Behavioral Decision in Development of Henan Animation Industry under “Internet+” Environment

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ABSTRACT
Management shortage, incomplete industry chain, unblocked enterprise communication and unreasonable industrial structure are prevailing in various industrial clusters in the course of animation industry clustering of Henan Province, and all those problems hinder effective development of Henan animation industry severely. Facing such many problems, this paper will study Henan animation industry clustering under “internet +” environment systematically according to cognitive neuroscience, and the research result will yield great theoretical and practical significances to steady development of Henan animation industry and serve as behavioral decision basis for development of Henan animation industry.

Key Words: Cognitive Neuroscience, Behavioral Decision, Henan Animation Industry, Internet+

Introduction
Cognitive neuroscience, which is developed based on (brain) neuroscience and cognitive science, is aimed to study human cognition mechanism, intelligence mechanism and laws, including consciousness, learning, memory, reasoning, language comprehension, knowledge acquisition, attention, emotion and motion control. With constant breakthroughs and innovations in new generation of digital information technology represented by IOT, cloud computing and big data under the drive of changing technology, economic industry, which takes technology as primary productive force, has an industrial operation adjustment accordingly, and a large batch of traditional industries, to keep pace with the times, also make industrial adjustment, so that they can be transformed and upgraded by integrating internet technology and traditional industry reasonably (Magnani et al., 2009). “Internet+” is online and digitalized traditional industry in essence. This business model changes previous mode only restricted in a certain department or enterprise and can flow and exchange between industrial upstream and downstream and among collaborative subjects at the lowest cost (Hu et al., 2015). Henan animation industrial cluster, which is centered on animation industry development, generates a huge scale effect after beginning to take shape, e.g. industrial synergistic effect, enhancing industrial competitiveness and lowering cost advantage. But currently, management shortage, broken industry, weak cooperation among cluster enterprises and similar cluster industrial structure become adverse factors to restrain effective operation of Henan animation industry cluster. Therefore, applying cognitive neuroscience theory to research behavioral decision in development of Henan animation industry is an effective way to boost Henan animation development (Bullock et al., 2009).
Cognitive neuroscience-based behavioral decision in animation industry

Theories of cognitive neuroscience and behavioral decision and development concerned

Tissue structure of functional area and cognitive nerve centre of brain, which can be compared to computer chip, is controllable, layered and well-aligned. Brain includes telencephalon, diencephalon, cerebellum, brain stem and medulla spinalis from front upper part to rear lower part; of which, telencephalon is the superlative nerve center of the whole neural system, cortex is the place for generating, encoding, storing, outputting and inputting human consciousness and active zone of advanced cognitive activity. These are the most critical several conceptual areas. Frontal lobe is related to somatic movement, voice, language and high-level thinking activity; parietal lobe involves with somatic sensation, taste and language; occipital lobe is in charge of visual information integration; temporal lobe is relevant to auditory sense and language memory; lobus insularis is in connection with visceral sensation. Brodmann (1909) divided the whole cortex into 47 areas with cellular staining method (Thilakarathne et al., 2015), which has been applicable to all functional areas so far (Luo, 2006). Fundamental assumption of cognitive neuroscience for (brain) cognitive function and brain functional area is: Complex brain function can be decomposed into simpler and more ordinary processes, and occurring area of these simple processes can be positioned according to anatomy and studied on a relatively dependent basis. Complex brain function (e.g. cognition-based consciousness and thinking) is usually completed jointly by multiple brain functional areas. Generally speaking, brain activity, whether simple or complicated, is closely related to some behaviors in general (Litt et al., 2008). For that reason, cognitive neuroscience is easily involved in brain physiological basis field of researching some key human behavioral patterns, i.e. interpreting classical behaviors of human society at the level of brain science. As a result, cognitive neuroscience has a cross development with social sciences involving human behavior, particularly for behavioral decision.

Behavioral decision was founded by Professor Herbert A. Simon, winner of 1978 Nobel Prize in Economics and famous managerialist. But according to following research, human beings always have deviation in routine decision, and the deviation is regular and systematical and plays a solid foundation for subsequent development and application of behavioral decision theory. On the basis of that, Daniel Kahneman puts forward research issue of decision stage further and believes different decision stages have different utilities; he divides individual utility into four different utilities: expect utility, decision utility, experienced utility and remembered utility. Relation of these four factors is shown in the Figure 1 below:

Cognitive neuroscience is further developed with economics experiment method and other scientific research methods. Decision will generate an uncertain response under the function of cognitive neuroscience when behavioral decision issue is under rapidly developing and changing society, especially in today’s times when internet shows an extraordinary development. Subconscious will influence decision: Figure 2 is a subconsciously corrected decision model (Thilakarathne et al., 2014). Besides “reasonable decision”, “rational choice for future result” and other factors, decision is also influenced by nonconscious bias (subconsciousness) prior to similar context awareness via these two approaches: 1. Influence decision indirectly by acting on “reasonable decision” and “rational choice for future result”; 2. Influence decision directly.

Figure 1. A decision model based on the perspective of behavioral decision making

Figure 2. The procedures of behavioral decision making combining cognitive neuroscience
New media and Henan animation industry development under “internet+” background

Network is gradually transformed from wired to wireless, from fixed to mobile and from single business to multimedia business with development of mobile development (Ridderinkhof et al., 2004). Wireless network technology breaks temporal and spatial network information of wired network, and accordingly, mobile internet booms, permeates into various social fields rapidly and brings about great convenience to human production and life. “Internet+” is not a simple overlapping of internet and traditional industry but in-depth integration between traditional industry and internet and aimed to form a new development pattern. In the era of new media, information increasingly tends to visual, dynamic, demassified and interactive features. New media derives a new-type industry chain model for animation industry, i.e. “production and creation of animation cartoon and comics—playing, publishing and application on media platforms—continuous development and of animation image and brand and R&D of derivative products—promotion and marketing of animation product”. In the whole chain, new media makes animation industry increasingly associated in the whole cultural industry environment and widely applied to culture entertainment, individual consumption, teaching aid and other fields in more and more digital forms. In particular, with convenience, interaction, content fragment and open creative platform that mobile internet embodies, animation industry is able to subvert traditional model and steps into the era of nationwide creation (Waechter et al., 2015).

With internet and diverse animation APPs having a cross development through social platform, video website, etc., a multimedia, multi-angle, multi-channel and three-dimensional dissemination model is realized and comics and animation breaks away from the constraint of book and television and can be spread whenever and wherever possible. In 2018, Chinese netizen scale reached 668 million and internet penetration was 47.9%. The coming of internet era provides a favorable condition for spread and growth of animation industry. Henan animation industry gradually shows the changes below: First, platform-oriented development is increasingly obvious. Policies that governments at all levels have issued since 2008 to support development of animation industry play a critical role in boosting reasonable layout of Henan animation industry and realizing overall, coordinated and sustainable development of animation industry. In Measures on Promoting Development of Animation Industry issued in May 2011, policy measures to promote development of Henan animation industry were put forward. Under the call of building an animation high-speed channel network, Henan animation industry is improving its industry chain constantly and harvests initial success. Establishment of animation high-speed channel network can not only strengthen exchange and cooperation among local animation enterprises in Zhengzhou greatly but also lower operation cost of enterprises. Second, advantage of local animation emerges. In 2011, Henan Xoyto Animation Group Co., Ltd. was founded. It is China’s first inter-regional, multi-industry, multimedia and multi-ownership provincial animation group. In 2012, Henan Comics Era Media Co., Ltd, affiliated to Henan Daily Press Group, was listed to list of national key animation enterprises and the operated magazine Comics Monthly was rated as national key comic works. Third, animation creativity springs up constantly. Henan animation have been developed in a new type since 2012: animation project for inheriting Chinese history civilization, focused on economic zone of central China. Original comics Xoyto Rescues Angle won the best children’s comics prize in the 9th Golden Dragon Award and Henan “Three-level” Spirit, Rural Red Flag Canal, Shaolin Haibao, Taihao Fuxi and other animation films reflecting humanistic spirit of central China emerge in large numbers. Network animation and mobile animation, which are representatives of mobile internet animation, show a rapid development momentum in recent years, and in the next few years, will become new force of animation industry. Table 1 describes changes of Henan animation industry.

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2017</th>
<th>Rate of increase (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animation Enterprise</td>
<td>About 2</td>
<td>&gt;100</td>
<td>&gt;98%</td>
</tr>
<tr>
<td>Animation Duration</td>
<td>400 minutes</td>
<td>&gt;10000 minutes</td>
<td>&gt;96%</td>
</tr>
<tr>
<td>Animator</td>
<td>About 100</td>
<td>&gt;1500</td>
<td>&gt;93.3%</td>
</tr>
<tr>
<td>Animator Kind</td>
<td>About 60</td>
<td>&gt;2100</td>
<td>&gt;97.1%</td>
</tr>
</tbody>
</table>

Table 1. The change of animation industry in Henan province in the last five years
**Cognitive neuroscience–based analysis on behavioral decision in development of Henan animation industry**

**Build animation industry chain focused on “playing platform”**

Currently, the critical factor to hinder development of China’s animation economy is that TV communication industry is hard to integrate with animation industry; besides, TV media should be the focus of animation industry operation. Therefore, the core to activate development of the whole animation economy is building “playing platform”-focused animation industry chain, improving TV function and effect and changing operation mode of TV station. Undoubtedly, animation should not be restricted to TV play but be involved in paper publishing, toy and stationery commodity industries and even in fashion business, namely, covering the whole market and being penetrated into all aspects of social life. Figure 3 lists behavior decision suggestions from four aspects.

**Implement national animation game excellent project**

Improve awareness of the public for animation industry constantly, call on the whole society to concern and support development of animation industry, support original works vigorously and raise core competitiveness of animation industry gradually. Take advantages to make breakthrough in making and release of animation film, improve popularity and confidence in Chinese animation, encourage enterprises to make high-quality and high-grade original works and set up brand image through contest; try to create a situation for making original works constantly, ensure source of online game animation industry chain is at high starting point and establish abundant material foundation. Enhance independent innovation capacity of animation industry continuously.

**Expand function of industrial park and speed up construction of online game animation park**

Generate animation enterprise clustering effect rapidly by allowing online game animation project with distinct product feature, high technical level and promising market prospect settled in animation park of Henan Province. Municipal government should offer a certain preferential policies to conforming projects, so as to accelerate industrial, intensive and international development. Make the best of existing urban environment to build animation culture professional street and set up landmark buildings as place for gathering animation talents through replacement and transfer; change single function of streets and transform towards art street and animation street; form the culture with Henan’s characteristics, increase urban vitality and improve urban function.

**Strengthen cultivation of animation professional talents**

Animation industry, which is similar with other cultural industries, need keep a reasonable talent structure, too. In terms of vocational education talent cultivation mode, the different levels of cultivation mode, integrating senior technician, technician, senior worker and short-term training, should be established, which is the advantage of vocational education exactly. Meanwhile, such way is in favor of scale production, output increase, quality stabilization, cost decrease as well as technology standardization, post subdivision and operation marketization in the road of industrialization. As shown in Figure 4, with cognitive neuroscience introduced to behavior decision of Henan animation industry, overall profit space of Henan animation industry will be improved constantly, which can boost...
sound progress of Henan animation industry remarkably.

**Figure 4.** The impact of cognitive neurology on the profit space of Henan animation industry

**Conclusions**

Animation industry, as an emerging industry rapidly developed in the world in recent years, is increasingly concerned by world’s major countries by virtue of its distinct cultural transmission function. In a certain sense, competitiveness of animation industry is a kind of cultural competition. It is a rare opportunity for development of animation industries in Henan and even South China. Introducing cognitive neuroscience to behavioral decision in Hanna animation industry can provide decision basis and reference for government department. The author believes, with China’s reform constantly deepened, animation cultural industry, through technological and cultural innovations, must grow vigorously and become an inexhaustible motive force for the realization of a great revitalization of the Chinese nation.

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**References**


