

**Atena**  
Editora  
Ano 2021



# HISTÓRIA:

**Consensos e dissensos engendrados**

**DENISE PEREIRA  
JANAÍNA DE PAULA DO ESPÍRITO SANTO  
(ORGANIZADORAS)**

**Atena**  
Editora  
Ano 2021



# HISTÓRIA:

## Consensos e dissensos engendrados

**DENISE PEREIRA  
JANAÍNA DE PAULA DO ESPÍRITO SANTO  
(ORGANIZADORAS)**



**Editora Chefe**

Profª Drª Antonella Carvalho de Oliveira

**Assistentes Editoriais**

Natalia Oliveira

Bruno Oliveira

Flávia Roberta Barão

**Bibliotecária**

Janaina Ramos

**Projeto Gráfico e Diagramação**

Natália Sandrini de Azevedo

Camila Alves de Cremo

Luiza Alves Batista

Maria Alice Pinheiro

**Imagens da Capa**

Shutterstock

**Edição de Arte**

Luiza Alves Batista

**Revisão**

Os Autores

2021 by Atena Editora

Copyright © Atena Editora

Copyright do Texto © 2021 Os autores

Copyright da Edição © 2021 Atena Editora

Direitos para esta edição cedidos à Atena Editora pelos autores.



Todo o conteúdo deste livro está licenciado sob uma Licença de Atribuição *Creative Commons*. Atribuição-Não-Comercial-NãoDerivativos 4.0 Internacional (CC BY-NC-ND 4.0).

O conteúdo dos artigos e seus dados em sua forma, correção e confiabilidade são de responsabilidade exclusiva dos autores, inclusive não representam necessariamente a posição oficial da Atena Editora. Permitido o *download* da obra e o compartilhamento desde que sejam atribuídos créditos aos autores, mas sem a possibilidade de alterá-la de nenhuma forma ou utilizá-la para fins comerciais.

Todos os manuscritos foram previamente submetidos à avaliação cega pelos pares, membros do Conselho Editorial desta Editora, tendo sido aprovados para a publicação com base em critérios de neutralidade e imparcialidade acadêmica.

A Atena Editora é comprometida em garantir a integridade editorial em todas as etapas do processo de publicação, evitando plágio, dados ou resultados fraudulentos e impedindo que interesses financeiros comprometam os padrões éticos da publicação. Situações suspeitas de má conduta científica serão investigadas sob o mais alto padrão de rigor acadêmico e ético.

**Conselho Editorial**

**Ciências Humanas e Sociais Aplicadas**

Prof. Dr. Alexandre Jose Schumacher – Instituto Federal de Educação, Ciência e Tecnologia do Paraná

Prof. Dr. Américo Junior Nunes da Silva – Universidade do Estado da Bahia

Prof. Dr. Antonio Carlos Frasson – Universidade Tecnológica Federal do Paraná

Prof. Dr. Antonio Gasparetto Júnior – Instituto Federal do Sudeste de Minas Gerais

Prof. Dr. Antonio Isidro-Filho – Universidade de Brasília

Prof. Dr. Carlos Antonio de Souza Moraes – Universidade Federal Fluminense  
Prof. Dr. Crisóstomo Lima do Nascimento – Universidade Federal Fluminense  
Profª Drª Cristina Gaio – Universidade de Lisboa  
Prof. Dr. Daniel Richard Sant’Ana – Universidade de Brasília  
Prof. Dr. Deyvison de Lima Oliveira – Universidade Federal de Rondônia  
Profª Drª Dilma Antunes Silva – Universidade Federal de São Paulo  
Prof. Dr. Edvaldo Antunes de Farias – Universidade Estácio de Sá  
Prof. Dr. Elson Ferreira Costa – Universidade do Estado do Pará  
Prof. Dr. Eloi Martins Senhora – Universidade Federal de Roraima  
Prof. Dr. Gustavo Henrique Cepolini Ferreira – Universidade Estadual de Montes Claros  
Profª Drª Ivone Goulart Lopes – Istituto Internazionale delle Figlie de Maria Ausiliatrice  
Prof. Dr. Jadson Correia de Oliveira – Universidade Católica do Salvador  
Prof. Dr. Julio Candido de Meirelles Junior – Universidade Federal Fluminense  
Profª Drª Lina Maria Gonçalves – Universidade Federal do Tocantins  
Prof. Dr. Luis Ricardo Fernandes da Costa – Universidade Estadual de Montes Claros  
Profª Drª Natiéli Piovesan – Instituto Federal do Rio Grande do Norte  
Prof. Dr. Marcelo Pereira da Silva – Pontifícia Universidade Católica de Campinas  
Profª Drª Maria Luzia da Silva Santana – Universidade Federal de Mato Grosso do Sul  
Prof. Dr. Pablo Ricardo de Lima Falcão – Universidade de Pernambuco  
Profª Drª Paola Andressa Scortegagna – Universidade Estadual de Ponta Grossa  
Profª Drª Rita de Cássia da Silva Oliveira – Universidade Estadual de Ponta Grossa  
Prof. Dr. Rui Maia Diamantino – Universidade Salvador  
Prof. Dr. Saulo Cerqueira de Aguiar Soares – Universidade Federal do Piauí  
Prof. Dr. Urandi João Rodrigues Junior – Universidade Federal do Oeste do Pará  
Profª Drª Vanessa Bordin Viera – Universidade Federal de Campina Grande  
Profª Drª Vanessa Ribeiro Simon Cavalcanti – Universidade Católica do Salvador  
Prof. Dr. William Cleber Domingues Silva – Universidade Federal Rural do Rio de Janeiro  
Prof. Dr. Willian Douglas Guilherme – Universidade Federal do Tocantins

#### **Ciências Agrárias e Multidisciplinar**

Prof. Dr. Alexandre Igor Azevedo Pereira – Instituto Federal Goiano  
Prof. Dr. Arinaldo Pereira da Silva – Universidade Federal do Sul e Sudeste do Pará  
Prof. Dr. Antonio Pasqualetto – Pontifícia Universidade Católica de Goiás  
Profª Drª Carla Cristina Bauermann Brasil – Universidade Federal de Santa Maria  
Prof. Dr. Cleberton Correia Santos – Universidade Federal da Grande Dourados  
Profª Drª Diocléa Almeida Seabra Silva – Universidade Federal Rural da Amazônia  
Prof. Dr. Écio Souza Diniz – Universidade Federal de Viçosa  
Prof. Dr. Fábio Steiner – Universidade Estadual de Mato Grosso do Sul  
Prof. Dr. Fágner Cavalcante Patrocínio dos Santos – Universidade Federal do Ceará  
Profª Drª Gírlene Santos de Souza – Universidade Federal do Recôncavo da Bahia  
Prof. Dr. Jael Soares Batista – Universidade Federal Rural do Semi-Árido  
Prof. Dr. Jayme Augusto Peres – Universidade Estadual do Centro-Oeste  
Prof. Dr. Júlio César Ribeiro – Universidade Federal Rural do Rio de Janeiro  
Profª Drª Lina Raquel Santos Araújo – Universidade Estadual do Ceará  
Prof. Dr. Pedro Manuel Villa – Universidade Federal de Viçosa  
Profª Drª Raissa Rachel Salustriano da Silva Matos – Universidade Federal do Maranhão  
Prof. Dr. Ronilson Freitas de Souza – Universidade do Estado do Pará  
Profª Drª Talita de Santos Matos – Universidade Federal Rural do Rio de Janeiro  
Prof. Dr. Tiago da Silva Teófilo – Universidade Federal Rural do Semi-Árido  
Prof. Dr. Valdemar Antonio Paffaro Junior – Universidade Federal de Alfenas

### **Ciências Biológicas e da Saúde**

Prof. Dr. André Ribeiro da Silva – Universidade de Brasília  
Profª Drª Anelise Levay Murari – Universidade Federal de Pelotas  
Prof. Dr. Benedito Rodrigues da Silva Neto – Universidade Federal de Goiás  
Profª Drª Daniela Reis Joaquim de Freitas – Universidade Federal do Piauí  
Profª Drª Débora Luana Ribeiro Pessoa – Universidade Federal do Maranhão  
Prof. Dr. Douglas Siqueira de Almeida Chaves – Universidade Federal Rural do Rio de Janeiro  
Prof. Dr. Edson da Silva – Universidade Federal dos Vales do Jequitinhonha e Mucuri  
Profª Drª Elizabeth Cordeiro Fernandes – Faculdade Integrada Medicina  
Profª Drª Eleuza Rodrigues Machado – Faculdade Anhanguera de Brasília  
Profª Drª Elane Schwinden Prudêncio – Universidade Federal de Santa Catarina  
Profª Drª Eysler Gonçalves Maia Brasil – Universidade da Integração Internacional da Lusofonia Afro-Brasileira  
Prof. Dr. Fernando Lima Santos – Universidade Federal do Recôncavo da Bahia  
Profª Drª Fernanda Miguel de Andrade – Universidade Federal de Pernambuco  
Prof. Dr. Fernando Mendes – Instituto Politécnico de Coimbra – Escola Superior de Saúde de Coimbra  
Profª Drª Gabriela Vieira do Amaral – Universidade de Vassouras  
Prof. Dr. Gianfábio Pimentel Franco – Universidade Federal de Santa Maria  
Prof. Dr. Helio Franklin Rodrigues de Almeida – Universidade Federal de Rondônia  
Profª Drª Iara Lúcia Tescarollo – Universidade São Francisco  
Prof. Dr. Igor Luiz Vieira de Lima Santos – Universidade Federal de Campina Grande  
Prof. Dr. Jefferson Thiago Souza – Universidade Estadual do Ceará  
Prof. Dr. Jesus Rodrigues Lemos – Universidade Federal do Piauí  
Prof. Dr. Jônatas de França Barros – Universidade Federal do Rio Grande do Norte  
Prof. Dr. José Max Barbosa de Oliveira Junior – Universidade Federal do Oeste do Pará  
Prof. Dr. Luís Paulo Souza e Souza – Universidade Federal do Amazonas  
Profª Drª Magnólia de Araújo Campos – Universidade Federal de Campina Grande  
Prof. Dr. Marcus Fernando da Silva Praxedes – Universidade Federal do Recôncavo da Bahia  
Profª Drª Maria Tatiane Gonçalves Sá – Universidade do Estado do Pará  
Profª Drª Mylena Andréa Oliveira Torres – Universidade Ceuma  
Profª Drª Natiéli Piovesan – Instituto Federacl do Rio Grande do Norte  
Prof. Dr. Paulo Inada – Universidade Estadual de Maringá  
Prof. Dr. Rafael Henrique Silva – Hospital Universitário da Universidade Federal da Grande Dourados  
Profª Drª Regiane Luz Carvalho – Centro Universitário das Faculdades Associadas de Ensino  
Profª Drª Renata Mendes de Freitas – Universidade Federal de Juiz de Fora  
Profª Drª Vanessa Lima Gonçalves – Universidade Estadual de Ponta Grossa  
Profª Drª Vanessa Bordin Viera – Universidade Federal de Campina Grande  
Profª Drª Welma Emidio da Silva – Universidade Federal Rural de Pernambuco

### **Ciências Exatas e da Terra e Engenharias**

Prof. Dr. Adélio Alcino Sampaio Castro Machado – Universidade do Porto  
Profª Drª Ana Grasielle Dionísio Corrêa – Universidade Presbiteriana Mackenzie  
Prof. Dr. Carlos Eduardo Sanches de Andrade – Universidade Federal de Goiás  
Profª Drª Carmen Lúcia Voigt – Universidade Norte do Paraná  
Prof. Dr. Cleiseano Emanuel da Silva Paniagua – Instituto Federal de Educação, Ciência e Tecnologia de Goiás  
Prof. Dr. Douglas Gonçalves da Silva – Universidade Estadual do Sudoeste da Bahia  
Prof. Dr. Eloi Rufato Junior – Universidade Tecnológica Federal do Paraná  
Profª Drª Érica de Melo Azevedo – Instituto Federal do Rio de Janeiro  
Prof. Dr. Fabrício Menezes Ramos – Instituto Federal do Pará  
Profª Dra. Jéssica Verger Nardeli – Universidade Estadual Paulista Júlio de Mesquita Filho  
Prof. Dr. Juliano Carlo Rufino de Freitas – Universidade Federal de Campina Grande

Profª Drª Luciana do Nascimento Mendes – Instituto Federal de Educação, Ciência e Tecnologia do Rio Grande do Norte  
Prof. Dr. Marcelo Marques – Universidade Estadual de Maringá  
Prof. Dr. Marco Aurélio Kistemann Junior – Universidade Federal de Juiz de Fora  
Profª Drª Neiva Maria de Almeida – Universidade Federal da Paraíba  
Profª Drª Natiéli Piovesan – Instituto Federal do Rio Grande do Norte  
Profª Drª Priscila Tessmer Scaglioni – Universidade Federal de Pelotas  
Prof. Dr. Sidney Gonçalves de Lima – Universidade Federal do Piauí  
Prof. Dr. Takeshy Tachizawa – Faculdade de Campo Limpo Paulista

### **Linguística, Letras e Artes**

Profª Drª Adriana Demite Stephani – Universidade Federal do Tocantins  
Profª Drª Angeli Rose do Nascimento – Universidade Federal do Estado do Rio de Janeiro  
Profª Drª Carolina Fernandes da Silva Mandaji – Universidade Tecnológica Federal do Paraná  
Profª Drª Denise Rocha – Universidade Federal do Ceará  
Profª Drª Edna Alencar da Silva Rivera – Instituto Federal de São Paulo  
Profª Drª Fernanda Tonelli – Instituto Federal de São Paulo,  
Prof. Dr. Fabiano Tadeu Grazioli – Universidade Regional Integrada do Alto Uruguai e das Missões  
Prof. Dr. Gilmei Fleck – Universidade Estadual do Oeste do Paraná  
Profª Drª Keyla Christina Almeida Portela – Instituto Federal de Educação, Ciência e Tecnologia do Paraná  
Profª Drª Miranilde Oliveira Neves – Instituto de Educação, Ciência e Tecnologia do Pará  
Profª Drª Sandra Regina Gardacho Pietrobon – Universidade Estadual do Centro-Oeste  
Profª Drª Sheila Marta Carregosa Rocha – Universidade do Estado da Bahia

### **Conselho Técnico Científico**

Prof. Me. Abrãao Carvalho Nogueira – Universidade Federal do Espírito Santo  
Prof. Me. Adalberto Zorzo – Centro Estadual de Educação Tecnológica Paula Souza  
Prof. Dr. Adailson Wagner Sousa de Vasconcelos – Ordem dos Advogados do Brasil/Seccional Paraíba  
Prof. Dr. Adilson Tadeu Basquerote Silva – Universidade para o Desenvolvimento do Alto Vale do Itajaí  
Profª Ma. Adriana Regina Vettorazzi Schmitt – Instituto Federal de Santa Catarina  
Prof. Dr. Alex Luis dos Santos – Universidade Federal de Minas Gerais  
Prof. Me. Alexsandro Teixeira Ribeiro – Centro Universitário Internacional  
Profª Ma. Aline Ferreira Antunes – Universidade Federal de Goiás  
Profª Drª Amanda Vasconcelos Guimarães – Universidade Federal de Lavras  
Prof. Me. André Flávio Gonçalves Silva – Universidade Federal do Maranhão  
Profª Ma. Andréa Cristina Marques de Araújo – Universidade Fernando Pessoa  
Profª Drª Andreza Lopes – Instituto de Pesquisa e Desenvolvimento Acadêmico  
Profª Drª Andrezza Miguel da Silva – Faculdade da Amazônia  
Profª Ma. Anelisa Mota Gregoleti – Universidade Estadual de Maringá  
Profª Ma. Anne Karynne da Silva Barbosa – Universidade Federal do Maranhão  
Prof. Dr. Antonio Hot Pereira de Faria – Polícia Militar de Minas Gerais  
Prof. Me. Armando Dias Duarte – Universidade Federal de Pernambuco  
Profª Ma. Bianca Camargo Martins – UniCesumar  
Profª Ma. Carolina Shimomura Nanya – Universidade Federal de São Carlos  
Prof. Me. Carlos Antônio dos Santos – Universidade Federal Rural do Rio de Janeiro  
Prof. Me. Carlos Augusto Zilli – Instituto Federal de Santa Catarina  
Prof. Me. Christopher Smith Bignardi Neves – Universidade Federal do Paraná  
Profª Drª Cláudia de Araújo Marques – Faculdade de Música do Espírito Santo  
Profª Drª Cláudia Taís Siqueira Cagliari – Centro Universitário Dinâmica das Cataratas  
Prof. Me. Clécio Danilo Dias da Silva – Universidade Federal do Rio Grande do Norte  
Prof. Me. Daniel da Silva Miranda – Universidade Federal do Pará  
Profª Ma. Daniela da Silva Rodrigues – Universidade de Brasília  
Profª Ma. Daniela Remião de Macedo – Universidade de Lisboa



Profª Ma. Dayane de Melo Barros – Universidade Federal de Pernambuco  
Prof. Me. Douglas Santos Mezacas – Universidade Estadual de Goiás  
Prof. Me. Edevaldo de Castro Monteiro – Embrapa Agrobiologia  
Prof. Me. Edson Ribeiro de Britto de Almeida Junior – Universidade Estadual de Maringá  
Prof. Me. Eduardo Gomes de Oliveira – Faculdades Unificadas Doctum de Cataguases  
Prof. Me. Eduardo Henrique Ferreira – Faculdade Pitágoras de Londrina  
Prof. Dr. Edwaldo Costa – Marinha do Brasil  
Prof. Me. Eliel Constantino da Silva – Universidade Estadual Paulista Júlio de Mesquita  
Prof. Me. Ernane Rosa Martins – Instituto Federal de Educação, Ciência e Tecnologia de Goiás  
Prof. Me. Euvaldo de Sousa Costa Junior – Prefeitura Municipal de São João do Piauí  
Prof. Dr. Everaldo dos Santos Mendes – Instituto Edith Theresa Hedwing Stein  
Prof. Me. Ezequiel Martins Ferreira – Universidade Federal de Goiás  
Profª Ma. Fabiana Coelho Couto Rocha Corrêa – Centro Universitário Estácio Juiz de Fora  
Prof. Me. Fabiano Eloy Atilio Batista – Universidade Federal de Viçosa  
Prof. Me. Felipe da Costa Negrão – Universidade Federal do Amazonas  
Prof. Me. Francisco Odécio Sales – Instituto Federal do Ceará  
Prof. Me. Francisco Sérgio Lopes Vasconcelos Filho – Universidade Federal do Cariri  
Profª Drª Germana Ponce de Leon Ramírez – Centro Universitário Adventista de São Paulo  
Prof. Me. Gevair Campos – Instituto Mineiro de Agropecuária  
Prof. Me. Givanildo de Oliveira Santos – Secretaria da Educação de Goiás  
Prof. Dr. Guilherme Renato Gomes – Universidade Norte do Paraná  
Prof. Me. Gustavo Krahl – Universidade do Oeste de Santa Catarina  
Prof. Me. Helton Rangel Coutinho Junior – Tribunal de Justiça do Estado do Rio de Janeiro  
Profª Ma. Isabelle Cerqueira Sousa – Universidade de Fortaleza  
Profª Ma. Jaqueline Oliveira Rezende – Universidade Federal de Uberlândia  
Prof. Me. Javier Antonio Albornoz – University of Miami and Miami Dade College  
Prof. Me. Jhonatan da Silva Lima – Universidade Federal do Pará  
Prof. Dr. José Carlos da Silva Mendes – Instituto de Psicologia Cognitiva, Desenvolvimento Humano e Social  
Prof. Me. Jose Elyton Batista dos Santos – Universidade Federal de Sergipe  
Prof. Me. José Luiz Leonardo de Araujo Pimenta – Instituto Nacional de Investigación Agropecuaria Uruguay  
Prof. Me. José Messias Ribeiro Júnior – Instituto Federal de Educação Tecnológica de Pernambuco  
Profª Drª Juliana Santana de Curcio – Universidade Federal de Goiás  
Profª Ma. Juliana Thaisa Rodrigues Pacheco – Universidade Estadual de Ponta Grossa  
Profª Drª Kamilly Souza do Vale – Núcleo de Pesquisas Fenomenológicas/UFPA  
Prof. Dr. Kárpio Márcio de Siqueira – Universidade do Estado da Bahia  
Profª Drª Karina de Araújo Dias – Prefeitura Municipal de Florianópolis  
Prof. Dr. Lázaro Castro Silva Nascimento – Laboratório de Fenomenologia & Subjetividade/UFPR  
Prof. Me. Leonardo Tullio – Universidade Estadual de Ponta Grossa  
Profª Ma. Lilian Coelho de Freitas – Instituto Federal do Pará  
Profª Ma. Lilian de Souza – Faculdade de Tecnologia de Itu  
Profª Ma. Liliani Aparecida Sereno Fontes de Medeiros – Consórcio CEDERJ  
Profª Drª Lívia do Carmo Silva – Universidade Federal de Goiás  
Prof. Dr. Lucio Marques Vieira Souza – Secretaria de Estado da Educação, do Esporte e da Cultura de Sergipe  
Prof. Dr. Luan Vinicius Bernardelli – Universidade Estadual do Paraná  
Profª Ma. Luana Ferreira dos Santos – Universidade Estadual de Santa Cruz  
Profª Ma. Luana Vieira Toledo – Universidade Federal de Viçosa  
Prof. Me. Luis Henrique Almeida Castro – Universidade Federal da Grande Dourados  
Prof. Me. Luiz Renato da Silva Rocha – Faculdade de Música do Espírito Santo  
Profª Ma. Luma Sarai de Oliveira – Universidade Estadual de Campinas  
Prof. Dr. Michel da Costa – Universidade Metropolitana de Santos

Prof. Me. Marcelo da Fonseca Ferreira da Silva – Governo do Estado do Espírito Santo  
Prof. Dr. Marcelo Máximo Purificação – Fundação Integrada Municipal de Ensino Superior  
Prof. Me. Marcos Aurelio Alves e Silva – Instituto Federal de Educação, Ciência e Tecnologia de São Paulo  
Profª Ma. Maria Elanny Damasceno Silva – Universidade Federal do Ceará  
Profª Ma. Marileila Marques Toledo – Universidade Federal dos Vales do Jequitinhonha e Mucuri  
Prof. Dr. Pedro Henrique Abreu Moura – Empresa de Pesquisa Agropecuária de Minas Gerais  
Prof. Me. Pedro Panhoca da Silva – Universidade Presbiteriana Mackenzie  
Profª Drª Poliana Arruda Fajardo – Universidade Federal de São Carlos  
Prof. Me. Rafael Cunha Ferro – Universidade Anhembi Morumbi  
Prof. Me. Ricardo Sérgio da Silva – Universidade Federal de Pernambuco  
Prof. Me. Renan Monteiro do Nascimento – Universidade de Brasília  
Prof. Me. Renato Faria da Gama – Instituto Gama – Medicina Personalizada e Integrativa  
Profª Ma. Renata Luciane Polsaque Young Blood – UniSecal  
Prof. Me. Robson Lucas Soares da Silva – Universidade Federal da Paraíba  
Prof. Me. Sebastião André Barbosa Junior – Universidade Federal Rural de Pernambuco  
Profª Ma. Silene Ribeiro Miranda Barbosa – Consultoria Brasileira de Ensino, Pesquisa e Extensão  
Profª Ma. Solange Aparecida de Souza Monteiro – Instituto Federal de São Paulo  
Profª Ma. Taiane Aparecida Ribeiro Nepomoceno – Universidade Estadual do Oeste do Paraná  
Prof. Me. Tallys Newton Fernandes de Matos – Faculdade Regional Jaguaribana  
Profª Ma. Thatianny Jasmine Castro Martins de Carvalho – Universidade Federal do Piauí  
Prof. Me. Tiago Silvio Dedoné – Colégio ECEL Positivo  
Prof. Dr. Welleson Feitosa Gazel – Universidade Paulista

## História: consensos e dissensos engendrados

**Bibliotecária:** Janaina Ramos  
**Diagramação:** Camila Alves de Cremo  
**Correção:** Mariane Aparecida Freitas  
**Edição de Arte:** Luiza Alves Batista  
**Revisão:** Os Autores  
**Organizadoras:** Denise Pereira  
Janaína de Paula do Espírito Santo

### Dados Internacionais de Catalogação na Publicação (CIP)

H673 História: consensos e dissensos engendrados / Organizadoras Denise Pereira, Janaína de Paula do Espírito Santo. – Ponta Grossa - PR: Atena, 2021.

Formato: PDF  
Requisitos de sistema: Adobe Acrobat Reader  
Modo de acesso: World Wide Web  
Inclui bibliografia  
ISBN 978-65-5983-231-6  
<https://doi.org/10.22533/at.ed.316212806>

1. História. I. Pereira, Denise (Organizadora). II. Espírito Santo, Janaína de Paula do (Organizadora). III. Título.  
CDD 901

Elaborado por Bibliotecária Janaina Ramos – CRB-8/9166

**Atena Editora**  
Ponta Grossa – Paraná – Brasil  
Telefone: +55 (42) 3323-5493  
[www.atenaeditora.com.br](http://www.atenaeditora.com.br)  
[contato@atenaeditora.com.br](mailto:contato@atenaeditora.com.br)

## DECLARAÇÃO DOS AUTORES

Os autores desta obra: 1. Atestam não possuir qualquer interesse comercial que constitua um conflito de interesses em relação ao artigo científico publicado; 2. Declaram que participaram ativamente da construção dos respectivos manuscritos, preferencialmente na: a) Concepção do estudo, e/ou aquisição de dados, e/ou análise e interpretação de dados; b) Elaboração do artigo ou revisão com vistas a tornar o material intelectualmente relevante; c) Aprovação final do manuscrito para submissão.; 3. Certificam que os artigos científicos publicados estão completamente isentos de dados e/ou resultados fraudulentos; 4. Confirmam a citação e a referência correta de todos os dados e de interpretações de dados de outras pesquisas; 5. Reconhecem terem informado todas as fontes de financiamento recebidas para a consecução da pesquisa.



## APRESENTAÇÃO

Quando lemos um bom texto e nos sentimos satisfeitos com a argumentação de qualquer autor a respeito de suas ideias, se parece coerente ou verossímil, isso acontece por que o autor ou autora foi bem sucedido em demonstrar suas ideias e sua metodologia, apresentando o seu paradigma. Mas pensar em paradigma ou ainda no que o teórico Jörn Rüsen chamou de matriz disciplinar vai além da qualidade argumentativa e metodológica das ideias de qualquer texto. Um paradigma funciona como uma espécie de base que é reconhecida por um número considerável de pesquisadores e em torno das quais muitas ideias, e hipóteses são apresentadas e testadas. São os diálogos entre os paradigmas e matrizes que ajudam o pesquisador no caminhar em busca da compreensão de questões sociais e históricas, quaisquer que sejam, que estejam movendo as pessoas que pesquisam e escrevem.

Dentro desses sistemas amplos, ou matrizes, que acabam movendo os diferentes profissionais e suas práticas, e que acabam por articular escolhas de formulação e pesquisas diversos, não podemos dizer que há sempre o consenso ou o caminho único, uma única teoria que prevaleça ou valide os olhares possíveis aos inúmeros objetos.

Justamente por sua natureza plural, o trajeto da pesquisa é permeado por consensos e dissensos... Ou seja, por mais que exista um núcleo comum em torno do método e dos valores de rigor em cada pesquisa, os diferentes caminhos possíveis marcam uma produção intelectual do campo em que multiplicidade deva ser reconhecida e respeitada como que realmente é: uma miríade de possibilidades válidas. Assim, é importante enquanto pesquisadores estarmos atentos e conhecermos a fundo tanto o que prevalece comum e consensual, como toda e qualquer possibilidade de falta desse consenso, como características da riqueza do conhecimento e da história, do fortalecimento do diálogo entre os pares e portanto, da própria ciência.

Esperamos que as leituras destes capítulos possam ampliar seus conhecimentos e instigar novas reflexões.

Boa leitura!


Denise Pereira  
Janaína de Paula do Espírito Santo

## SUMÁRIO

### CAPÍTULO 1..... 1

A ELITE INTELECTUAL *ÁULICA*: JORNAIS, IDEIAS E OS SEUS REDADORES NA CORTE FLUMINENSE (1822-1831)

Nelson Ferreira Marques Júnior

 <https://doi.org/10.22533/at.ed.3162128061>

### CAPÍTULO 2..... 12

A FACE INVISÍVEL DAS MULHERES IMIGRANTES POLONESAS NO BRASIL

Isabella Czamanski Rota

 <https://doi.org/10.22533/at.ed.3162128062>

### CAPÍTULO 3..... 23

A POSSIBILIDADE DE LEITURA DO RELATO DE VIAGEM SOB A ÓTICA DO LUGAR DE MEMÓRIA

Douglas Pastrello

 <https://doi.org/10.22533/at.ed.3162128063>

### CAPÍTULO 4..... 31

A SANTA CASA DE MISERICÓRDIA E A RELAÇÃO COM O PROCESSO HIGIENISTA NA CIDADE DE TERESINA ENTRE OS ANOS (1852-1889)

Nara Viviany Moura de Oliveira

Kércia Andressa Vitoriano Gonçalves

 <https://doi.org/10.22533/at.ed.3162128064>

### CAPÍTULO 5..... 45

SENSORY EVALUATION OF FOOD AND ITS EVOLUTION OVERTIME

Alice Vilela

 <https://doi.org/10.22533/at.ed.3162128065>

### CAPÍTULO 6..... 59

CELEBRAÇÕES CÍVICAS REALIZADAS PELO GINÁSIO MUNICIPAL DE SERROLÂNDIA-BA NO PERÍODO DA DITADURA CIVIL-MILITAR (1964-1985)

Marconey de Jesus Oliveira

 <https://doi.org/10.22533/at.ed.3162128066>

### CAPÍTULO 7..... 69

DESENVOLVIMENTO DAS POLÍTICAS E DOS CUIDADOS DE SAÚDE SEXUAL E REPRODUTIVA EM PORTUGAL








Maria José de Oliveira Santos








Elisabete Soares Ferreira

Anabela Martins Pinto de Figueiredo





Manuela Maria da Conceição Ferreira

 <https://doi.org/10.22533/at.ed.3162128067>

<b>CAPÍTULO 8</b> .....	<b>81</b>
DIVULGAÇÃO DAS CIÊNCIAS GEOLÓGICAS POR MEIO DA LINGUAGEM VISUAL: O PAPEL PEDAGÓGICO DO LIVRO DE TEXTO NAS PRIMEIRAS DÉCADAS DO SÉCULO XX	
Heitor Assis Júnior Pedro Wagner Gonçalves	
 <a href="https://doi.org/10.22533/at.ed.3162128068">https://doi.org/10.22533/at.ed.3162128068</a>	
<b>CAPÍTULO 9</b> .....	<b>97</b>
GEOGRAFIAS DA REPRESSÃO POLICIAL - RELIGIOSOS DA FREGUESIA DE SANT'ANNA NO RIO DE JANEIRO (1890 – 1929)	
Valquiria Cristina Rodrigues Velasco	
 <a href="https://doi.org/10.22533/at.ed.3162128069">https://doi.org/10.22533/at.ed.3162128069</a>	
<b>CAPÍTULO 10</b> .....	<b>109</b>
HISTÓRIA DO ENSINO DE HISTOLOGIA E DE PATOLOGIA	
Ana Margarida Calado	
 <a href="https://doi.org/10.22533/at.ed.31621280610">https://doi.org/10.22533/at.ed.31621280610</a>	
<b>CAPÍTULO 11</b> .....	<b>121</b>
HISTÓRIA DO LUGAR BRASIVIANO NA FRONTEIRA BRASIL – BOLÍVIA	
Francisco Marquelino Santana	
 <a href="https://doi.org/10.22533/at.ed.31621280611">https://doi.org/10.22533/at.ed.31621280611</a>	
<b>CAPÍTULO 12</b> .....	<b>129</b>
LEITURA DE MAPA: RELATO DE EXPERIÊNCIAS DOS ALUNOS DA RESIDÊNCIA PEDAGÓGICA NO 6º ANO DO ENSINO FUNDAMENTAL NO COLÉGIO PRESIDENTE CASTELO BRANCO	
Anna Clara Barbosa de Sousa Nilda Aparecida Pascoal Rezende	
 <a href="https://doi.org/10.22533/at.ed.31621280612">https://doi.org/10.22533/at.ed.31621280612</a>	
<b>CAPÍTULO 13</b> .....	<b>142</b>
“LEMBRAR-SE É TER UMA LEMBRANÇA OU IR EM BUSCA DE UMA LEMBRANÇA”: COLETÂNEA DE ENTREVISTAS DOS/AS MORADORES DE SÃO JOÃO DO PARAÍSO- MASCOTE BAHIA	
Luciara Santos dos Anjos Maria Sandra da Gama	
 <a href="https://doi.org/10.22533/at.ed.31621280613">https://doi.org/10.22533/at.ed.31621280613</a>	
<b>CAPÍTULO 14</b> .....	<b>152</b>
O ASSUNTO-ÔNIBUS EM PROGRAMAS DE DEBATE NO JORNALISMO ESPORTIVO	
André Ricardo Carbone Egle Müller Spinelli	
 <a href="https://doi.org/10.22533/at.ed.31621280614">https://doi.org/10.22533/at.ed.31621280614</a>	

<b>CAPÍTULO 15</b> .....	<b>164</b>
O CONCEITO DE DERIVADA NOS PROGRAMAS OFICIAIS DE MATEMÁTICA DO SÉCULO XX	
Ana Paula Florêncio Aires	
 <a href="https://doi.org/10.22533/at.ed.31621280615">https://doi.org/10.22533/at.ed.31621280615</a>	
<b>CAPÍTULO 16</b> .....	<b>177</b>
O GUETO HOMOSSEXUAL E O TEXTO <i>SAINDO DO GUETO</i> DO JORNAL LAMPIÃO DA ESQUINA	
Vinícius Potrich de Souza Macedo Gonçalves	
 <a href="https://doi.org/10.22533/at.ed.31621280616">https://doi.org/10.22533/at.ed.31621280616</a>	
<b>CAPÍTULO 17</b> .....	<b>186</b>
O HOLODOMOR E SUAS REPRESENTAÇÕES A PARTIR DO JORNAL <i>CHLIBOROB</i>	
Henrique Schlumberger Vitchmichen	
 <a href="https://doi.org/10.22533/at.ed.31621280617">https://doi.org/10.22533/at.ed.31621280617</a>	
<b>CAPÍTULO 18</b> .....	<b>196</b>
O <i>SALTÉRIO DE LUTTRELL</i> (C.1345): POSSIBILIDADES DE ESTUDO	
Jaime Estevão dos Reis	
Giovanni Bruno Alves	
Vinicius Tivo Soares	
 <a href="https://doi.org/10.22533/at.ed.31621280618">https://doi.org/10.22533/at.ed.31621280618</a>	
<b>CAPÍTULO 19</b> .....	<b>206</b>
O VALE DO RIO TAQUARI COMO ANTRO DE “NEONAZISMO”?	
René Ernaini Gertz	
 <a href="https://doi.org/10.22533/at.ed.31621280619">https://doi.org/10.22533/at.ed.31621280619</a>	
<b>CAPÍTULO 20</b> .....	<b>218</b>
POBRES E DESVALIDAS: CLAMOR E CARIDADE NAS SÚPLICAS DAS MÃES DA SECA EM TERESINA (1877-1879)	
Kércia Andressa Vitoriano Gonçalves	
Nara Viviany Moura de Oliveira	
 <a href="https://doi.org/10.22533/at.ed.31621280620">https://doi.org/10.22533/at.ed.31621280620</a>	
<b>CAPÍTULO 21</b> .....	<b>227</b>
QUESTÕES DE GÊNERO E SEXUALIDADES NO INTERIOR BAIANO: A PRÁTICA DO FUTEBOL FEMININO NA CIDADE DE GUANAMBI-BA	
Nivalda Pereira Coelho	
Felipe Eduardo Ferreira Marta	
 <a href="https://doi.org/10.22533/at.ed.31621280621">https://doi.org/10.22533/at.ed.31621280621</a>	



<b>CAPÍTULO 22</b> .....	<b>234</b>
SÃO JERÔNIMO: BREVE HAGIOGRAFIA Maria Cristina da Silva Martins  <a href="https://doi.org/10.22533/at.ed.31621280622">https://doi.org/10.22533/at.ed.31621280622</a>	
<b>CAPÍTULO 23</b> .....	<b>245</b>
SOIL SCIENCE: FROM BABYLON TO THE PRESENT Manuel Teles Oliveira  <a href="https://doi.org/10.22533/at.ed.31621280623">https://doi.org/10.22533/at.ed.31621280623</a>	
<b>CAPÍTULO 24</b> .....	<b>255</b>
TRICENTENÁRIO DA ESCRAVIDÃO: A IMPORTÂNCIA DA AQUISIÇÃO DA CONSCIÊNCIA CRÍTICA PARA A SENSIBILIZAÇÃO DO EDUCANDO Diogo da Silva Roiz Mirian Roberta Fernandes Pereira  <a href="https://doi.org/10.22533/at.ed.31621280624">https://doi.org/10.22533/at.ed.31621280624</a>	
<b>CAPÍTULO 25</b> .....	<b>269</b>
UM OLHAR SOBRE O URBANISMO E EDIFICAÇÕES NO MEDIEVO Damião Amiti Fagundes  <a href="https://doi.org/10.22533/at.ed.31621280625">https://doi.org/10.22533/at.ed.31621280625</a>	
<b>SOBRE AS ORGANIZADORAS</b> .....	<b>282</b>
<b>ÍNDICE REMISSIVO</b> .....	<b>283</b>

## SENSORY EVALUATION OF FOOD AND ITS EVOLUTION OVERTIME

Data de aceite: 23/06/2021

Data de submissão: 29/03/2021

### Alice Vilela

CQ-VR - Chemistry Research Centre,  
Department of Biology and Environment, School  
of Life Sciences and Environment, University of  
Trás-os-Montes and Alto Douro (UTAD)  
Vila Real, Portugal  
<https://orcid.org/0000-0002-1615-2418>

**ABSTRACT:** Humans have used their senses to evaluate food for several thousands of years. Given that so many phytotoxins and bacterial metabolites are bitter and sour, humanity had probably used sensory evaluation since before *Homo sapiens* were human. As civilization developed and the trading and selling of goods became commonplace, the first seeds of food sensory testing as we know it was planted. Tasting methods, as a form of sensory analysis of foods, were applied for the first time in Europe, a long time ago, to control the quality of breweries and distilleries. In the United States, during World War II, it arose from the need to produce quality foods that were not rejected by army soldiers. From this need the methods of application of the tasting appeared, establishing the sensorial analysis as a scientific basis. The food industry traditionally viewed sensory evaluation in the context of the company “expert” (the N of 1) who through years of accumulated experience was able to describe company products and set standards of quality by which raw materials would be purchased

and each product manufactured and marketed. Examples of such “experts” include the perfumer, flavors, brew-master, winemaker, and coffee and tea tasters. Nowadays, small-scale internal consumer tests provide a company with a cheap way to get valuable information regarding the advantages and flaws of their products. Therefore, the demand for possibilities to do this kind of test has increased. With the advance of electronics and biosensors, it is also possible to use in sensory evaluation trials, e-noses, and e-tongues, mainly when human panels cannot/ should not be used, due to ethical reasons such as poisonous or extreme condition samples.

**KEYWORDS:** Sensory scientist, consumer choices, sensory data analysis, e-nose, e-tongue.

### AVALIAÇÃO SENSORIAL DE ALIMENTOS E SUA EVOLUÇÃO AO LONGO DO TEMPO

**RESUMO:** Há milhares de anos que os humanos usam os sentidos para avaliar os alimentos. Dado que muitas fitotoxinas e metabólitos bacterianos têm gosto amargo ou ácido, a humanidade provavelmente usou a avaliação sensorial desde antes que o *Homo sapiens* fosse considerado “humano”. À medida que a civilização se desenvolveu e o comércio e a venda de mercadorias se tornaram comuns, começou a surgir a necessidade da realização da avaliação sensorial dos alimentos. Os métodos de degustação, foram aplicados pela primeira vez na Europa, com o objetivo de controlar a qualidade de cervejarias e destilarias. Nos USA, durante a Segunda Guerra Mundial, surgiu a

necessidade de produzir alimentos de qualidade que não fossem rejeitados pelos soldados do exército. A partir dessa necessidade surgiu a análise sensorial como base científica. Tradicionalmente, a indústria alimentar via a avaliação sensorial no contexto da empresa como sendo realizada pelo “expert” (N = 1) que através de anos de experiência era capaz de descrever os produtos e estabelecer padrões de qualidade desde a matéria-prima até ao produto final. Exemplos de tais “especialistas” incluem o mestre- cervejeiro, o enólogo, os provadores de café (baristas) e chás. Hoje em dia, os testes internos de consumidor, proporcionam à empresa uma alternativa barata para a obtenção de informações valiosas sobre as vantagens e falhas dos seus produtos. Portanto, a procura por possibilidades de fazer esse tipo de teste aumentou. Com o avanço da eletrônica e dos biossensores, também é possível usar em ensaios de avaliação sensorial, narizes e línguas eletrônicos, principalmente quando os painéis humanos não podem / não devem ser usados, devido a razões éticas, como amostras venenosas ou em condições extremas.

**PALAVRAS-CHAVE:** Cientista sensorial, consumidor, análise de dados sensoriais, e-nose, e-tongue

## 1 | INTRODUCTION

There is a class of scientists who specialize in the analysis of the sensory qualities of merchandise – the color, sound, smell, taste, and feel of things. The original name for this area of research was “organoleptic”, and the person who performed the analysis the “*Organoleptician* (HOWES, 2015).

It is difficult for us to understand how people, in the past, perceived their world in sensory terms. Can we ever reach an understanding of what smells meant to 18<sup>th</sup> century Parisians? Maybe, if we read the book “Perfume: The Story of a Murderer” - a 1985 literary historical fantasy novel, by the German writer Patrick Süskind, we get an idea! The novel explores the sense of smell and its relationship with the emotional meaning that scents may have! Or can we ever uncover the meanings of taste in a pre-refrigerator age? The historian Mark M. Smith places these questions in his article “The explosion of sensory history” (SMITH, 2010). Of the many sectors of consumer products industries (food/beverage, personal care products, pharmaceutical, fabrics, and clothing...), it was on the food and beverage sectors that grew the interest in sensory evaluation (STONE; SIDEL, 1985). Its origins can be traced back to the 1930s when the Arthur D. Little industrial consulting firm, in the U.S., devised a “Flavour Profile Method” and “Hedonic Index” for use by commercial food and beverage companies, and the first panel on “Flavour in Foods” was presented at the 1937 meeting of the American Chemical Society (HOWES, 2015).

During the 1940s-1950s, sensory evaluation received additional motivation through the U.S. Army Quartermaster Food and Container Institute, which supported research in food acceptance for the armed forces (SIDEL; STONE, 1993). For the military, in combat, the importance of flavor and acceptability for a particular product was recognized. It was not enough to present to the military, food-products with an adequate level of nutrition. This

aspect of food did not guarantee food acceptance by military personnel (SIDEL; STONE, 1993). For instances, several studies were published on “Browning” – As to the objectives of the conference, those immediately apparent were: To report the status of Quartermaster Corps contract research on browning; to evaluate research progress, and to assess the value of the different approaches selected by the various investigators in attempting to understand the mechanisms and control of browning (C) and also about “Color in foods” (QFCIAF, 1953; BERENSTEIN, 2018). So, funds were assigned to studies of the problems of identifying what foods were preferred as well as the more fundamental issue of the measurement of food acceptance.

After the war, a new impulse was made in sensory science and sensory history. The White Sands Proving Ground became the center of V2 Rocket Research, and the nearby Holloman Aeromedical Field Laboratory and the associated Wright-Patterson Air Force Base Aero-Medical Laboratory began working on what would become known as the “Project Mercury”, the first U.S. space program. Soon, scientists found that the exploration and conquest of space by humans would require more than merely surviving, like a fly, a monkey, or a mouse. Once the man was “up there”, enclosed in a spacecraft alone or together with other courageous humans, a question was raised. What would they have for lunch? (BERENSTEIN, 2018). In space, every aspect of metabolism becomes a problem! Food scientists calculated that 5 pounds a day per person, or 1 ton a year is the amount of food needed (BERENSTEIN, 2018), for a man to survive in space. Given this, the conclusion was “reduce everything to its essences, the most basic form”: nutrient pellets, titrated to meet, precisely, the body’s needs, to sustain bare life and function.

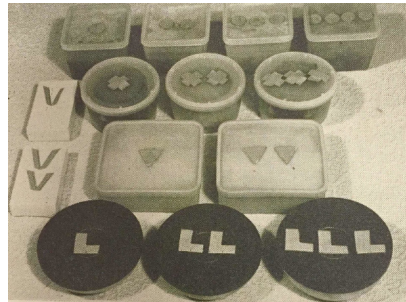
Lieutenant Colonel David Simons, a medical officer, was the first human to dine in space-equivalent conditions (over 100,000 feet up, above 99 percent of the earth’s atmosphere). Dr. Simons had been one of the designers of the experiments that rocketed animals into near space. He and his co-workers, at Holloman and Wright-Patterson, developed a scheme to lift a human to the upper limits of the atmosphere using a giant, helium-filled balloon. This work was named the project “Man High” (BERENSTEIN, 2018).

Beatrice Finkelstein, research nutritionist, and dietitian at Wright AFB Aero Medical Laboratory was the scientist responsible for designing Dr. Simons’ low-residue diet (Figure 1 A) (BERENSTEIN, 2018). In a series of experiments at Wright AFB, Finkelstein confined human subjects within a sensory deprivation chamber to examine “the means they employ to defend themselves against the effects of isolation.” The test subjects spent 72 hours alone in a pitch-dark, soundproof room. The room had a cot, a chair, a chemical toilet, and a refrigerator. The refrigerator held little Tupperware-style containers of food, lids marked with tactile symbols, which indicated their contents. Subjects could palpate the lids in the dark and select the substance of their meals (Figure 1 B).





A



B

Figure 1. (A) Beatrice Finkelstein in her research lab; (B) Small Tupperware-style containers and system of coding various food-groups.

In her report, Finkelstein wrote “*The significance of food during these trials has varied (...) Some subjects have spent excessive amounts of time eating, nibbling or counting food; others have become angry at the food or overly fond of it. (...) While some snacked continually, others stuck to a routine of three or four meals a day. Brownies, ordinarily a favorite, lost savor; in contrast, canned orange juice, which is usually rated low, was enjoyed. All meat tasted the same (...)*” (BERENSTEIN, 2018). Moreover, she concluded: “*Evidence is strong that food is used as a tool to obtain personal satisfaction*” (BERENSTEIN, 2018). For those alone and in the dark in conditions meant to mimic the stress and isolation of high-altitude spy flights, or voyages into space, food was one of the only available comforts.

All these issues were forgotten during the 1960s and early 1970s due to the implementation of the U.S. federal government program “War on Hunger”. The government’s desire to feed the starving and undernourished met with frustration when product after the product was rejected by the target consumers, primarily because no one troubled to determine whether the sensory properties of these products were acceptable to the targeted groups (SIDEL; STONE, 1993).

Mainly due to the government’s successes and failures in sensory evaluation, the food industry began to provide support for this developing science and various studies were custom-built to find out how to make the food more acceptable (PANGBORN, 1964).

## 2 | THE EVOLUTION OF THE “SENSORY SCIENTIST”

The title of “*Organoleptician*” has since been dropped and replaced by “Sensory professional” or “Sensory scientist”. The sensory evaluation of food products remains central to the practice of these professionals of the “sensory science”, but the scope of the products studied has expanded significantly to include everything from personal care to household cleaning (HOWES, 2015).

However, the food industry traditionally viewed sensory evaluation in the context of

the company “expert” (the N of 1) who through years of accumulated experience was able to describe company products and set standards of quality by which raw materials would be purchased and each product manufactured and marketed. Examples of such “experts” include the perfumer, brew-master, winemaker, and coffee and tea tasters (SIDEL; STONE, 1993).

Sensory professionals also have an effort to expand their role within the companies they worked for, seeking to convince management that the application of sensory evaluation techniques is crucial to every stage of product development, from product conception to product consumption. They usually use the language of driving, as in “*sensory properties drive consumer acceptance and emotional benefits*” (HOWES, 2015), and it has had the desired effect.

The science of sensory evaluation can be integrated into the “aesthetic-industrial complex” context and It is one of the “sciences of subjectivity” which, as Shapin (SHAPIN, 2012) suggests, “are world-making”.

Nevertheless, one crucial question can be made: what sort of world are these sensory scientists making out of our senses? Can it be proven as an exact science?

The science of sensory evaluation rests on a vital paradox: “*Most sensory characteristics of food can only be measured well, completely, and meaningfully by human subjects*” as opposed to scientific instruments. But it is considered necessary that human subjects behave as much like scientific instruments as possible: “*When people are used as a measuring instrument, it is necessary to control all testing methods and conditions to avoid errors caused by psychological factors*” (HOWES, 2015).

Meilgaard, Carr, and Civille (2010) affirm that the key to sensory analysis is: “(...)  
*to treat the panelists as measuring instruments. As such, they are highly variable and very prone to bias, but they are the only instruments that will measure what we want to measure so we must minimize the variability and control the bias by making full use of the best existing techniques in psychology and psychophysics (...)*”.

The controls techniques mentioned by Meilgaard and co-workers (MEILGAARD; CARR; CIVILLE, 2010) include: (i) Standardization of the test conditions, e.g. constant single lighting conditions, temperature, humidity, test station design; (ii) Elimination of all disturbance variables (sounds, odors, light-stimuli, the exertion of persons, uncomfortable sitting position); (iii) Ensuring that “irrelevant” sensory factors, such as the size of the samples, do not interrupt the panelists’ judgment; (iv) Train panelists to evaluate products “monadically” (to assess one sensory characteristic at a time); (v) Isolating one panelist from another by having them perform their tasks in individual booths or cubicles (Figure 2); (vi) Instructing the panelists not to discuss samples before evaluation (since this might create expectations); (vii) Instructing the panelists to work in silence, since “comments or noises” made out loud can influence sensory judgments. Moreover, now, several industries are working on “Sensory equipment” from tasting cabins to sample preparation rooms (Figure

2), (THIEMT, 2019).

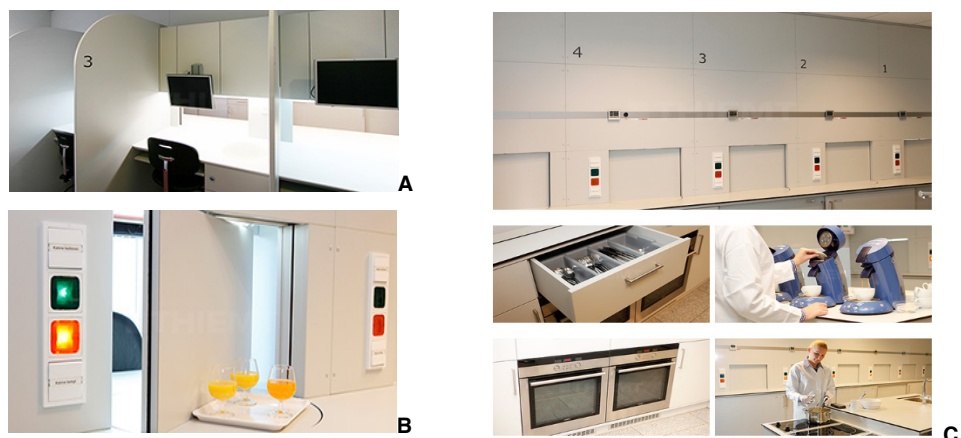


Figure 2. Individual booths or cubicles (A) and sample delivery system (B). The backside of the test cabin acts as a wall unit of the preparation room (C). The sample preparation and coding, such as the presentation takes place right here. The materials of the ceilings, walls, and floors should be odorless and olfactory inert, such as the furnishings (THIEMT, 2019).

### 3 | THE EVOLUTION OF THE “SENSORY TESTS” AND DATA ANALYSIS

Nowadays, there are three kinds of tests used in sensory evaluation procedures. “Discriminative tests” are used to determine if a difference exists among samples. “Descriptive tests” employed to identify and quantify sensory characteristics (descriptors) that are important in a product. “Affective” or “hedonic tests” are used to measure how much a panelist (or just a simple consumer) likes a product sample. The variability of responses is controlled using standardized questionnaires and standard numerical scales (STONE; BLEIBAUM; THOMAS, 2012) as well as through statistical analysis (MEILGAARD; CARR; CIVILLE, 2010). The results of the experiments, and the plotting of such results in the form of graphs and tables. Only results that are “statistically significant” are considered “meaningful.” In other words, while sensory evaluation experiments are concerned with assessing the qualities of products, it is the quantification of sensation that counts. Averages are usually calculated so that any trace of the “subjective associations” of individual panelists can be eradicated from the overall picture of a product’s sensory qualities (STONE; BLEIBAUM; THOMAS, 2012). The degree of sensory restriction to which the sensory professional is subjected allows the reproducibility of the results that are “precise and consistent” (POSTE et al., 1991).

Many of the papers published in the field are concerned with the development of “sensory lexicons”. The construction of these vocabularies (a group of words, commonly called a lexicon), is essential both for standardization and communication among sensory

professionals working in different countries, and the communication of product sensory attributes to the consumers. Sensory lexicons are applied using descriptive sensory analysis techniques. They provide a source list to describe products (wine, bread, beer, coffee, chocolate). Over the years, descriptive lexicons represented in wheel form, have been developed for wine (NOBLE et al., 1984), (Figure 3 A), beer (MEILGAARD; DALGLIESH; CLAPPERTON, 1979), and spirits (LEE et al., 2001), among others alcoholic beverages like Pink Port Wines (MONTEIRO; VILELA; CORREIA, 2014) and chocolate (Figure 3 B).

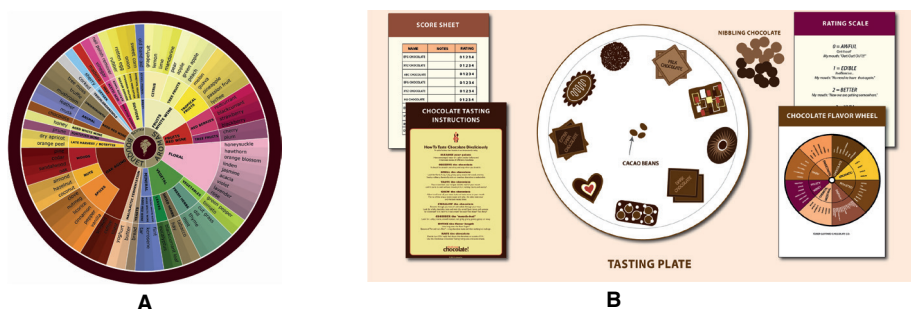


Figure 3 – (A) An example of the wine aroma wheel (AROMASTER, 2019) first developed by Nobel and co-workers (NOBLE et al., 1984); (B) An example of the chocolate aroma and flavor wheel and a chocolate tasting plate (SØRENSEN, 2019).

Characteristics of flavor lexicons to be used in food/beverage products sensory profiles have been discussed by Lawless and Heymann (1998). And, according to the authors, a vital characteristic of a good flavor lexicon is that it must be discriminative, as well as, descriptive, if possible. For a descriptive language to be discriminating, it must be able to differentiate the products for which it was developed. One example is the work performed by Vilela et al. (2015). The work aimed to develop strawberry, raspberry, and cherry jams with a more acceptable nutritional profile but maintaining their sensory characteristics in comparison with the traditional formulation with sucrose. Sucrose was replaced by fructose, sorbitol, or fructooligosaccharides (FOS), given the potential low glycemic index and the reduced calories in the case of sorbitol and FOS, and enrichment with dietary fiber, in the case of FOS. After sensory lexicon development sensorial and application of quantitative descriptive analysis test, the authors found that the sweeteners used interfered, significantly, in the parameters measured. For exemplification, the sensory profile, and the strawberry jam sensory attributes, prepared with different sweeteners (osmotic dehydration agents), can be seen in Figure 4, a spider graph, one of the most used types of graph for sensory profile presentation.

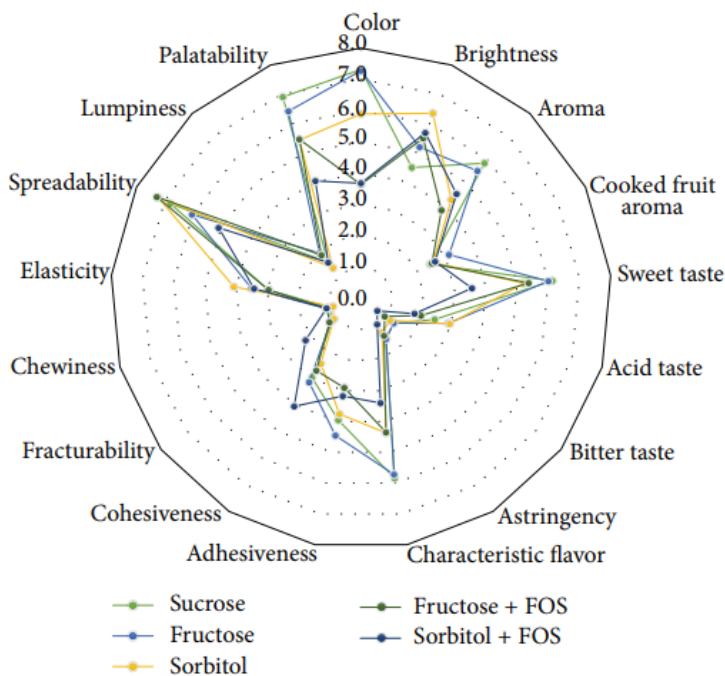


Figure 4: Sensory profile of strawberry jams prepared with five different OD agents or combinations of two. Adapted from Vilela et al.(2015).

Another interesting data analysis and representation is CATPCA (as Categorical Principal Components Analysis). In a work performed by Monteiro and co-workers (MONTEIRO; VILELA; CORREIA, 2014), the applicability of sensory techniques in the Pink Port Wine sensory evaluation was studied. The work aimed to differentiate between five Pink Port Wine brands, positioned on the Portuguese market. The authors, with the Porto Cruz company's help, where the work was performed, selected and trained a group of panelists by using discriminative tests. Then the identification and selection of descriptors was performed and finally, the establishing of the wines sensory profile, using the developed sensory lexicon, and non-parametric multivariate analytical techniques such as CATPCA. Interestingly, from the five brands studied, three of them were similar in terms of attributes, while the other two presented different sensory characteristics. The two-dimensional CATPCA explained more than 87% of the total amount of initial variance and a scatter plot, with each attribute and each wine plotted along with Principal component 1 and Principal component 2 was obtained (Figure 5), (MONTEIRO; VILELA; CORREIA, 2014).

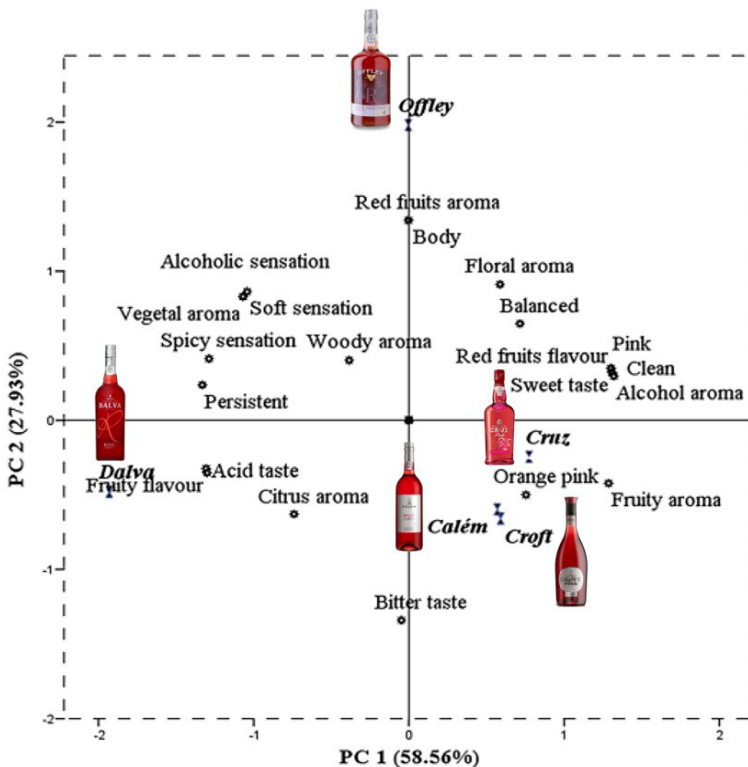


Figure 5. Principal components loadings and scores of the sensory attributes and wines for PC1 and PC2, after CATPCA analysis. Adapted from Monteiro, Vilela and Correia (2014).

In 2018, Vilela and co-workers (VILELA et al., 2018) published a study on three Vinho Verde monovarietal wines from the grape varieties, Alvarinho, Loureiro, and Arinto. The “sensory lexicon” developed by the trained panelists could be used by marketers allowing the articulation of flavor perceptions to consumers. Moreover, a second-order factor analysis statistical model (SEM) was developed for each grape-variety wine, based on the data-set of the sensory attributes, allowing a new perspective on the sensory characterization of these wines (Figure 6). This work also shows that Structural Equation Modelling (SEM), is a good statistical tool to be used in sensory analysis data treatment, once SEM explicitly considers the measurement errors associated with the variables under study, and can encompass two sub-models, according to the relational structure between the variables: a measurement model and a structural model that allowed as to characterize the monovarietal wines according to their main sensory descriptors.

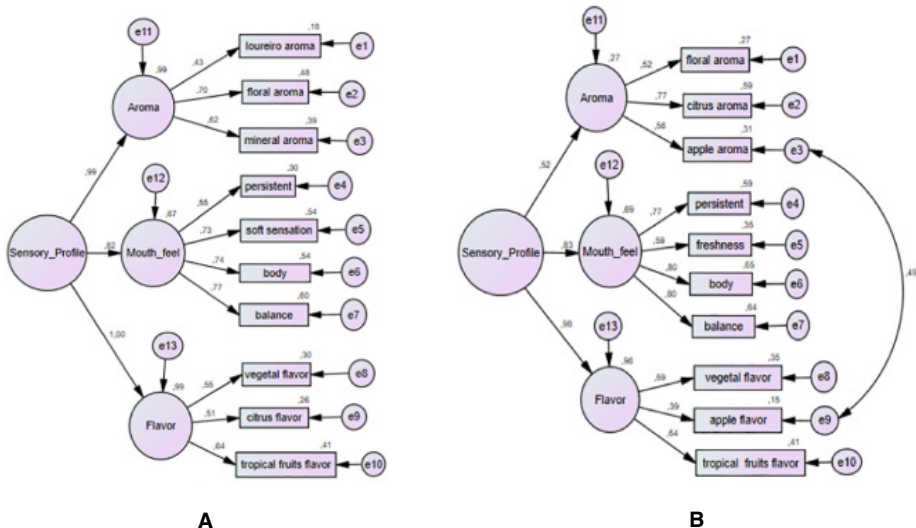


Figure 6 - Schematic representation and values of the standardized factor weights and the individual reliability of each of the items in the final second-order CFA model for the sensory profile of monovarietal Loureiro (A) and Alvarinho (B) wines. Adapted from Vilela et al. (2018).

#### 4 | ELECTRONIC NOSES AND TONGUES

Electronic noses (e-noses) and tongues (e-tongues) are sensors designed to mimic the sensorial abilities of humans in the detection of complex mixtures of chemical substances, also of biological origin. They are created to mimic the Human nose in its ability for entrapment of odors and sensory transduction mechanisms. E-noses usually possess cross-reactive sensing displays that upon odor contact generate modeled responses and analytical algorithms that catalog these responses (LOUTFI et al., 2015). For aroma detection by the e-nose, volatile molecules must come into physical contact with the detectors. This phenomenon occurs by contact with the detectors; or by moving the carrier air to the detector or by moving the detector through the air allowing it to contact the volatiles (LOUTFI et al., 2015).

E-noses devices can contain up to 40 sensors, each one standardized for a precise chemical compound. Compounds and sensors combined to provide a measurement pattern. To be able to detect, analyze and process the information, an e-nose device must be built putting together three components, each with a specific function (VILELA et al., 2017). A sample delivery system consisting of a multisensory array; a detection system such as an Artificial Neural Network (ANN); and a computing system with appropriated software (digital pattern-recognition algorithms and reference-library databases) (WILSON; BAIETTO, 2009), Figure 7.



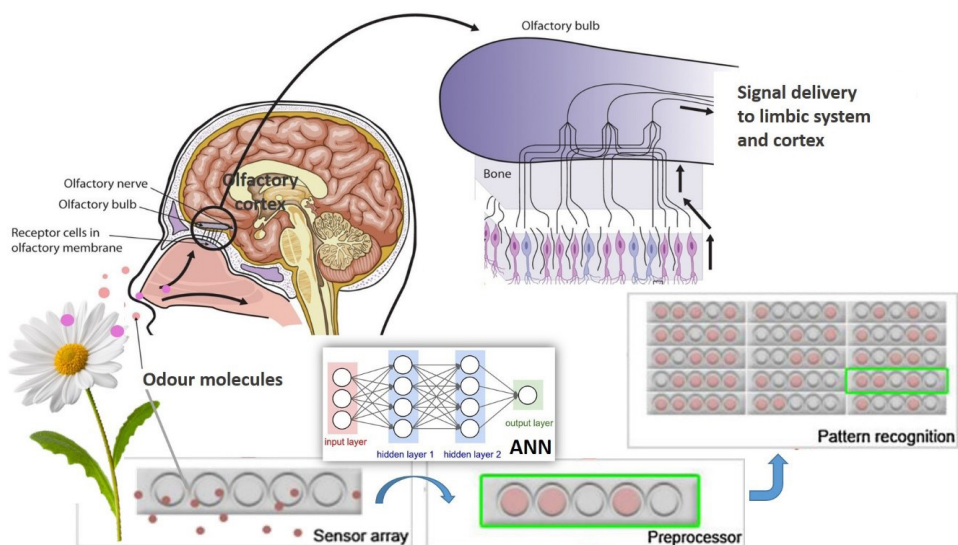


Figure 7. Schematic representation of an e-nose device, with the analogy to Human Nose. Retrieved from Vilela et al. (2019).

Besides e-noses, the sensory scientist also can use electronic tongues. They are electronic devices with specific sensors that can mimic the Human gustatory system. The first e-tongue appeared in the 1990s. They were developed for application in ions and heavy metals analysis (LAVIGNE et al., 1998) as well as in the evaluation of taste (TOKO, 1996). E-tongue is a useful instrument when human panels cannot/should not be used, due to food process circumstances; poisonous/extreme condition samples, and cost-effective reasons (PODRAZKA et al., 2018).

E-noses and e-tongues are being used to discriminate volatile aroma compounds (ZENG et al., 2021) and taste profiles, including spoilage detection in food (ZAUUU et al., 2021) as also the possible adulteration and fraud in some processed food products, that would be unethical to be detected by Human panelists.

## 5 | FINAL REMARKS

Sensory evaluation involves the development and use of principles and methods for measuring human responses to food and beverages. This science depends on guidelines for the preparation and serving of samples under controlled conditions so that biasing factors can be minimized.

Sensory perception is a learned and active practice and not a passive reflex. Sensations are held to arise “neither from the food/beverage nor from the consumer, but from the encounter between them”, that is, it is neither taste nor taster, but *tasting*.

Universal objectives and universal language “lexicons” must be developed. As, also,



new statistical methods, graphical representations, and data analysis must be studied, so that sensory experts and consumers can contribute, both, for a better food/beverage sensory quality evaluation.

The world of flavor has evolved, from the sensory scientist to Human taster or panelists, to electronic sensors. The advances are not only in terms of chemistry, biochemistry, microbiology, or simple sensory analysis, but also mathematics, computer and electronics help the flavor development technologies that allow faster, safer, economic, and precise aroma/flavors compounds analysis, characterization, and quantification.

## ACKNOWLEDGMENTS

We appreciate the financial support provided to the Research Unit in Vila Real (CQ-VR) [grant number UIDB/00616/2020 and UIDP/00616/2020], FCT - Portugal, and COMPETE.

## REFERENCES

AROMASTER/aromaster.com [CC BY-SA 3.0 (<https://creativecommons.org/licenses/by-sa/3.0/>)], accessed 26<sup>th</sup> May 2019.

BERENSTEIN, N. Eating at 100,000 Ft. : Man High and the Origins of Space Food. 2018. Retrieved from: <http://nadiaberenstein.com/blog/2018/3/8/eating-at-100000-ft-man-high-and-the-origins-of-space-food>, accessed 6<sup>th</sup> June 2019.

HOWES, D. *The Science of Sensory Evaluation: An Ethnographic Critique*. Adam Drazin and Susanne Kuechler, eds., The Social Life of Materials, published by Bloomsbury Academic, p. 81-97, 2015.

SØRENSEN, S.M. Fine chocolate tasting. Retrieved from: <https://www.slideshare.net/sveinmagnus/fine-chocolate-tasting>, accessed 26<sup>th</sup> May 2019

LAVIGNE, J.J.; SAVOY, S.; CLEVINGER, M.B.; RITCHIE, J.E.; MCDONIEL, B.; YOO, S.-J.; ANSLYN, E.V.; MCDEVITT, J.T.; SHEAR, J.B.; NEIKIRK, D. Solution-based analysis of multiple analytes by a sensor array: Toward the development of an electronic tongue. *Journal of American Chemistry Society*, vol. n. 120, p. 6429–6430, 1998.

LAWLESS, H.T.; HEYMANN H. *Sensory Evaluation of Food: Principles and Practices*. Chapman & Hall, New York, 1998.

LEE, K.M.; PATERSON, A.; PIGGOTT, J.R.; RICHARDSON, G.D. Origins of Flavor in Whiskies and a Revised Flavor Wheel: a Review. *Journal of the Institute of Brewing*, vol. n. 107, p. 287-313, 2001.

LOUTFI, A.; CORADESCHI, S.; MANI, G.K.; SHANKAR, P.; RAYAPPAN, J.B.B. Electronic noses for food quality: A review. *Journal of Food Engineering*, vol. n. 144, p. 103-111, 2015.

MEILGAARD, M.C.; DALGLIESH, C.E.; CLAPPERTON, J.F. Beer Flavor Terminology. *Journal of the Institute of Brewing*, vol. n. 85, p. 38-42. 1979:

MEILGAARD, M.; CARR, B.T.; CIVILLE, G.V. *Sensory Evaluation Techniques*, 3<sup>rd</sup> edition. Boca Raton, FL: CRC Press, 2010.

MONTEIRO, B.; VILELA, A.; CORREIA, E. Sensory profile of pink port wines: Development of a flavor lexicon. *Flavor and Fragrance Journal*, vol. n. 29, p. 50-58, 2014.

NOBLE, A.C.; ARNOLD, R.A.; MASUDA, B.M.; PECORE, S.D.; SCHMIDT, J.O.; STERN, P.M. Progress Towards a Standardized System of Wine Aroma Terminology. *American Journal of Enology and Viticulture*, vol. n. 35, p. 107-109, 1984.

PANGBORN, R.M. Sensory Evaluation of Food: A Look Forward and Back. *Food Technology*, vol. n. 18, p. 1309-1324, 1964.

PODRAZKA, M.; BACZYŃSKA, E.; KUNDYS, M.; JELÉN, P.S.; NERY, E.W. Electronic Tongue—A Tool for All Tastes? *Biosensors*, vol. n. 8, p. 3. 2018.

POSTE, L.; MACKIE, G.A.; BUTLER, G.L.; LARMOND, E. *Laboratory Methods for Sensory Analysis of Food*. Ottawa, Agriculture Canada, 1991.

QFCIAF (Quartermaster Food And Container Institute For The Armed Forces) (U.S.). *Contributions of browning research to ration item stability; a conference on the status of browning reaction research and a review of its contributions to stabilized packaged rations*, the conference held 1 February 1952 at the Quartermaster Food and Container Institute for the Armed Forces, Chicago, Illinois, Research and Development Division, Office of the Quartermaster General, 1952.

QFCIAF (Quartermaster Food And Container Institute For The Armed Forces) (U.S.). *Color in foods*, a symposium sponsored by the Quartermaster Research and Development Command, U. S. Army Quartermaster Corps, Oriental Institute, Kenneth T. Farrell Edts. University of Chicago, November 3-4, 1953.

SHAPIN, S. The Sciences of Subjectivity. *Social Studies of Science*, vol. n. 42, p. 170-184, 2012.

SIDEL, J.L.; STONE, H. The role of sensory evaluation in the food industry", *Food Quality and Preference*, vol. n. 4, Issues 1-2, p. 65-73, 1993.

SMITH, M.M. The explosion of sensory history, *In Looking Back*, vol. n. 23, p. 860- 863, 2010.

STONE, H.; SIDEL J.L. *Sensory Evaluation Practices*. Orlando: Academic Press, 1985.

STONE, H.; BLEIBAUM, R.; THOMAS, H. *Sensory Evaluation Practices*, 4<sup>th</sup> Edition. San Diego, CA, Academic Press, 2012.

THIEMT. Special equipment for sensory product control. Retrieved from <https://thiemt.com/legacy/laboratory/sensory-labs/general-information/>, accessed 25<sup>th</sup> May 2019.

TOKO, K. Taste sensor with global selectivity. *Materials Science and Engineering: C – Journal*, vol. n. 4, p. 69-82, 1996.

VILELA, A.; BACELAR, E.; PINTO, T.; ANJOS, R.; CORREIA, E.; GONÇALVES, B.; COSME, F. Beverage and Food Fragrance Biotechnology, Novel Applications, Sensory and Sensor Techniques: An Overview. *Foods*, vol. n. 8, p. 643, 2019.

VILELA, A.; MARQUES, C.; CORREIA, E. Structural Equation Modelling (SEM) applied to sensory profile of Vinho Verde monovarietal wines. *Food Research International*, vol. n. 111, p. 650-660, 2018.

VILELA, A.; MATOS, S.; ABRAÃO, A.S.; LEMOS, A.M.; NUNES, F.M. Sucrose Replacement by Sweeteners in Strawberry, Raspberry, and Cherry Jams: Effect on the Textural Characteristics and Sensorial Profile—A Chemometric Approach". *Journal of Food Processing*, Article ID 749740, p. 14, 2015.

VILELA, A.; PINTO, T.; GONÇALVES, B.; BACELAR, E.; CORREIA, C.; JORDÃO, A.M.; COSME, F. Food analysis: From structure, chemistry and flavour to foodomics. In *Science within Food: Up-to-date Advances on Research and Educational Ideas*, Méndez-Vilas A. Edt., Formatex Research Center: Badajoz, Spain, p 95-115, 2017.

WILSON, A.D.; BAIETTO M. Applications and advances in electronic-nose technologies". *Sensors*, vol. n. 9, issue 7, p. 5099-5148, 2009.

ZAUKUU, J.Z.; GILLAY, Z.; KOVACS, Z. Standardized Extraction Techniques for Meat Analysis with the Electronic Tongue: A Case Study of Poultry and Red Meat Adulteration". *Sensors (Basel)*, vol. n. 21, issue 2, p. 481, 2021.

ZENG, C.; WEI, Q.; PU, F.; LIU, Y.; SUN, W.; CHE, Z.; HUANG, Y. Discrimination of *Zanthoxylum bungeanum* Maxim through volatile aroma compounds analysis with artificial neural network". *Journal of Food Biochemistry*, vol. n. 45, issue 2, 2021: e13621. doi: 10.1111/jfbc.13621.

## ÍNDICE REMISSIVO

### A

Amazônia boliviana 121  
Análise de dados sensoriais 46  
Atividades práticas 129, 136, 137, 140, 141, 266  
*Áulicos* 1, 2, 3, 4, 5, 7, 9, 10

### C

Celebrações 59, 61, 64, 65  
Ciência 33, 81, 83, 109, 111, 115, 118, 119, 245, 262, 270, 271  
Cientista sensorial 46  
Código penal 97, 98, 105, 106  
Consumidor 46  
Cuidados de saúde 69, 71, 75, 79  
Cultura 2, 8, 10, 12, 14, 16, 22, 25, 27, 28, 29, 30, 44, 62, 101, 105, 121, 128, 151, 155, 156, 170, 171, 176, 182, 255, 256, 257, 258, 259, 260, 261, 263, 266, 279, 282

### D

Ditadura 59, 60, 61, 63, 65, 66, 67, 68, 168, 169, 178, 184

### E

E-nose 45, 46, 54, 55  
E-tongue 45, 46, 55  
Elite intelectual 1, 5, 6, 7, 8, 9  
Ensino 7, 60, 62, 63, 64, 67, 68, 69, 76, 78, 82, 94, 95, 109, 112, 113, 114, 115, 116, 117, 118, 129, 130, 131, 132, 134, 135, 141, 164, 165, 166, 167, 169, 170, 171, 172, 173, 175, 176, 215, 255, 256, 257, 258, 259, 260, 261, 262, 263, 266, 267, 268, 269, 281, 282  
Ensino fundamental 129, 130, 131, 134, 258

### G

Georreferenciamento 97  
Ginásio Municipal de Serrolândia 59, 60, 61, 62, 63, 65, 67

### H

Histologia 109, 110, 111, 112, 113, 114, 115, 116, 117, 118

### I

Identidade 2, 11, 12, 21, 22, 27, 29, 113, 121, 122, 125, 126, 127, 137, 174, 175, 178, 183,

185, 194, 198, 258, 260, 264, 266, 267

Imigração 12, 14, 18, 19, 22, 78, 193, 194, 209, 212

Imprensa 1, 2, 4, 5, 7, 9, 10, 11, 122, 153, 155, 157, 158, 160, 162, 177, 178, 179, 185, 186, 192, 193, 194, 207, 208, 210, 212, 216, 237

## **L**

Leitura de mapas 129, 130, 131, 132, 134, 141

Lugar 19, 23, 24, 25, 26, 27, 28, 29, 33, 42, 99, 103, 106, 115, 121, 122, 125, 126, 127, 128, 134, 135, 136, 141, 142, 143, 144, 145, 146, 147, 148, 150, 160, 165, 174, 175, 183, 203, 208, 219, 228, 232, 239, 242, 259, 261, 263, 266, 274

Lugar de memória 23, 24, 25, 26, 27, 28, 29, 143, 144, 150

## **M**

Medicina 8, 98, 109, 110, 113, 115, 116, 117

Memória 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 43, 61, 63, 67, 142, 143, 144, 145, 146, 150, 151, 162, 187, 193, 194, 217, 228, 229

Microscópio 109, 111, 113, 114, 115, 116, 117

Mulheres 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 41, 42, 61, 68, 72, 73, 74, 75, 77, 78, 98, 100, 101, 105, 110, 149, 179, 180, 183, 184, 198, 218, 219, 220, 224, 225, 227, 228, 229, 231, 232, 233, 238

## **P**

Patologia 109, 110, 111, 112, 113, 114, 115, 116, 117

Políticas 1, 2, 3, 4, 7, 9, 15, 38, 60, 64, 65, 68, 69, 70, 71, 72, 73, 74, 77, 79, 111, 179, 181, 184, 190, 191, 255, 256, 259, 260, 264

Práticas cívicas 59, 60, 62, 63, 64, 65, 67

## **R**

Relatos de viagens 23, 25, 27

Repressão policial 97, 100, 105

Reprodutiva 69, 70, 71, 73, 74, 75, 78, 79, 229

Rio de Janeiro 1, 6, 8, 10, 11, 22, 30, 43, 67, 78, 95, 97, 98, 99, 101, 103, 105, 106, 107, 108, 128, 141, 150, 161, 162, 163, 177, 179, 180, 184, 185, 226, 268

## **S**

Salubridade 31, 32, 33, 36, 38, 39, 42

Santa Casa de Misericórdia 31, 32, 33, 34, 35, 36, 37, 38, 39, 41, 42

Saúde sexual 69, 70, 71, 73, 75, 76, 78, 79

Seringueiros brasivianos 121

## T

Teresina 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 218, 219, 220, 222, 224, 226


**Atena**  
Editora

Ano 2021





# HISTÓRIA:

## Consensos e dissensos engendrados

 [www.atenaeditora.com.br](http://www.atenaeditora.com.br)

 [contato@atenaeditora.com.br](mailto:contato@atenaeditora.com.br)

 [@atenaeditora](https://www.instagram.com/atenaeditora)

 [facebook.com/atenaeditora.com.br](https://www.facebook.com/atenaeditora.com.br)



# HISTÓRIA:

## Consensos e dissensos engendrados

 [www.atenaeditora.com.br](http://www.atenaeditora.com.br)

 [contato@atenaeditora.com.br](mailto:contato@atenaeditora.com.br)

 [@atenaeditora](https://www.instagram.com/atenaeditora)

 [facebook.com/atenaeditora.com.br](https://www.facebook.com/atenaeditora.com.br)