# **TEXTO PARA AS QUESTÕES DE 01 A 05**

## Who is Oppenheimer? The controversial man behind the atomic bomb

Erin Blakemore Published June 27, 2023

## From child prodigy to the Manhattan Project



Born in New York City in 1904, Julius Robert Oppenheimer was the son of German Jewish immigrants who found wealth in the textile importing trade. He graduated from Harvard University *summa cum laude* after just three years of study, then studied theoretical physics at both Cambridge University and the University of Göttingen in Germany, where he gained his doctorate at age 23.

The young physicist "Oppie" had soon rubbed shoulders with the greatest scientific figures of his age, and his academic work advanced quantum theory and predicted everything from the neutron to the black hole. He was a

voracious learner outside of the sciences, too, learning Sanskrit, studying religion, and aligning himself with a variety of progressive causes.

After the United States joined the Allies in 1941, Oppenheimer was asked to participate in the top-secret Manhattan Project, whose aim was to develop an atomic weapon. As he endeavored to figure out what would need to happen to trigger and sustain the kind of neutronchain reaction needed to create a nuclear explosion, Oppenheimer's superiors were impressed by his wide-ranging knowledge, ambition, and ability to work with, and inspire, other scientists. In 1942, the U.S. Army called on Oppenheimer to head up the secret lab where the bomb would be tested.

#### Bombing Japan-and the moral aftermath

On August 6 and August 9, 1945, the U.S. dropped two of the bombs Oppenheimer had helped develop over Hiroshima and Nagasaki. A minimum of 110,000 people are thought to have been killed in the blasts, which wiped out both cities on a scale of devastation never seen before or since.

Oppenheimer had served on the scientific committee that recommended the War Department deploy the bomb as soon as possible against Japan. Historical debates still rage about whether the government listened to scientists' pleas that the bomb be deployed against military targets only, or even publicly tested beforehand in an attempt to force Japan's surrender.

The night of the Hiroshima bombing, Oppenheimer was cheered by a crowd of fellow scientists at Los Alamos Ranch School, a private boys' school near Santa Fe, and declared that his only regret was that the bomb hadn't been finished in time to use against Germany.

But though they were thrilled by their accomplishment, the scientists were horrified at the loss of civilian lives in the attack, worrying that the future of the weapons would encourage future wars instead of deter them. A few weeks after the bombing, Oppenheimer wrote a letter to the Secretary of War warning that "the safety of this nation...cannot lie wholly or even primarily in its scientific or technical prowess. It can be based only on making future wars impossible."

But Oppenheimer also defended the Manhattan Project and the bomb he'd been tasked with building, arguing that it had been necessary to fully understand the possibilities of nuclear science.

# **Opposition to the hydrogen bomb**

Nonetheless, Oppenheimer spent much of his life after the war lobbying for nuclear deterrence, vocally opposing U.S. attempts to develop a more powerful hydrogen bomb after the U.S.S.R. made strides with its own bomb. Instead, said Oppenheimer, the U.S. should consider using nuclear weapons only tactically and pursue other uses of nuclear technology, like generating power, instead.

This earned him political enemies—and put him the crosshairs of the Red Scare, an American political era of anti-Communist hysteria during the Cold War. At a 1954 hearing looking into his supposed Communist sympathies, the Atomic Energy Commission revoked his security clearance. The move was only reversed in 2022, after government officials revisited Oppenheimer's case and found the investigation had been flawed and unlawful.

"He doesn't slot into easy categories of pro-nuclear, anti-nuclear or anything like that," historian Alex Wellerstein told PBS NewsHour. "He's a tricky figure."

Oppenheimer never returned to government service, instead founding the World Academy of Arts and Sciences and lecturing on science and ethics until his death in 1967. Though he had helped create the "necessary" weapon that ended a war, destroyed two entire cities, and ushered in a dangerous new age, he lobbied against nuclear proliferation for the rest of his life.

"In some crude sense which no vulgarity, no humor, no overstatement can quite extinguish," he said in 1950, "the physicists have known sin; and this is a knowledge which they cannot lose."

**Fonte**: Disponível em: <u>https://www.nationalgeographic.com/history/article/julius-robert-oppenheimer-atomic-bomb-legacy</u> Acesso em 20 julho 2023 (texto adaptado).

**QUESTÃO 01**. Na leitura do texto, é possível inferir uma sequência de acontecimentos na vida de Oppenheimer. Assinale a alternativa que dispõe em uma linha do tempo, em ordem cronológica correta, alguns destes acontecimentos, entre os anos de 1904 (nascimento) a 1967 (morte).



**QUESTÃO 02.** Releia os excertos apresentados e escolha a alternativa CORRETA com relação às explicações dos elementos de referência em destaque.

*Oppenheimer was asked to participate in the top-secret Manhattan Project, whose* (1) *aim was to develop an atomic weapon.* 

Julius Robert Oppenheimer was the son of German Jewish immigrants <u>who</u> (2) found wealth in the textile importing trade

But though <u>they</u> (3) were thrilled by their accomplishment, the scientists were horrified at the loss of civilian lives in the attack, worrying that the future of the weapons would encourage future wars instead of deter <u>them</u> (4).

- a) (1) refere-se ao Oppenheimer; (2) refere-se ao filho de imigrantes; (3) refere-se aos civis; (4) refere-se aos cientistas
- b) (1) refere-se ao projeto Manhattan; (2) refere-se aos pais de Oppenheimeir; (3) refere-se aos cientistas; (4) refere-se às guerras.
- c) (1) refere-se à bomba atômica; (2) refere-se ao Oppenheimer; (3) refere-se às vidas dos civis;
  (4) refere-se às armas.

QUESTÃO 03. Considere o seguinte trecho:

**Nonetheless**, Oppenheimer spent much of his life after the war lobbying for nuclear **deterrence**, vocally opposing U.S. attempts to develop a more powerful hydrogen bomb after the U.S.S.R. made strides with its own bomb.

Escolha a alternativa que melhor traduz o sentido do início do trecho:

- a) Inclusive, Oppenheimer passou parte de sua vida pós-guerra fazendo lobby por uma persuasão nuclear.
- b) Não obstante, Oppenheimer passou parte de sua vida pós-guerra pressionando pela dissuasão nuclear...
- c) Entretanto, Oppenheimer passou uma pequena parte de sua vida durante a guerra tentando influenciar por um período de paz.

**QUESTÃO 04.** Observe as duas sentenças retiradas do texto e assinale a alternativa que contem a melhor tradução considerando o entendimento do sentido expresso em língua portuguesa; o contexto geral do texto; e o gênero textual em questão.

- *I.* This earned him political enemies and put him the crosshairs of the Red Scare, an American political era of anti-Communist hysteria during the Cold War.
- *II.* He doesn't slot into easy categories of pro-nuclear, anti-nuclear or anything like that... He is a tricky figure.
- a) I. Ele foi presenteado com inimigos políticos que o colocaram na surdina do Red Scare, para que se protegesse da política estadunidense de histeria coletiva anti-comunista durante a Guerra Fria. / II. Ele não pode ser facilmente colocado em categorias simples como prónuclear, anti-nuclear ou nada disso... Ele é uma figura duvidosa.
- b) I. Ele ganhou inimigos políticos que o colocaram frente a frente com o Red Scare, que era a política americana de histeria coletiva anti-comunista durante a Guerra Fria. / II. Ele pode ser facilmente colocado em categorias simples como pró-nuclear, anti-nuclear ou qualquer outra do tipo... Ele é uma pessoa difícil e complicada.
- c) I. Sua postura fez com que ganhasse inimigos políticos e fosse colocado na mira do *Red Scare*, momento político estadunidense de histeria coletiva anti-comunista durante a Guerra Fria. / II. Ele não pode ser facilmente classificado como pró-nuclear, anti-nuclear ou ainda colocado em qualquer outra simples categoria do gênero... Ele é uma figura controversa.

**QUESTÃO 05.** Assinale a alternativa que melhor expõe o que aconteceu na vida de Oppenheimer entre 1941 e 1942:

- a) Oppenheimer aceitou o convite para integrar a equipe do projeto ultrassecreto Manhattan, cuja proposta era desenvolver uma bomba atômica, em que descobriu como desencadear e manter o tipo de reação em cadeia necessária para criar uma explosão nuclear. Impressionados pelo seu amplo conhecimento e habilidade para inspirar outros cientistas, o exército americano o nomeou chefe do laboratório onde a bomba seria testada.
- b) Oppenheimer aprendeu sânscrito, estudou as religiões e se equiparou aos grandes cientistas de sua idade na década de 1940, além de fazer avanços significativos na pesquisa em teoria quântica e descobertas sobre nêutrons e buracos negros. Além disso, nesses anos, ele se alinhou a várias causas progressivas e lutou junto ao movimento Red Scare.
- c) Oppenheimer aceitou o convite para integrar o comitê científico em que, junto aos militares, escreveu uma carta ao Secretário de Guerra, recomendando o uso da bomba contra o Japão, somente em alvos militares, para forçar sua rendição no decorrer da Segunda Guerra Mundial.

# **TEXTO PARA AS QUESTÕES DE 06 A 10**

# Wildfire risk governance from the bottom up: linking local planning processes in fragmented landscapes

Matthew Hamilton, Max Nielsen-Pincus, Cody R. Evers



**Abstract:** The growing scale of natural hazards highlights the need for models of governance capable of addressing risk across administrative boundaries. However, risk governance systems are often fragmented, decentralized, and sustained by informal linkages among local-level risk mitigation planning processes. Improving resilience to the effects of environmental change requires a better understanding of factors that contribute to these linkages. Using data on the patterns of participation of 10,199 individual stakeholders in 837 community wildfire protection plans (CWPPs) within the western U.S., we document the emergence of a locally clustered but spatially extensive wildfire risk governance network. Our

evaluation of factors that contribute to connectivity within this network indicates that risk interdependence (e.g., joint exposure to the same fires) between planning jurisdictions increases the prospects for linkages between planning processes, and that connectivity is also more likely among planning processes that are more proximate and similar to one another. We discuss how our results advance understanding of how changing hazard conditions prompt risk mitigation policy networks to reorganize, which in turn affects risk outcomes at multiple spatial scales.

#### **METHODS**

#### **Data collection**

Our analysis focuses on a dataset of actor participation in CWPPs (Community Wildfire Protection Plans) in 11 U.S. states. The study region encompasses rangelands, arid shrublands, desert, and wet and dry forest ecosystems. The geographic footprint of the dataset includes densely populated regions as well as extensive tracts of sparsely populated rural areas. Collectively, the 11 states also capture substantial variation in institutional settings in which CWPPs were developed. For example, nearly all CWPPs in the state of Montana were developed at the county level, while in the state of Washington, approximately twice as many CWPPs were developed at the community level relative to the county level. In 2019–2021, we collected all publicly available CWPP documents for each of the 11 states, which range in date from 2001 to the time of data collection. Beginning in the mid-2000s, CWPP development increased sharply, and began to level off in the early 2010s, marking the beginning of saturation of coverage of risk-prone areas. Wildfire risk increased during the two decades that coincide with the development of CWPPs in our database.

We identified and extracted rosters of participants from all CWPPs. We defined participants as individuals who were involved in the development of the plan, and as such, did not include individuals who were only plan signatories. Of the 1056 publicly available CWPPs we collected, 219 did not include participants' names and organizational affiliations. These were excluded from analysis, resulting in a dataset of 837 CWPPs.

A total of 10,199 individuals participated in these CWPPs. We used participants' affiliations to classify them by organization type. A large proportion of participants were local residents and did not contribute to planning processes as representatives of organizations. Nearly half of all participants represented local government agencies. Although CWPPs are inherently local planning processes, a substantial number of state and federal agency representatives contributed, comprising 8 and 13% of all participants, respectively. The remainder of participants represented non-governmental organizations, private businesses, and other types of organizations. Among representatives of private businesses, we additionally identified those individuals who, as private consultants, helped prepare CWPPs, as prior research has highlighted the significant role that consultants play in plan development (Jakes et al. 2007, Abrams et al. 2016).

We likewise characterized CWPPs based on geographic location, level, and participation of private consultants. Most CWPPs address wildfire risk at the community or county level, while a smaller proportion of plans were developed at the fire protection district level. At least one private consultant participated in approximately 40% of all CWPPs.

We subsequently assembled a spatial dataset of the jurisdictions of all CWPPs. We obtained some jurisdictional boundaries via publicly available datasets, including the Oregon Spatial Data Library and the Colorado Forest Atlas. Other boundaries were georeferenced using maps from CWPP documents. In turn, CWPP jurisdictions enabled us to integrate data on planning processes with biophysical data. In particular, we measured wildfire hazard conditions within each CWPP jurisdiction using the Wildfire Hazard Potential (WHP) dataset (Dillon et al. 2015), which assigns all locations in the contiguous U.S. a ranking based on the potential for fires that would be difficult to suppress. We calculated CWPP hazard potential as the mean value of pixels within each jurisdiction.

Finally, we constructed a network that measured patterns of participation of actors in CWPPs. Because we used the network to evaluate factors that affect participation across distinct planning processes, we excluded all actors who only participated in one CWPP and, subsequently, all CWPPs with no participants, which resulted in a network of 1846 individuals participating in 781 CWPPs.

#### Variables and analytical approach

Our analysis proceeded in two steps, the first of which evaluated actor- and CWPP-level attributes that affected the likelihood of cross-jurisdiction participation. Specifically, we estimated a logistic model that assessed whether actors participated in more than one CWPP as a function of their organizational affiliations. We subsequently estimated a generalized linear model that evaluated the proportion of CWPP participants that were involved in the development of at least one other CWPP as a function of CWPP attributes (including the size of the CWPP jurisdiction, the administrative level of the CWPP, and the state in which it was developed) and the proportion of its participants with different organizational affiliations.

The second step of our analysis involved the estimation of a network model that directly evaluated the likelihood of cross-jurisdiction participation as a function of characteristics of pairs of CWPPs. We focused on proximity, similarity or hazard levels, and risk interdependence as predictors of cross-jurisdiction participation. Each predictor was measured as a network motif, or substructure, involving three nodes - two CWPPs and one actor. For example, "cross-jurisdiction activity: spatial distance" measures the tendency for actors to participate in pairs of CWPPs as function of the distance between the centroids of their jurisdictions. We measured "cross-jurisdiction activity: hazard difference" as the absolute value of the difference of mean hazard potential values between CWPPs in each dyad. We measured actors' tendency to participate in dyads of CWPPs as a function of the number of years that had elapsed between their development ("cross-jurisdiction activity: year difference").

The variable "cross-jurisdiction activity: exposure to prior fires" measured for each year (2000–2018) and for each dyad of CWPPs the expected number of housing units within areas of CWPPs burnt by wildfires prior to the development of the CWPPs. Within the jurisdictions of both CWPPs, using records of historical wildfire perimeters, we obtained wildfire perimeters from the Monitoring Trends in Burn Severity (MTBS) project (Eidenshink et al. 2007) and housing units from the SILVIS WUI (wildland-urban interface) dataset (Radeloff et al. 2005). We used the variable "cross-jurisdiction activity: exposure to prior simulated fires" to account for how stakeholders might perceive risk interdependence based on the probability of fire transmission between CWPP jurisdictions. Specifically, we utilized the 2019 wildfire simulation data from the national FSim library (Short et al. 2020), which includes plausible fires for the continental U.S. that were simulated under contemporary climate and fuel cover. Community exposure was calculated by intersecting these fire perimeters with wildland-urban interface (WUI) boundaries (Radeloff et al. 2005) to estimate the number of housing units within the resulting intersections, using the same approach as described above for calculating the "cross-jurisdiction activity: exposure to prior fires" variable. For details on estimating wildfire exposure see Ager et al. (2019). To measure inter-jurisdiction exposure to simulated fires, we isolated all locations of WUI exposure within a selected CWPP boundary, then identified the points of ignition for each exposure event. We then attributed those points with the exposure amount.

**QUESTÃO 06.** Baseando-se nas partes do *abstract* do texto, assinale a alternativa que indica corretamente a sequência apresentada dos passos da pesquisa ao leitor:

- a) Justificativa coleta de dados participantes da pesquisa resultados
- b) Contexto justificativa metodologia resultados encaminhamentos
- c) Contexto método análise dos dados resultados

**QUESTÃO 07.** Considerando as assertivas que tratam de questões pontuadas no texto sobre os participantes do estudo, podemos afirmar que:

- I. Participantes deste estudo são indivíduos que, de alguma forma, estiveram envolvidos com o planejamento, excluindo-se os seus signatários;
- *II.* Do total de CWPPs abertos ao público, somente 837 foram analisados, uma vez que continham dados dos participantes;
- III. Quase metade do total de participantes representava agências governamentais locais;
- *IV.* 21% dos participantes eram representantes de agências federais e estaduais;
- V. O restante dos participantes representava ONGs, empresas privadas e outros tipos de organização.
- a) Somente IV e V estão corretas
- b) I, II e III estão corretas
- c) Todas estão corretas

**QUESTÃO 08.** A abordagem analítica que leva em consideração as variáveis apresentadas na metodologia foram divididas em dois passos. A opção que **melhor exprime a ideia** do segundo passo da análise é:

- a) O segundo passo da nossa análise consistiu-se na criação de um modelo de rede que avaliou diretamente a probabilidade de participação entre jurisdições, com base nas características das duplas de CWPPs. Concentrou-se nos níveis de proximidade, semelhança e risco, e na interdependência dos riscos como indicadores dessa participação entre as jurisdições participantes.
- b) A segunda etapa de nossa análise contemplou a recepção de um modelo de rede que afetou diretamente a probabilidade da participação entre jurisdições em função das características dos pares de CWPPs. Nós nos concentramos apenas na proximidade, similaridade ou níveis de perigo e interdependência de risco como variáveis dependentes de participação entre diferentes jurisdições.
- c) A segunda etapa da análise aferiu apenas os modelos de rede que foram associados diretamente aos pares de CWPPs. Houve foco na proximidade, similaridade e níveis de perigo, mas não nos ativemos a preditores de participação entre jurisdições diferentes, como a interdependência de risco.

**QUESTÃO 09.** Considerando os itens que apresentam a leitura em língua portuguesa de alguns dos grupos nominais presentes no artigo, podemos afirmar que:

- I. The Wildfire Hazard Potential (WHP) dataset Base de dados do potencial de perigo de incêndios
- II. CWPP (Community Wildfire Protection Plan) Plano de proteção a incêndios comunitários
- III. Monitoring Trends in Burn Severity (MTBS) project Projeto de Dinâmicas de monitoramento em queimaduras graves
- IV. WUI (wildland-urban interface) interface urbano-silvestre
- a) Somente II está correta
- b) I e IV estão corretas
- c) Todas estão corretas

# **QUESTÃO 10.** Observe com atenção o excerto:

Community exposure was calculated by intersecting these fire perimeters with wildland-urban interface (WUI) boundaries (Radeloff et al. 2005) to estimate the number of housing units within the resulting intersections, using the same approach as described above for calculating the "cross-jurisdiction activity: exposure to prior fires" variable.

Considerando o trecho acima, o que foi calculado e como foi calculado?

- a) A interseção de cinco perímetros urbanos limítrofes às áreas silvestres; pela estimativa do número de casas dentro das intersecções resultantes.
- b) A vulnerabilidade de exposição das comunidades analisadas; pelo cruzamento dos perímetros de segurança contra incêndio com os limites de interface urbano-silvestre.
- c) A estimativa do número de habitações contidas nas interseções dos perímetros urbanos; pelo número de exposições comunitárias aos incêndios somado à exposição aos primeiros incêndios.

# TEXTO PARA A QUESTÃO 11 - ABSTRACT

# Augmented Reality Improved Learning of Lower-level Students by Empowering their Participation in Collaborative Activities

Jingwan Tang, Yang Zhang, April Luehmann, and Andrew White University of Rochester

Many studies have shown that augmented reality (AR) can improve learning, but little is known about the mechanisms. To investigate this inquiry, we employed a mixed analysis method to approach the data coming from an experimental study. The quantitative findings showed that lower-level students performed better in the post-assessments for AR groups than for control groups. Qualitative analyses were conducted to explore how AR facilitated the lower-level students' learning. The current findings suggested that: the AR's feature of distributed labor, openness, real-time feedback, and operational symbolic items sustained the lower-level students to engage with higher-level students in problem-solving activity inclusively, jointly, and authentically.

Keywords: augmented reality, lower-level students, collaborative activities.

**In:** Tang, J., Zhang, Y., Luehmann, A. & White, A. *Augmented reality improved learning of lower-level students by empowering their participation in collaborative activities.* (2020)

**Fonte**: *Disponível em:* <u>https://repository.isls.org/bitstream/1/6846/1/999-1006.pdf</u> Acesso em: 20 julho 2023. (texto adaptado).

**QUESTÃO 11**. Com base no conteúdo desse *abstract*, responda as seguintes questões:

A. Dê uma possível tradução das palavras chave e do título deste resumo.

**B**. Descreva o estudo realizado, apontando os itens que o compõem, incluindo justificativa e objetivos, metodologia, resultados e conclusões.

**Atenção!** Lembre-se de que as questões de múltipla escolha devem ser preenchidas no gabarito contido na folha de respostas. A questão dissertativa também deve ser respondida apenas no espaço destinado para preenchimento. Evite rasuras em seu caderno de prova e em sua folha de respostas. Caso precise de rascunho, peça a um dos aplicadores!