

routine of the cities. The beginning of the 20th century was a moment in history when scientific knowledge sought more and more recognition among the population. After Pasteur's bacteriological revolution, with the discovery of microbes and disease-causing agents, came the substitution of the miasmatic theory, prevailing until then, for the understanding of diseases, a fact that changed the form of sanitary organization of cities. In this same context, there was the outbreak of an influenza pandemic, which took on considerable crisis proportions and put to test the scientific knowledge validity. The present paper aims to show how the destabilization of urban routines and the process of understanding (or not) of the population about the disease occurred from the moment a pandemic was established in daily life. The printed communication vehicles became the focus of study of the present research. The proposal intends an analysis of the news published in the national periodicals, between the years 1918-1919, with the purpose of understanding how the scientific knowledge was presented, so that people could understand the origin and the causes of the new disease, as well as the best ways to fight it. For this purpose, a database was organized, a research instrument built to study the digital base of the National Library Foundation's hemeroteca and private newspaper archives. As partial results it was possible to verify an effort of journalistic articles published in Brazil, during the period of the 1918 influenza pandemic, which proposed to explain the causes of the disease; orientation to the population about prophylaxis; effort to give science, technique and medical practices the authority to deal with the "Spanish flu". This effort by the media must be problematized through the existence of popular knowledge that circulated among the population during the same event. Such information was present in newspapers all over the country. The studies about the press are supported by Darton (1990), Sodré (1999), and the understanding about the history of public health by Rosen (1994).

Keywords: *Influenza, 1918-1919, mass communication media, information dissemination.*

Narrativas sobre a máquina a vapor - tecnologia, ciência e cultura na relação com a natureza

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No século XIX a máquina a vapor interessou cientistas, engenheiros, artistas, paisagistas, filósofos, teóricos da política, cidadãos, pedagogos. Entre entusiasmos, esperanças e receios, o contacto com a máquina a vapor gerou pensamento sobre relações entre o natural e o artificial, sobre relações entre ciência e tecnologia; sobre sofrimento na industrialização; foi central no desenvolvimento de inteligibilidade do mundo e na produção de mundividências; subverteu a estética da representação na pintura e a estética dos jardins. Está no início de uma transformação acelerada da vida no planeta e do planeta. A máquina a vapor permite-nos abordar de uma forma não fragmentada a cultura de uma época, podendo, através dela, entrar em espaços sociais e culturais onde se vive, de forma substancialmente diferente, o valor deste poder motriz. Quando Carnot (1824) se interessa pela compreensão teórica destas máquinas, dando um contributo original e singular para uma nova área da

física, a Termodinâmica, estava longe de imaginar consequências ambientais resultantes da multiplicação destas máquinas, estava longe de imaginar que no futuro iríamos viver nas ruínas do Antropoceno. E estava longe de imaginar o seu contributo valioso no estudo e compreensão da atmosfera. Neste caso, a tecnologia antecede a ciência, daí termos dado uma forma ao subtítulo desta intervenção pouco habitual na sua sequência. Os mundos separados da engenharia e das ciências cruzam-se em Carnot. Sem Carnot teria havido termodinâmica, pergunta-se Isabelle Stengers. Nos finais do século XX, Joan Solomon (1983) usa representações tridimensionais da máquina a vapor para uma aprendizagem significativa da “degradação” da energia associada à conservação da energia. A sua tridimensionalidade apela a uma multidimensionalidade cultural na sua abordagem e apela a um pensamento visual e tátil (Baird, 2014). Nesta intervenção pretende-se expor algumas narrativas desenvolvidas a partir de textos históricos, de imagens de pinturas, de objetos de ensino, e de estudos históricos, cruzando áreas disciplinares diversas e valorizando-as de um ponto de vista pedagógico. O objeto central que motiva a construção destas narrativas é uma reprodução tridimensional de uma máquina a vapor integrada no espólio de objetos históricos de ensino da Escola Secundária André de Gouveia, adquirida em 1940. Pretende-se, assim, contribuir para o desenvolvimento de novos modos de vida para este objeto “histórico” de ensino, colocando-o no interior de algumas destas narrativas. As narrativas são trabalhadas como elementos de “coesão de uma cultura” (Bruner, 1996), contrariando uma educação fragmentada que se afasta das ligações e valorizando uma compreensão do mundo, natureza e cultura (“natureculture”, no dizer de Donna Haraway, 2016), que incorpore e alimente gestos sustentáveis. A aventura de conhecimento na criação destas narrativas tem muito em comum com a aventura da construção de conhecimento científico, tão bem expressa nesta frase de Bruner (1996): “Getting to know many things that you encounter is an adventure in how to account for a great many things that you encounter in as simple and elegant a way as possible”.

Palavras-chave: *máquina a vapor, natureza e tecnologia, educação científica, cultura e fruição estética.*

Narratives on the steam engine - technology, Science and Culure in relation with nature

In XIXth century the steam engine was of interest to scientists, engineers, artists, landscape architects, philosophers, politicians, citizens and pedagogues. Through enthusiasm, hopes and fears contact with the steam engine has originated thoughts on the relations between natural and artificial, on the relations between science and technology; on pain in industrialization. The said contact with the steam engine was central as regards developing world intelligibility and producing worldviews. That contact has subverted the aesthetics of representation in painting and aesthetics concerning gardens. The contact with the steam engine began an hastening transformation of life in the planet and of the planet. The steam engine allows us to approach the culture of an epoch in a non fragmented way. Through it we can enter in social and cultural spaces where one lives in much different ways the value of this new power. When Carnot

(1824) got interested on theoretical understanding of these engines, and thus contributing in a original and specific way to a new area of Physics, namely Thermodynamics, he was faraway of conceiving that in the future we would live in the disaster of Anthropocene. He also was far from conceiving his valuable contribution in the study and understanding of the atmosphere. In this case technology goes before science and for that reason I have composed the subtitle of this speech in an uncommon way as regards sequence. The distinct worlds of engineering and science cross each other in Carnot. Without Carnot would have been born Thermodynamics? This question is from Isabelle Stengers. At the end of XXth century Joan Solomon (decade 80) makes use of three-dimensional representations of the steam engine towards a significant learning of energy “degradation” linked to the conservation of energy. Its tridimensionality calls for a culture multidimensionality in approaching that engine and also calls to visual tactile thinking (Baird 2014). In this speech, I would like to tell on some narratives developed from historical texts, paintings, historical objects for learning science and historical studies, while traversing different disciplines and setting a pedagogical value to those narratives. The central object that propels all this research is a three-dimensional reproduction of a steam engine which is part of the Escola Secundária André de Gouveia’ historical learning objects collection, which the said school acquired in 1940. My purpose is therefore to contribute to the development of new ways of life as regards this historical learning object, by placing it inside some of these narratives. The narratives are worked out as elements of “cohesion of a culture” (Bruner, 1996), and therefore in contrast with a fragmented education going away from connections, and in consequence prizing a world nature and culture (natureculture, as Donna Haraway stays it, 2016) understanding that incorporates and feeds sustainable actions. The adventure of knowledge in raising these narratives has much in common with the adventure of building scientific knowledge, as Bruner (1996) so well told it in this phrase of his: “Getting to know many things that you encounter is an adventure in how to account for a great many things that you encounter in as simple and elegant a way as possible”.

Keywords: *steam engine, nature and technology, science education, culture and aesthetical fruition.*

Racialização da anemia falciforme e sua relação com a história do racismo científico: validação de princípios de planejamento de uma sequência didática.

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Neste estudo, partimos da ideia de que a contextualização histórica do racismo científico, a partir de um enfoque educacional Ciência, Tecnologia, Sociedade e Ambiente (CTSA), possibilita abordar, em sala de aula, discursos e práticas científicas atuais potencialmente estigmatizantes para determinados grupos humanos, como acontece com alguns discursos de racialização da anemia falciforme (AF). Esta