Theory of Knowledge

“Labels are a necessity in the organization of knowledge, but they also constrain our understanding.” Discuss this statement with reference to two areas of knowledge.

Word Count – 1,595

Humans are pattern-seeking creatures, having tendencies to identify similarities or patterns emerging within existing knowledge in shared body of knowledge, along with pursuing likenesses in new knowledge to fit it within shared body. This tendency is primarily to simplify learning and remember knowledge easily[1]. In finding similarities, often words or phrases called **labels** are attached to pieces of knowledge, sorting them under areas of knowledge. This process is known as **labelling,** constituting categorisation and classification of knowledge.

Labels are deemed necessary in **organising** knowledge, which is arranging similar facets of knowledge together. However, benefits of labelling are countered by its limitations in **constraining** understanding of knowledge, essentially by limiting its possible extents within set boundaries. Therefore, this essay will discuss different perspectives on the disparity concerning usefulness of labels which facilitate organisation of knowledge but can potentially hinder its depth of exploration and understanding. These ideas can be particularly explored through **Natural Sciences and Human Sciences**.

In **Natural Sciences**, labels play an **essential role to a large extent** in organising different constituents of knowledge, especially through **pattern-seeking and inductive reasoning**. In creating the periodic table, Dmitri Mendeleev **sought patterns** between elements with similar chemical and physical properties, grouping them as per increasing atomic number. This produced labelled vertical columns/groups in the modern periodic table, like alkali metals and halogens. Mendeleev also left gaps for elements yet to be discovered, intuiting these patterns

[1] Ohio State University. "This Is Your Brain Detecting Patterns: It Is Different from Other Kinds of Learning, Study Shows." *Science Daily*, 31 May 2018, www.sciencedaily.com/releases/2018/05/180531114642.htm. Accessed 19 Dec. 2020.

would continue[2]. Labelling groups of elements neatly organises the periodic table and facilitates predicting properties of elements that cannot be tested in laboratory. Secondly, Carl Linnaeus established the binomial naming system, comprising first name genera and second name species, in 1735 by using **inductive reasoning**. Genera are labels highlighting distinct group of organisms having similar characteristics, with same label being used with different species, for example *Canis familiaris* (dog) and *Canis lupus* (wolf) share the same genus label – *Canis*[3]. Using genera as labels assists in grouping, thus organising organisms sharing similar characteristics. This makes studying and foreseeing their traits easier such as when using inductive reasoning to generalise all organisms having genus label *Canis* to have canines since dogs are known to have canines.

Nevertheless, the extent to which labels could play a role in organising knowledge in NS is restricted by some scientific knowledge that **may not fit** within identified patterns, hence defined labels. Classifying Platypus in the animal classification system produced a dilemma for scientists who utilised **sense perception** in spotting key features like beak, webbed feet, and fur[4]. This failed Linnaeus' inductive reasoning because platypuses had beaks and webbed feet like birds but fur like mammals, hence a generalised label of a classified group became difficult to attach. Eventually, scientists discovered that platypuses laid eggs but young fed on their milk, thus grouping them under mammals. The challenges in using labels – birds and mammals, for classifying platypuses portrays how scope of labelling in NS is limited, even

[2] Royal Society of Chemistry. "Development of the Periodic Table." *Rsc.org*, 2019, www.rsc.org/periodic-table/history/about. Accessed 19 Dec. 2020.

[3] Jones, Mary, and Geoff Jones. *Cambridge IGCSE Biology Coursebook*. 2002. Third ed., Cambridge, United Kingdom, Cambridge University Press, 2014, pp. 1–16.

[4] Jones, Mary, and Geoff Jones. *Cambridge IGCSE Biology Coursebook*. 2002. Third ed., Cambridge, United Kingdom, Cambridge University Press, 2014, pp. 1–16.

though to **a relatively smaller extent**. This **constrains our understanding** in **consuming** and **disseminating** knowledge by envisioning generalised knowledge instead of its true attributes. Many knowledge consumers might be unaware of actual characteristics of platypuses like laying eggs because its classification under mammals generalises having placenta[5], thus giving birth. During dissemination from individual consumers to shared body, the initially restricted understanding passes on to other knowledge consumers, thus depicting how labels in NS could possibly constrain understanding.

As discussed, utilising labels in organising scientific knowledge majorly **aids in understanding and interpreting scientific knowledge**, namely when speculating characteristic properties of elements or observations of reactions which cannot be performed under laboratory conditions. For example, in my IB chemistry course, I have never performed a reaction between potassium and water due to safety concerns, but its label of alkali metals helps me in imagining, by using deductive reasoning, possible observations like a vigorous reaction, common to all alkali metals.

Nonetheless, labelling can influence our understanding and interpretation of scientific knowledge to a large extent, especially through **role of language** in creating and defining labels which **manipulates** comprehension and interpretation of scientific knowledge. Chemistry has numerous branches of study, distinguished via labels like Organic Chemistry. During my IB organic chemistry introductory class, I intuited organic chemistry to include study of **naturally** prepared substances like proteins, because of how language used in "organic" shaped its meaning. Although, organic chemistry also included studies on

[5] Jones, Mary, and Geoff Jones. *Cambridge IGCSE Biology Coursebook*. 2002. Third ed., Cambridge, United Kingdom, Cambridge University Press, 2014, pp. 1–16.

preparing **synthetic** substances like polyethene (plastics). This demonstrates how labels could constrain understanding of scientific knowledge, principally due to **ambiguity in language** and **connotations** associated with certain words used as labels, thereby, "organic" being connotated with natural/biological fixes boundaries to possible knowledge extents in organic chemistry when it actually includes "inorganic" substances too.

The part that **nature of AOKs** play in establishing how successfully knowledge can be labelled is also substantial to consider. How far possibilities of using labels in **Human Sciences** exists is persuaded by **abstract nature of knowledge** in HS. While arranging knowledge under different umbrellas in HS remains possible, it is **limited** to a certain extent, characterised by **abstract and relative nature** of knowledge. Abraham Maslow developed his Hierarchy of Needs, proposed as a motivation theory, by segregating different levels of human needs using labels: physiological, security, social, esteem, and self-actualisation[6]. Viewing from perspective of differing cultures and individuals' positions in society, needs can be different to those labelled by Maslow, since **personal knowledge would be different to shared knowledge**. In Indian culture, professionals are most motivated by just and competitive compensation[7], however this is not explicitly expressed in any labelled need, coming only closest to physiological needs which rather compose basic compensations. Hence, this depicts how labelling in HS is restricted by **relative and abstract nature of knowledge** contained, explained by **evolving connotations** surrounding labels with **developments in society**. During Industrial Revolution, majority of workers recruited in

[6] Hoang, Paul. *Business Management*. 2014. Third ed., Victoria, Australia, IBID Press, Aug. 2014, pp. 109–190.

[7] ANI. "Survey Reveals What Motivates Indian Professionals Most and Their Preferred Industry." *Business Standard India*, 30 Sept. 2019, www.business-standard.com/article/news-ani/survey-reveals-what-motivates-indian-professionals-most-and-their-preferred-industry-119093000172_1.html. Accessed 20 Dec. 2020.

manufacturing would have anticipated safety standards in workplaces to fulfil their safety needs, but with today's growing service sector, safety needs would reflect expectations of job security. A restricted possibility of using labels to define human needs, thus motivation, is also exemplified in my BM IA wherein my research on employees' motivation introduced motivating factors like training opportunities, not classed within any labelled need.

However, using labels to categorise knowledge in HS **streamlines scope of knowledge**, making it more focused. An organisational hierarchy like one in my school, provides clarity on roles and responsibilities. Labels like Deputy Head assist in knowing whom to seek different information from and approach for different concerns like academic issues.

Similar to NS, labels in HS can also, to a great degree, **influence and constrain our understanding** of knowledge like abstract concepts. Role of language in labelling countries' development as "developed" or "developing" constrains our understanding of actual development levels in these countries. Economic development is widely deciphered as improvements in living standards considered by many as material aspects of life specifically brought through higher per capita GDP. Thus, language used in labels, "developed" and "developing", shape our understanding of developed countries being "rich" by having higher per capita GDP whilst developing countries being "poor" through lower per capita GDP. Nonetheless, there are other factors defining development like access to quality healthcare or degrees of gender inequality[8]. **Connotations** around labels, defining development levels of countries, can be shaped by **confirmation biases** existing within our **personal knowledge**. These biases create **prejudiced knowledge** when disseminated to shared body because of

[8] Tragakes, Ellie. *Economics for the IB Diploma*. 2009. Second ed., The Edinburgh Building, Cambridge, UK, Cambridge University Press, 2012, pp. 436–460.

differences in **evaluating knowledge**. Countries labelled as developed could be given greater preference and respect over countries labelled as developing, despite these labels not reflecting how progressed countries actually are, hence constraining understanding in HS.

Language's function in crafting metaphors, though, could aid our understanding. Some labels use **metaphorical language** to better explain knowledge in HS. Growth trends in stock markets are communicated using metaphorical labels – bearish and bullish markets. Bearish markets comprise declining whilst bullish feature climbing stock prices. The label "bear" denotes negative growth based on its attacking position as pushing down, whilst "bull" symbolises positive growth from its attacking position as thrusting up[9]. These labels guide investors to different market trends, influenced by perceptions. Examining **historical development** of "bear" illustrates how jobbers would sell bearskin at forecasted lower prices assuming lower purchase prices, thus these jobbers became popular for pulling down market value. With these perceptions continuing, investors conventionally sell stocks during bearish and buy during bullish trends since bears and bulls are regarded as opposites[10]. Hence, metaphorical language used in such labels assists **explanation and organisation** of two differing facets of stock markets, hence HS concepts.

Implications of reliability of **labels being comparatively higher in NS** are that classification techniques introduced by Linnaeus in 1735 are continued to be used today, along with

[9] Hall, Mary. "Where Did the Bull and Bear Market Get Their Names?" *Investopedia*, 9 Apr. 2020, www.investopedia.com/ask/answers/bull-bear-market-names/. Accessed 21 Dec. 2020.

[10] Hall, Mary. "Where Did the Bull and Bear Market Get Their Names?" *Investopedia*, 9 Apr. 2020, www.investopedia.com/ask/answers/bull-bear-market-names/. Accessed 21 Dec. 2020.

Mendeleev's idea of the periodic table, despite being further improvised by Henry Mosely[11]. Since HS knowledge is largely distinguished by its **abstractness** and influences from **links to personal knowledge**, other measurements defining labels, using different approaches to human and society behaviour have been introduced like determining development using HDI[12] and motivating workers through different theories like Herzberg's two-factor theory[13].

Therefore, in considering the extent to which, labels are a necessity to organise knowledge and, to which they constrain our understanding, we could say that labels are necessary in organising **objective knowledge**, predominantly existing in shared body, making it more focused and interpretable. However, labels can constrain breadth and depth of understanding for **abstract knowledge** dwindling between personal to sub-shared and shared body of knowledge. Hence, such knowledge normally has **alternate paradigms co-existing** to categorise it under some or the other label.

[11] Royal Society of Chemistry. "Development of the Periodic Table." *Rsc.org*, 2019, www.rsc.org/periodic-table/history/about. Accessed 19 Dec. 2020.

[12] Tragakes, Ellie. *Economics for the IB Diploma*. 2009. Second ed., The Edinburgh Building, Cambridge, UK, Cambridge University Press, 2012, pp. 436–460.

[13] Hoang, Paul. *Business Management*. 2014. Third ed., Victoria, Australia, IBID Press, Aug. 2014, pp. 109–190.

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