles of confusing elements of mind. The legal domain avoids this confusion by taking a stand for tangibility where the intentions, beliefs, actions or behaviours, mindfulness are all conjectured through the concrete, systematized and empirically established objectified image. As per the Pardo and Patterson (2013) notion, duality is problematic where the picture of an entity having undecipherable metaphysical form has no place in the legal domain. Since legal domain is not apart from the social context, but contributes in building up a just society, its interdisciplinary avenues are not limited to few disciplines. In the couple of earlier decades, the legal field was interacting with the social science and science disciplines on an ad-hoc basis, without losing hold over the established legal structure, category and boundary (see also Zeki, Goodenough & O'Hara, 2004; Santosuosso & Bottalico, 2009). The exposure of other disciplines didn't lead to the integration with law, however, other disciplines proved to be the critical acquaintance only. The hope that legal domain will integrate with disciplines like neurosciences will, to an extent, make itself more trustworthy, reliable and objective. The law depends upon the sanctioned rules and regulations under which the attributed causes are discovered and appropriated. These sanctions and conventions about the meaning of actions, morality and will can also be interpreted as a social will of the society.

Society has a deeper and connotative meaning and it is interpreted through various channels and identities. Society in itself cannot be free as its nature demands associations and dependence. However, the meaning of freedom is also a matter of interpretations and debate. Freedom cannot be universally defined singularly, for example, free society can be oxymoron or these two combinations of words give a new meaning for social change. The way societal representations of morality, ethics, and responsibility primarily shapes the legal proceedings, chances are good that the spread of the technical understanding of the brain in the society, through various channels such as schools, media and social network, may shape the discourse

of law. The transition of individual responsibility to the individual brain which one is destined not to have a control upon may change the meaning of action, ownership, and responsibility. Though this is some futuristic prediction based on the assumptions, as law was always there so the debate upon the evidence. Law is undergoing transitions, but it always with the combinations of various pieces of evidence to make a case for individual responsibility.

Neuroscience, as a source of knowledge of the individual mind, has given one of the most substantive support to the legal domain, at least in terms of understanding the individuals control over their actions. Neuroscientific mechanisms through which the intentions and acts of individuals are shaped, is also a matter of society under which any individual develops and imbibes the social rules as a matter of brain habituation. The speculations about the authenticity of neuroscientific mechanisms is a matter of many interrelated factors such as technique of brain scanning, public engagement with the brain science, power position of neuroscientific experts, political value and trust of legal domain. Since brain studies have eye opening effects on both general audiences and experts, it is an ever rising research area with enormous findings, increasing research scholars, journals and support from the public and legal domain (Rose, 2005; Rose, 2013). The rise of neuroscience is not just the research that is happening around the world and taken as authentic research, but it is the connection with various other domains in the society such as brain scanning machines, pharmaceutical industries, and huge demand for effective means to improve one's brain for individuals' health and cognitive benefits. The marketing of brain research through numerous conferences and seminars about its functions and dysfunctions had given direct challenge to the will and individual responsibility. This spread of the brain with medical science connected with the local and cultural ways of self enhancement which is any way through the medicines for brain activation seems to be capturing the objective reality of the society. The justifications given on the basis of brain science established a way of understanding the self. The societal assumptions like power

hierarchy have the chance to get converted into new kinds of power dynamics where technology has the final say and all other subjectivities and intuitions are unverifiable and secondary. In this time of anxieties and depressions, they have become a need of survival and one of the foremost means for certain knowledge about oneself. The movement from laboratory settings to the social reality of people through media and discourse, brain studies have created a gap in understanding technical knowledge by the general public. The image of the brain has become more pronounced into the self-understanding and as an emerging vehicle for the understanding of mind. On what platform does the brain images are construed by the public and taken as an authentic source of investigation? The unresolved question about whether legal domain directly engages with the neuroscientific evidence and then the public image about the neuroscience emerges or it is constructed through the common sense image of neuroscience and then connected to law, doesn't have yet a very clear answer. For example, the role of psychological testing, use of various medical techniques at the general level (such as thermometer, blood pressure machine) has integrated and submerged well with the public and an important integration was seen just not between the two or three culture of disciplines but also between public and the technical (see also Kronberger, 2015). Society acts as a check or filter through which the technical knowledge integrates with the practices and also in checking critically the real time transference of technical knowledge into the legal domain. Though this uncritical appropriation of society as a buffer between laboratory knowledge and practice somewhere legitimize the social system and structure. For example, how technical knowledge is understood by different classes in the society and how much those technical knowledge is under their cognitive reach.

In the context of brain studies and neuroscience this understanding is authorized by the techniques of brain scanning which psychiatrists and doctors recommend for diagnosis. The available techniques and their data generate an unquestionable knowledge about the brain

structure and functioning and it has become part of public discourse. Some of the findings suggested that science cannot replace common sense (e.g. Jovchelovitch, 2008), but common sense is also fragmented and there is a hierarchy of imposition of common sense on others. Legal domains generally seem to have a middle class take on justice where the classists' common sense defines the judgment. Here the common sense understanding of the brain may surpass the technical understanding due to many social psychological underpinnings like power dynamics and class supremacy. The understanding of law is a perception about the social symbols and endorsement of their existence in collectivity. These social symbols are institutionalized and people derive meaning in their successful conformity. For example, the respect shown towards a national flag is a token of a good and responsible citizen who abides by the law and has a sense of history and culture. Amsterdam and Bruner (2000) aptly extended the idea of culture in law. They stated that "If law is to work for the people in a society, it must be (and must be seen to be) an extension or reflection of their culture. Therefore, we shall have to explore as well what culture is, how it operates and through what instrumentalities" (p. 2).

In the neuroscientific terminology, this is like a neural adaptation of the social object in one's behaviour which is habituated. Further, this is one's will to show respect to the flag towards which the brain gets adapted when it sees a particular shape and colour. This is also a marker of collective memory of being a citizen, a native who struggled and created an identity. Law can be taken as a vantage point which seems to anchor the meaning of collective identity which is further clearly channelized and systematized. Thus, the concoction of brain and law systematically complement each other and affirm the socio-political norms dominantly displayed through science and status quo. Since science has the power to liberate, it is undeniable that neuroscience has the capacity to deal with the public understanding of responsibility, will and actions.

References

Amsterdam, A. G., & Bruner, J. (2000). *Minding the law: How courts rely on storytelling, and how their stories change the ways we understand the law-and ourselves*. Cambridge: Harvard University Press.

Bruner, J. S. (1957). On perceptual readiness. *Psychological Review, 64*(2), 123–152. https://doi.org/10.1037/h0043805

Choudhary, S., & Slaby, J. (2012). *Critical neuroscience: A handbook of the social and cultural contexts of neuroscience*. UK: Willey-Blackwell.

Damasio, A. (2012). *Self comes to mind: constructing the conscious brain*. London: Vintage.

Dennett, D. (1995). *Darwin's dangerous idea: evolution and the meaning of life*. London: Penguin

Fernyhough, C. (2010). Vygotsky, Luria, and the social brain. In B. W. Sokol, U. Müller, J. I. M. Carpendale, A. R. Young, & G. Iarocci (Eds.), *Self and social regulation: Social interaction and the development of social understanding and executive functions* (pp. 56–79). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195327694.003.0003

Feser, E. (2005). *Philosophy of mind*. London: One World.

Fodor, J. (1983). *The Modularity of Mind: An Essay on Faculty Psychology.* New York*:* MIT Press.

Fox, D., Prilleltensky, I. (1997). Critical psychology: An introduction. New Delgi: Sage

Fox, D., Prilleltensky, I., & Austin, S. (Eds.). (2009). *Critical psychology: An introduction* (2nd ed.). Sage Publications Ltd.

Freire, P. (1970). *Pedagogy of the oppressed.* UK: The Continuum Publishing Company

Gergen, K. J. (2010). The Acculturated brain. *Theory & Psychology, 20* (6), 1-20.

Hacking, I. (1994). The looping effects of human kinds. In D. Sperber, Premack, D., and Premack, A. J. (Ed.), *Causal Cognition: A Multi-disciplinary Approach* (pp. 351-382). Oxford: Clarendon Press.

Hare-Mustin, R. T., & Marecek, J. (1997). Abnormal and clinical psychology: The politics of madness. In D. Fox & I. Prilleltensky (Eds.), *Critical psychology: An introduction* (pp. 104–120). Sage Publications, Inc.

Holzkamp, K. (1983). *Grundlegung der Psychologie* [Foundation of psychology]. Frankfurt am Main, Germany: Campus.

Holzkamp, K. (2013). Psychology: Social self-understanding on the reasons for action in the conduct of everyday life. In E. Schraube & U. Osterkamp (Eds.), *Psychology from the standpoint of the subject: Selected writings of Klaus Holzkamp* (pp. 233-351). New York, NY:Palgrave Macmillan, http://dx.doi.org/10.1057/9781137296436

Huxley, T.H. (1874). On the hypothesis that animals are automata, and its history. *Fortnightly Review, 16*,555–580.

Jacquette, D. (2009). *Philosophy of mind: The metaphysics of consciousness*. London & NewYork: Continuum.

James, W. (1890). *Principles of psychology* (vol.1). Retrieved from https://archive.org/details/principlesofpsyc01jameuoft.

Jovchelovitch, S. (2008). The Rehabilitation of Common Sense: Social Representations, Science and Cognitive Polyphasia. *Journal for The Theory of Social Behaviour, 38*, 431-448.

Justickis, V. (2008). Does the law use even a small proportion of what legal psychology has to offer. In D. Canter & R. Zukauskiene (eds), *Psychology and law: Bridging the gap* (pp. 223-237). Aldrshot: Ashgate

Kanai, R., Feilden, T., Firth, C., & Rees, G. (2011). Political orientations are correlated with brain structure in young adults. *Current biology, 21*(8), 677–680. https://doi.org/10.1016/j.cub.2011.03.017

Kant, I. (1781). *The critique of pure reason*. Retrieve from http://files.libertyfund.org/files/1442/0330_Bk.pdf.

Kelsen, H. (1941). The Law as a Specific Social Technique. *University of Chicago Law Review*, 9 (1), Article 5.

Kincheloe, J. L., Steinberg, S. R., & Villaverde, L. E. (1999). *Rethinking intelligence: Confronting psychological assumptions about teaching and learning*. London: Routledge

Kronberger, N. (2015). Of worlds and objects: scientific knowledge and its publics. In G. Sammut, E. Andreouli, G. Gaskell, & J. Valsiner (Eds.), *The Cambridge Handbook of Social Representations* (pp.358-368). UK: Cambridge University Press.

Markova, I, (2003). *Dialogicality and Social Representations.* UK: Cambridge University Press.

Martín-Baró, I. (1994). *Writings for a liberation psychology.* (A. Aron & S. Corne, Eds.). Harvard University Press.

Mora, M.N. (2019). How Law and Neuroscience became a new field of study. *Bioethics Update, 5*, 75-88.

Nagel, T. (1974). What is it like to be bat? *The philosophical Review, 83* (4), 435-450.

Nam, H. H., Jost, J. T., Kaggen, L., Campbell-Meiklejohn, D., and Bavel, J. J. V. (2018). Amygdala structure and the tendency to regard the system as legitimate and desirable. *Nature Human Behaviour, 2*, 133 – 138.

Pardo, M. S., and Patterson, D. (2013). *Mind, brains and law: The conceptual foundations of law and neuroscience.* New York: Oxford University Press.

Palincsar, A. S. (1998). Social constructivist perspectives on teaching and learning. *Annual Review of Psychology, 49,* 345–375. https://doi.org/10.1146/annurev.psych.49.1.345

Parfit, D. (1984). Reasons and persons. Oxford: Oxford University Press.

Patterson, D., and Pardo, M. S. (2017). *Philosophical foundations of law and neuroscience*. UK: Oxford University Press.

Pedersen, W. S., Muftuler, L. T., & Larson, C. L. (2018). Conservatism and the neural circuitry of threat: economic conservatism predicts greater amygdala-BNST connectivity during periods of threat vs safety. *Social cognitive and affective neuroscience*, *13*(1), 43–51. https://doi.org/10.1093/scan/nsx133

Pickersgill, M. (2013). The social life of the brain: Neuroscience in society. *Current Sociology*, *61*(3), 322–340. https://doi.org/10.1177/0011392113476464

Prinz, J. J. (2012). *Beyond human nature: How culture and experience shape our lives*. New Delhi: Penguin.

Rexilius, G. E. (Ed.). (1988). Psychologie als Gesellschaftswissenschaft [Psychology as a social science]. Opladen, Germany: Westdeutscher Verlag.

Robinson, R. (2010). Consciousness: the first frontier. *Theory & Psychology, 20* (6), 781-793.

Rolli, M. (2004). Immanence and Transcendence. *Bulletin de la Sociite Amincaine de Philosophie de Langue Franfais, 14* (2), 50-74). Retrieved from file:///C:/Users/pc/Downloads/460-987-1-SM.pdf.

Rose, N. (1996). Inventing ourselves: Psychology, power, and personhood. Cambridge, UK: Cambridge University Press.

Rose, N., & Abi-Rached, J. M. (2013). Neuro: The new brain sciences and the management of the mind. New Jersey: Princeton University Press

Ryle, G. (1949). *The concept of mind*. London: Penguin.

Santosuosso, A., & Bottalico, B. (2009). Neuroscience, accountability and individual boundaries. *Frontiers in human neuroscience*, *3*, 45. https://doi.org/10.3389/neuro.09.045.2009Rose, 2005

Schechtman, M. (2014). The malleability of identity. In S. Luper (ed), *The Cambridge companion to life and death* (pp. 64-79. Delhi: Cambridge University Press.

Searle, J. (1980). Minds, brains, and programs. *The Behavioural and Brain Sciences*, *3*, 417-457.

Teo, T. (2015). Critical psychology: A geography of intellectual engagement and resistance. *American Psychologist*, *70*(3), 243.

Tolman, C. W. (2009). Holzkamp's critical psychology as a science from the standpoint of the human subject. *Theory & Psychology*, *19*, 149—160. http://dx.doi.org/10.1177/0959354309103535

Trilling, L. (1972). *Sincerity and Authenticity*. Cambridge: Harvard University Press. doi:10.2307/j.ctvjhzrdp

Valsiner, J., & Veer, R. (2000). *The Social Mind: Construction of the Idea*. UK: Cambridge University Press

Vygotsky, L. (1978). *Mind in Society: Development of Higher Psychological Processes* (Cole M., Jolm-Steiner V., Scribner S., & Souberman E., Eds.). Cambridge: Harvard University Press.

Vygotsky, L. S. (1997). The historical meaning of the crisis in psychology: A methodological investigation. In R. W. Rieber & J. Wollock (Eds.), The collected works of L. S. Vygotsky: Vol. 3. Problems of the theory and history of psychology (pp. 233–343). New York, NY: Plenum.

Vygotsky, L. S., & Luria, A. R. (1993). *Studies on the history of behavior: Ape, primitive, and child.* (V. I. Golod & J. E. Knox, Eds.). Lawrence Erlbaum Associates, Inc.

Zeki, S., Goodenough, O. R., & O'Hara, E. A. (2004). How neuroscience might advance the law. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, *359*(1451), 1677-1684.